

Z.S. 72

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Editors

Stanley Cramp I. J. Ferguson-Lees
P. A. D. Hollom E. M. Nicholson

Photographic Editor Eric Hosking



Volume 56

1963



H. F. & G. Witherby Ltd
61/62 WATLING STREET LONDON EC4

Printed in England by Diemer & Reynolds Ltd., Bedford

List of illustrations

	PAGE
<i>Plates 1-5</i>	Capercaillie (<i>Tetrao urogallus</i>), male in threat postures, Angus, and in flight over Loch Lomond (C. E. Palmar) . . facing 20
<i>Plate 6</i>	Hybrid Scaup × Tufted Duck (<i>Aythya marila</i> × <i>fuligula</i>) and Tufted Duck × Pochard (<i>A. fuligula</i> × <i>ferina</i>), both males (specimens) (Bryan L. Sage)
<i>Plate 7</i>	<i>Upper:</i> Herring Gull (<i>Larus argentatus</i>), nest with two young built on top of dead body of adult Herring Gull, Pembrokeshire (R. C. B. Colcman) <i>Lower:</i> Hybrid Scaup × Tufted Duck (<i>Aythya marila</i> × <i>fuligula</i>), mounted head (permission of <i>Ardea</i>) . .
<i>Plate 8</i>	Greenfinches (<i>Chloris chloris</i>), fighting over food, Glamorgan (C. Stockton) facing 21
<i>Plates 9-11</i>	Roller (<i>Coracias garrulus</i>), at and emerging from nest hole, and habitat with resin-tapped tree, Spain (M. D. England) facing 56
<i>Plate 12</i>	Summer Tanager (<i>Piranga rubra</i>), immature male perched and in the hand, Bardsey (W. M. Condry) facing 57
<i>Plates 13-20</i>	Shags (<i>Phalacrocorax aristotelis</i>), aggressive posture, 'landing-gape', 'upright-aware' posture, 'throat-clicking', 'sitting-gape', 'dart-gape', 'throw-back', resting position, wing-drying, and stretching, Lundy (Barbara K. Snow) facing 96
<i>Plate 21</i>	Birds of prey: Peregrine (<i>Falco peregrinus</i>) (G. A. Booth) facing 121
<i>Plates 22-25</i>	Birds of prey: Short-toed Eagle (<i>Circus gallicus</i>); Griffon Vultures (<i>Gyps fulvus</i>) and other birds at carcass; Sparrowhawk (<i>Accipiter nisus</i>); Hobby (<i>Falco subbuteo</i>); Golden Eagle (<i>Aquila chrysaetos</i>); Lesser Spotted Eagle (<i>Aquila pomarina</i>); Hen Harrier (<i>Circus cyaneus</i>); and Marsh Harrier (<i>Circus aeruginosus</i>) (Eric Hosking) facing 138
<i>Plate 26</i>	Birds of prey: Kestrel (<i>Falco tinnunculus</i>) (Eric Hosking); and Pallid Harrier (<i>Circus macrorurus</i>) nesting in Sweden (Gösta Håkansson) facing 156
<i>Plates 27-34</i>	More examples of the best recent work by British bird-photographers: Jay (<i>Garrulus glandarius</i>), Lancs. (J. B. and S. Bottomley); Dunlin (<i>Calidris alpina</i>), Denmark (K. J. Carlson); Avocet (<i>Recurvirostra avosetta</i>), Denmark (R. G. Carlson); Twite (<i>Carduelis flavirostris</i>), Sutherland (Harold Auger); Reed Bunting (<i>Emberiza schoeniclus</i>), Worcester (H. Marcus Stone); Whinchat (<i>Saxicola rubetra</i>), Somerset (A. N. H. Peach); Grasshopper Warbler (<i>Locustella naevia</i>), Anglesey (John Markham); Pratincole (<i>Glareola pratincola</i>), France (S. C. Porter); Black-headed Gull (<i>Larus ridibundus</i>), Cumberland (E. K. Thompson); Buzzard (<i>Buteo buteo</i>), Montgomeryshire (Harold Platt);

LIST OF ILLUSTRATIONS

PAGE

	Hen Harrier (<i>Circus cyaneus</i>), Argyll (A. Winspear Cundall); and Whooper Swan (<i>Cygnus cygnus</i>), Ayrshire (William S. Paton) facing	176
Plates 35-38	Spoonbills (<i>Platalea leucorodia</i>), at nest, in flight, and in reeds, Netherlands and Hungary (Guy B. Farrar and Eric Hosking) facing	214
Plates 39-42	Glaucous Gulls (<i>Larus hyperboreus</i>), swallowing Eider's egg, in flight, party by tundra pool, calling, and immature eating corpse of adult, Spitsbergen (W. Puchalski) facing	252
Plate 43	Tawny Pipit (<i>Anthus campestris</i>), adult perched on rock, Sweden (P. O. Swanberg) facing	288
Plate 44	Upper: Richard's Pipit (<i>Anthus novaeseelandiae</i>), adult at nest, Malaya (F. G. H. Allen) Lower: Tawny Pipit (<i>Anthus campestris</i>), adult at nest, Sweden (P. O. Swanberg)	
Plate 45	Richard's Pipit (<i>Anthus novaeseelandiae</i>), adult in flight, Malaya (F. G. H. Allen)	
Plate 46	House Sparrows (<i>Passer domesticus</i>), one typical and two discoloured females (specimens) (British Museum, Natural History) facing	289
Plates 47-53	Typical habitats and birds of the Danube delta, including Glossy Ibis (<i>Plegadis falcinellus</i>), White Pelicans (<i>Pelecanus onocrotalus</i>), Spoonbill (<i>Platalea leucorodia</i>) and Great White Heron (<i>Egretta alba</i>), Rumania, Bulgaria and Hungary (I. J. Ferguson-Lees, Eric Hosking and Zoltán Tildy) facing	324
Plate 54	Parts of Bookham Common, Surrey (Geoffrey Beven) facing	325
Plate 55	Crane (<i>Megalornis grus</i>), female at nest, Norway (M. D. England) facing	345
Plates 56-59	Cranes (<i>Megalornis grus</i>), male and female at nest, and habitat, Norway (M. D. England) facing	368
Plate 60	The late Stuart Smith (1906-1963), with Willow Warbler and stuffed Cuckoo (Eric Hosking) facing	392
Plate 61	Houbara Bustard (<i>Cblaniydotis undulata</i>), Suffolk (Eric Hosking) facing	412
Plates 62-63	Red-rumped Swallows (<i>Hirundo daurica</i>), entering and leaving nest, Portugal (M. D. England)	
Plate 64	Radde's Warbler (<i>Phylloscopus schwarzi</i>), in hand and showing wing formula, Kent (G. R. Shannon) facing	413
Plates 65-72	Black-winged Kites (<i>Elanus caeruleus</i>), male and female at and near nest, nest and eggs, and habitat, Portugal (M. D. England and A. N. H. Peach) facing	452

British Birds

25 FEB 1963

Principal Contents

BOUGHT

Editorial



A study of survival of adult Fulmars with observations on
the pre-laying exodus

G. M. Dunnet, A. Anderson and R. M. Cormack

Studies of an aggressive Capercaillie

C. E. Palmar

(with five plates)

Notes on Scaup \times Tufted Duck hybrids

Bryan L. Sage

(with two plates)

News and comment

Notes

Reviews

Letters

Three
Shillings



January
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by

Stanley Cramp I. J. Ferguson-Lees
P. A. D. Hollom E. M. Nicholson

Photographic Editor: Eric Hosking

Hon. Editors: W. B. Alexander N. F. Ticehurst

Editorial Address: 30 St. Leonard's Avenue, Bedford

Contents of Volume 56, Number 1, January 1963

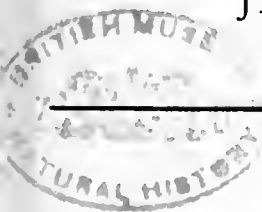
	<i>Page</i>
Editorial	1
A study of survival of adult Fulmars with observations on the pre-laying exodus. By Dr. G. M. Dunnet, A. Anderson and R. M. Cormack ..	2
Studies of an aggressive Capercaillie. Photographs by C. Eric Palmar (plates 1-5). Text by I. J. Ferguson-Lees	19
Notes on Scaup x Tufted Duck hybrids. By Bryan L. Sage (plates 6 and 7b)	22
 Notes:—	
Water Rail taking Moorhen's egg (C. K. Mylne)	27
Spotted Redshanks and Greenshanks feeding in unison (J. H. Taverner) ..	28
Herring Gull's nest on dead Herring Gull (Don Glanville and R. C. B. Coleman) (plate 7a)	28
Juvenile Cuckoo's method of feeding upon Cinnabar Moth caterpillars (K. R. Crawshaw)	28
Reactions of Carrion Crows to Foxes and a captive Crow (P. A. D. Hollom)	29
A fourth Yellow-headed Wagtail on Fair Isle (Peter Davis)	30
Aggressive Greenfinches (C. Stockton) (plate 8)	31
 Reviews:—	
<i>A Glossary for Bird Watchers.</i> By Michael Lister. Reviewed by Stanley Cramp	32
<i>The Bird Notes Bedside Book.</i> Edited by Gwen Davies. Reviewed by Raymond Cordero	32
 Letter:—	
The Hastings Rarities and the 'British List' (Dr. W. R. P. Bourne) ..	33
News and Comment. Edited by Raymond Cordero	38

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 5 Warwick Court, London, W.C.1

British Birds

Vol. 56 No. 1

JANUARY 1963



Editorial

JUST THREE YEARS AGO we reviewed the problems which had arisen in maintaining the standards and developing the scope and service of this journal during the 1950's, following the early death of H. F. Witherby's chosen successor, B. W. Tucker. We explained how the capacity of the team which had then been improvised had been overtaxed by increasing burdens, and we described new arrangements to strengthen the editorial board and to underpin it with such reinforcements as the Rarity Records Committee and a corresponding team to assist with notes on other subjects. We announced that P. A. D. Hollom would take over as Senior Editor from E. M. Nicholson and that Stanley Cramp, then Chairman of the Scientific Advisory Committee of the British Trust for Ornithology, would join the editorial board.

In conformity with the new policy of creating a well-balanced and fully editorial team, P. A. D. Hollom in his turn is now handing over the duties of Senior Editor to Stanley Cramp, who will thus have two previous Senior Editors serving under him—a fact which in itself sufficiently indicates the confidence which his colleagues place in him and in their conviction of the value of the team approach. The continuing growth of ornithological activity in so many directions and the strain under which small periodicals nowadays have to work impose ever-increasing demands on the energy, time and capacities of the editorial team, who once more have to apologise for certain shortcomings, particularly as regards late publication which new efforts are being made to overcome. While events in ornithology crowd the scene and clamour for instant attention, the requirements of scientific accuracy become more exacting as the body of existing knowledge grows and its compartments become more specialised and separated from one another. Basically the problem is that the revenue available from sales and advertising will not nearly pay for the standard and coverage of service which readers of *British Birds* naturally expect and

which the editors and publishers continue to strive to provide.

One new feature which begins in this issue and which will appear regularly in future is a digest of ornithological news items. It is intended to cover national conferences, new appointments, publications which fall outside the scope of normal reviews, and any other happenings of general interest from the setting up of new reserves and observatories to the first showings of important films. For editing this we have been fortunate in obtaining the help of Raymond Cordero, who has served some years as Honorary Secretary of the Ornithological Section of the London Natural History Society and been primarily concerned in preparing the new film 'London's Birds'. To avoid confusion between this new feature and that dealing with reports of unusual birds and interesting movements, the latter will now be known simply as 'Recent reports'.

Last but by no means least, C. M. Swaine has asked to be relieved of the heavy strain of running the Rarity Records Committee's affairs. He took over the position of Honorary Secretary eighteen months ago, in succession to G. A. Pyman, and we owe him a great deal for his untiring efforts on our behalf. Fortunately one of the original members of the committee, D. D. Harber, who has already given so much assistance to this journal in a number of ways, has volunteered for this vast and daunting task; he takes over from this month.

We hope that these and other measures which we are taking will enable the journal to maintain and improve its service to readers. Meanwhile, we trust that they will bear with our shortcomings and do their best to assist in overcoming them by obtaining additional subscribers.

A study of survival of adult Fulmars with observations on the pre-laying exodus

By G. M. Dunnet and A. Anderson

Zoology Department, University of Aberdeen

and R. M. Cormack

Statistics Department, University of Aberdeen

IN JULY 1950 Dr. Robert Carrick and G.M.D. started colour-ringing adult Fulmars (*Fulmarus glacialis*) caught on their nests on the small island of Eynhallow in Orkney. The immediate aims were to determine (a) whether Fulmars breed each year, and (b) the age at which

young Fulmars first breed. The results of the first three years' work (Carrick and Dunnet 1954) showed clearly that both sexes breed every year, but no data were obtained on age at first breeding. Between 1953 and 1957 the colony was studied by Dr. E. A. G. Duffey and A.A. with the assistance of several other people, and during this period the work was concerned with searching for the return of birds ringed as nestlings and with compiling case-histories of ringed individuals. A number of adults and the nestlings were ringed every year, but still no bird ringed as a nestling was found breeding (and this still applies at the present time).

The field-work took place during short visits to Eynhallow at key times in the breeding cycle: in May during egg-laying, in July during hatching (when adults are most easily and safely caught on the nest), and in early August to ring the surviving young. Eynhallow is distant and isolated, and living-quarters are not normally available, so that prolonged stays are expensive and difficult to arrange. As a result, visits were always rather short and no attempt was made to study the whole Fulmar population of the island: the study was concerned rather with obtaining a representative sample of individual histories.

In 1958 the ringing techniques, which were turning out to be inadequate, were improved and a method of sexing birds in the hand, mainly from bill-measurements, was developed (Dunnet and Anderson 1961). It was decided in 1959 that with about two hundred adults ringed on Eynhallow, some of them for as long as ten years, an analysis of their survival should be possible provided the colony as a whole could be studied. Fulmars spend much time at sea and are present in the breeding colonies, and closely and clearly associated with their nest-sites, only from May to mid-July. In April, less than a month before egg-laying, the birds spend a lot of time flying and visiting other groups of Fulmars near-by. We thought it likely that *all* the breeding birds might be present on the island just prior to egg-laying. Accordingly, plans were made to be on Eynhallow for as much as possible of the laying season in 1960, 1961 and 1962 when it was hoped that all surviving ringed adults would be present and could be identified. This assumed that Fulmars always breed in the same colony and we have no evidence to the contrary. Even within the colony, Fulmars generally use the same site year after year (Carrick and Dunnet 1954; and unpublished information), so that changes of colony are most improbable.

There are, however, various aspects of Fulmar breeding biology and shortcomings in the ringing techniques which prevent every potential breeder from being detected and identified even in May. These are discussed on pages 4-10.

THE PRE-LAYING EXODUS

A pre-laying exodus from the breeding grounds is known to occur in several Procellariiformes. Fisher (1952) and Venables (in Fisher 1952) described it for the Fulmar. Prévost (1953a: 162) said of the Antarctic Fulmar (*Fulmarus glacialis*), 'Nous avons l'impression qu'après la copulation la femelle s'absente pendant plusieurs jours. Peu de temps avant la ponte, elle reviendrait à la colonie et c'est à elle qu'incomberait le soin de préparer le nid pour l'incubation. Le mâle est alors généralement absent.' This suggests a very similar behaviour to that of the Atlantic Fulmar, in which copulation has been observed at the breeding colony in late April and early May (Fisher 1954: 332; and personal observation). Serventy (1958) described the very conspicuous exodus of the Short-tailed Shearwater (*Puffinus tenuirostris*) which, owing to highly synchronous egg-laying in that species, results in complete desertion of the breeding grounds immediately before laying.

Of other petrels little seems to be known: in many cases the breeding colonies have been studied only after the eggs have been laid. Prévost (1953b) suggested that female Cape Pigeons (*Daption capensis*) may be absent from the breeding colonies just before egg-laying, but that this is not so in Wilson's Petrel (*Oceanites oceanicus*), the Giant Petrel (*Macronectes giganteus*) or the Snow Petrel (*Pagodroma nivea*). Davis (1957) has shown that Storm Petrels (*Hydrobates pelagicus*) visit their nesting burrows frequently but irregularly during the five to eight weeks before egg-laying and, though there is a drop in the number of burrows occupied by day during the last week, visits by night are apparently not reduced at this time. In Buller's Albatross (*Diomedea bulleri*) and the Royal Albatross (*D. epomophora*) there is a tendency for males to be absent from the nest during the day or two before the egg is laid, and it has been suggested (Richdale 1949, 1950) that this enables them to prepare for their long first stint of incubation. Warham (in press) has reviewed the situation in petrels generally.

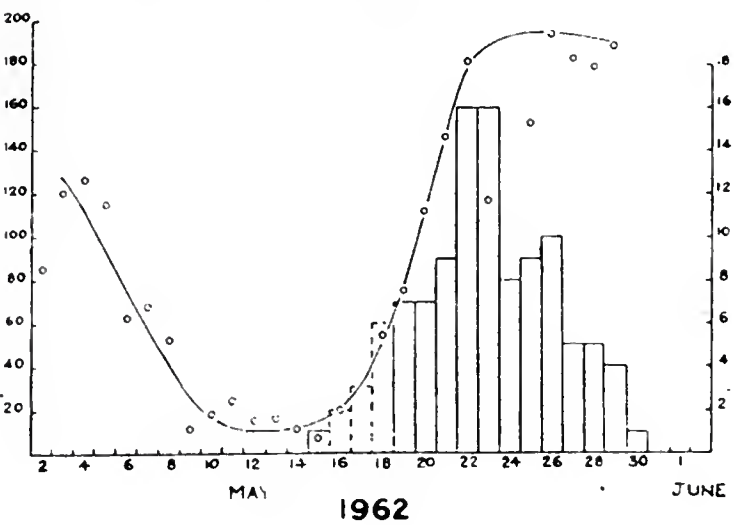
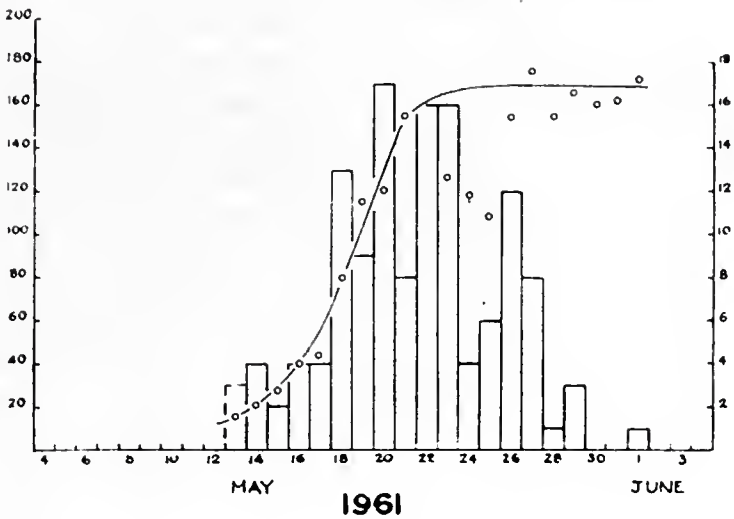
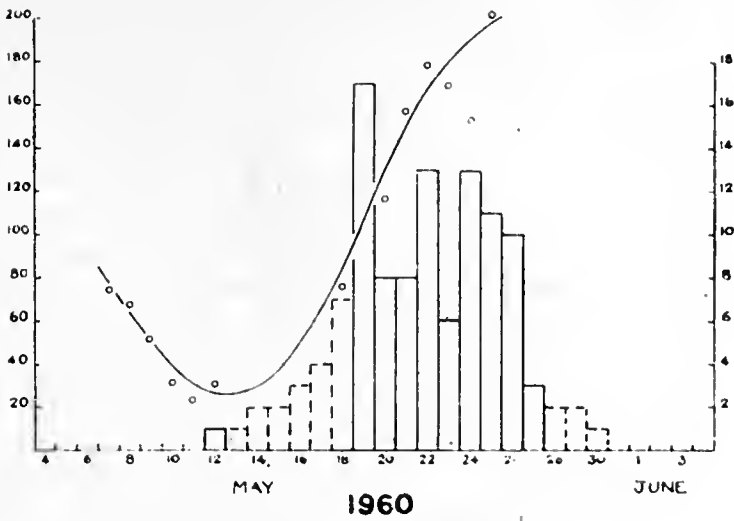
Fisher (1952: 343), using 'information collected from all possible sources', constructed a diagram of the patterns of change in numbers

FIG. 1. Dates of egg-laying and counts of Fulmars (*Fulmarus glacialis*) on Eynhallow, and immediately off-shore, in May 1960, 1961 and 1962. Each count was made during a daily walk round the island visiting all known nesting places to record the laying dates. In 1960 one clutch was laid on 12th May, after which no observations were made until 18th May when 19 additional eggs were found. These 19 have been distributed over the days in question and are shown in dotted lines. Similarly indicated are the five eggs known to have been laid after observations ceased on 27th May 1960, the three eggs found when observations started on 13th May 1961, and the eleven eggs laid between 16th and 18th May 1962. The drop in numbers of birds present and of eggs laid around 24th May in each year is associated with strong gales and rain

SURVIVAL OF ADULT FULMARS

NUMBERS OF BIRDS SEEN (OPEN CIRCLES)

NUMBERS OF CLUTCHES LAID (HISTOGRAMS)



of Fulmars present in colonies of different sizes. For a colony of more than a hundred pairs (such as the Eynhallow one) he indicated a drop in numbers in early to mid-May to a level of about 60% of the peak population present in April, and recovery in early June to 100%. Yet four pages later he gave a graph (based on numbers of occupied sites) of the very detailed counts which Venables (in Fisher 1952) made on a colony of some six to eight hundred birds in Shetland; these showed, in the three years 1948, 1949 and 1950, a drop in numbers of adults in early May to about 5-10% of the breeding population (which is taken as twice the number of sites occupied at the end of May). These minima bear a similar relation to the maximum number of adults counted—which was not in April, but in December and February in the years studied in full. Recovery in late May was to only about 60% of the total breeding population.

Our detailed counts of apparently adult Fulmars seen around Eynhallow during part of May in 1960, 1961 and 1962 are given in Fig. 1. In each year a minimal number of birds was counted on and around the island about the date when the first egg was laid, and there was a subsequent rapid increase. In 1960 we were on Eynhallow for a week before the first egg appeared and the numbers of Fulmars decreased continuously during that time. In 1961 we arrived at the beginning of egg-laying, but in 1962 we were on Eynhallow two weeks before the first egg was laid, and observed a similar decrease. In each year we knew the number of eggs laid, and therefore the number of breeding birds on Eynhallow. Using this as the breeding population, the minimum numbers present were 10%, 6% and 3%, and subsequent recovery of the order of 65-80% of the breeding population. These data are similar to Venables's counts.

Ringed birds were identified at every opportunity: seven in 1960 and 13 in 1962 were identified in early May and again around egg-laying, but not in between. The maximum duration of their absence during the pre-laying exodus varied between nine and 19 days, with a mean of 14.7 days. Only three of the twenty birds identified in 1960 and 1962 were females (mean 15.9 days), and the mean for males was 14.5 days. Four of the individuals were recorded for both years and the individual variation between years was large (11 days and 17 days in the case of one male).

In the days immediately preceding egg-laying more males than females were seen at or near their sites (Table 1). This suggests that they do not always return from the exodus in pairs and, while females may return one or at most two days before laying, males may come back earlier. The meagre evidence of a longer exodus by females supports this. Thirty-three males and 26 females were first identified on the day of laying, and many not till later.

SURVIVAL OF ADULT FULMARS

Table 1. Numbers of adult Fulmars (*Fulmarus glacialis*) of known sex positively identified on Eynhallow, Orkney, during the period immediately before their eggs were laid

Of 184 ringed Fulmars of known sex, 95 have been males and 89 females

	Number of days before egg laid									
	1	2	3	4	5	6	7	8	9	10
Males	15	12	6	3	1	1	2	0	0	1
Females	10	4	1	1	0	0	0	0	0	0

	Number of days before egg laid									
	11	12	13	14	15	16	17	18	19	20
Males	0	3	4	0	3	2	2	2	1	2
Females	0	0	0	0	2	0	1	0	0	0

This, together with the greater exodus of breeding birds than illustrated by Fisher, does not substantiate his suggestion (p. 484) that the 'May dip' may be caused primarily by an exodus of males as Richdale (1950) has shown to occur in the Royal Albatross. Clearly females must take part in the exodus as in the case of the Short-tailed Shearwater (Serventy 1958). The function of the exodus remains obscure. Both birds certainly undergo a considerable ordeal at egg-laying: the female in the production of the large egg and the male in his very long first stint at incubation (see below). The suggestion that the birds go to sea to feed and prepare for this is plausible but not proved. The only indication of the whereabouts of these breeding adults during the exodus comes from the recovery on about 10th May 1962 of an adult which bred on Eynhallow in 1960 and 1961; its position was given as 200 miles north-west of Thyboron in Denmark and therefore about 230 miles east of Eynhallow, near the Norwegian coast.

SPREAD OF EGG-LAYING

Egg-laying was spread over at least 17 days in 1960, over at least 20 days in 1961 and over 16 days in 1962 (Fig. 1). The first egg was laid on 12th May in 1960 and on 15th May in 1962, and three were present on 13th May in 1961. The last eggs were laid about the first days of June in each year. The mean for 1960 and 1961 was about 21st-22nd May, and for 1962 it was about 23rd May.

EGG-LOSS

The Fulmar lays its single, large, thin-shelled (0.2 mm.) egg directly on to rocky ledges (often very narrow) or into shallow hollows scraped

out of the turf on grassy slopes. Many eggs are lost naturally as a result of cracking against the rocks or predation by Herring Gulls (*Larus argentatus*) and Great Black-backed Gulls (*L. marinus*) when left unattended. While our presence on the island undoubtedly increased egg-loss from both of these causes, our direct contribution to egg-loss was of the order of 15-25% of the total. We cut our interference to a minimum wherever possible by

- (a) reducing the number of visits to one per day except in special cases,
- (b) marking incubating birds by squirting dye on them, so that they could be identified later without further disturbance,
- (c) avoiding catching adults off eggs, and
- (d) watching disturbed adults back on to the nest before moving on.

Disturbance is, however, an integral part of such an investigation: it cannot be completely eliminated.

Data on early egg-loss are given in Table 2. Over two-thirds (71%) of the total egg-loss within nine days of laying occurred in the first three days, and a much lower rate of loss prevailed after this.

After the egg is lost the parents show much less interest in the nest-site. It then becomes very difficult to get close enough to identify them, and not always possible to associate them definitely with the site.

Table 2. Period of survival of Fulmar (*Fulmarus glacialis*) eggs which have been lost on Eynhallow, Orkney, in the first nine days after laying

Maximum survival (days)	Numbers of eggs				Per cent
	1960	1961	1962	Total	
1	17	20	12	49	47
2	5	6	2	13	12
3	4	7	2	13	12
4	2	4	2	8	8
5	0	4	4	8	8
6	1	2	1	4	4
7	0	5	0	5	5
8	0	3	1	4	4
9	0	1	0	1	1
Total	29	52	24	105	100

THE ROLES OF MALE AND FEMALE IN INCUBATION

The presence and identity of birds at the sites was noted on each daily round of the island, and the data on the roles of male and female during the early stages of incubation are given in Table 3. The first stint by the female, immediately after laying, is usually very short: it is frequently less than 24 hours, and in only 15 out of 100 cases did it

SURVIVAL OF ADULT FULMARS

last two days or more. By contrast, the first spell by the male lasts on average about seven days, and ranges between a few hours (exceptional) and eleven days. Subsequent spells are probably similar for both sexes and average around five days, until the last seven to ten days of incubation when they become shorter and average around one day (Richter 1937, Williamson 1952).

Table 3. Shares of male and female Fulmars (*Fulmarus glacialis*) in the first four stints of incubation, Eynhallow, Orkney

The figures in brackets refer to incomplete stints; the mean duration of these is calculated on those of two or more days, to each of which one day has been added

Duration of stints	1st stint (female)	2nd stint (male)	3rd stint (female)	4th stint (male)
Under 1 day	69	1	2 (1)	1
1 day	16	5	2 (6)	(1)
2 days	8	(4)	1 (7)	
3 days	3	3 (5)	2 (3)	(1)
4 days	3	7 (5)	1 (7)	(1)
5 days	1	6 (5)	3 (10)	(1)
6 days		12 (3)	1 (4)	
7 days		13 (7)		
8 days		7 (6)	(1)	
9 days		1 (4)		
10 days		2 (2)		
11 days		3 (2)		
Mean duration of complete stints	0.93	5.86	3.0	—
Mean duration of incomplete stints of two or more days	—	6.72	5.03	4.25

Thus, during a visit around laying time, the probability of detecting and identifying the female is much less than that for the male. She lays usually within a few hours of her return from the pre-laying exodus, incubates for a very short spell, and leaves again—possibly often all within 24 hours. She may not return for seven to ten days, during which time a high rate of egg-loss occurs. The result is that many females never provide a good opportunity for their identification. This is reflected in the number of nests for which only the male was known: in 1960 the pair were known at 42 nests, the male only at 13 and the female only at six, while in 1961 and 1962 the figures were, respectively, 63, 19 and four and 53, 16 and six. In the three years, the female was identified at 174 sites, but at only 52 of them before completing her first incubation stint.

RINGING TECHNIQUES

In addition to these biological factors which prevent the detection of all the surviving ringed birds, there are deficiencies in the ringing techniques which prevent the identification of some of the ringed birds detected. Fulmars are long-lived birds, and to be satisfactory the rings must remain clearly identifiable for many years. In the early part of the study each Fulmar was simply ringed with serially-numbered, aluminium rings provided by the British Trust for Ornithology and a unique combination of two of nine colours of celluloid rings. These methods proved to be unsatisfactory for several reasons. In the first place, the aluminium ring got badly worn and illegible after about five years and regular replacement was necessary. Since 1959, therefore, all adults caught have been ringed with monel rings, which are expected to last much longer: 75 of the adults first caught in 1958 or earlier have now been re-ringed with monel rings, and 55 have been ringed in this way since 1959. At the same time, ordinary coloured celluloid flat-bands with overlapping layers have several features which lead to confusion or completely prevent identification. These are:

(i) Over the years, and sometimes within one year, colours fade and become similar to others (e.g. pale green fades to yellow, red to pink, and pale blue to white). This can be overcome by careful limitation of colours and now we use only six—black, white, red, yellow, dark blue and green (green is the least satisfactory of these because of the fading of pale green to yellow and because dark green is difficult to distinguish from black in certain lights). We have found that the pigments used by the Minnesota Mining & Manufacturing Company in the preparation of 'Scotchlite' and 'Scotchcal' sheeting are remarkably immune from fading, and we now use these materials, in the colours given above, bonded to un-numbered monel rings. Such rings are placed on one leg, and celluloid rings on the other. Although the sheeting is abraded on contact with cliffs and ledges, these rings have proved reliable over the last three years.

(ii) Celluloid rings become brittle with age and relax, so that adjacent rings may get intermingled and even pass through each other to reverse their proper order. This results firstly in difficulty in identifying the birds and secondly in confusion of individuals. It has been prevented by 'injecting' acetone between the layers to seal the rings when they are first put on.

(iii) Coloured rings, as well as aluminium rings, tend to wear and eventually to fall off. This tendency is reduced on celluloid rings by sealing them (which also prevents birds from pulling them off), and it is hoped that the Scotchlite/Scotchcal monel rings will last a long time.

SURVIVAL OF ADULT FULMARS

ESTIMATES OF SURVIVAL

We have seen that it is not possible either to detect all the previously ringed breeding birds in any year (owing to certain aspects of their breeding biology) or to identify every previously ringed bird which is detected (owing to shortcomings of the ringing techniques). Thus in any year there are more survivors than those identified and some of those not identified will never be identified in the future (if they have lost most of their rings). This leads inevitably to an underestimate of survival rates in both the simple model and the more involved statistical model used below.

Not all the Fulmars caught on Eynhallow may be breeding: some caught by fleigh or otherwise away from nests may have been pre-breeders. In the subsequent analyses it has to be assumed that the probability of dying is the same for each individual over any interval of time. For this assumption to be fulfilled the category of birds must be restricted, and so only positive breeders are included here. In most birds it is considered that the probability of survival is independent of age (Lack 1954), but this may not be so in very long-lived species, though senility (=probability of dying increasing with age) has not been clearly demonstrated in birds (but see Austin and Austin 1956, Paynter 1949). Such variation in survival may be detected and measured only if large samples are available: where they are not, as in this study, the assumption of constant survival must be made. Any error so introduced will tend to underestimate the survival rate.

Details of the numbers of birds caught and identified and the duration of the field work in each year are given in Table 4.

Estimate of mean minimum annual survival rate

The estimate of mean minimum annual survival rate is based on the assumption that each bird dies during the twelve months immediately after its last recorded observation. This method obviously gives only an approximate estimate of survival as we have already discussed several factors other than death, which prevent the identification of previously ringed birds at the colony. However, as the study proceeds over the years, it will tend to give an ever larger and more accurate estimate which, as will be shown, is quite close to the statistical estimate of mean survival.

The data and calculations are set out in Table 5, and the estimated number of ringed breeders alive in each year, together with the number identified, in Table 6. This method gives fairly consistent estimates of annual survival varying between 0.9110 and 0.9537, with an unweighted mean of 0.9325. These estimates do not refer to any particular year interval, but are mean annual survival rates for those birds

Table 4. Summary of work on Fulmars (*Fulmarus glacialis*) on Eynhallow, Orkney, from 1950 to 1962, including details of numbers ringed and numbers identified in subsequent years

Year	Month of fieldwork and number of days	Number of Fulmars first ringed	Number positively breeding	Accumulated total of previously ringed breeders	Previously ringed breeders identified	Nests with egg or young
1950	July 7	11	11	0	0	24
1951	July 5	66	66	11	4	68
1952	July 4	30	28	77	36	46
1953	May 4	3	2	105	43	92
1954	May 10	4	4	107	54	106
1955	July 10	52	51	111	63	79
1956	July 10	14	13	162	69	84
1957	May 10	7	5	175	99	116
1958	{ May 4 } { July 5 }	19	19	180	85	122
1959	{ May 4 } { July 4 }	8	8	199	51	78
1960	{ May 20 } { July 4 }	28	26	207	102	114
1961	{ April 2 } { May 20 } { July 3 }	6	3	233	133	130
1962	{ May 30 } { July 3 }	20	18	236	116	110

Table 5. Calculation of mean minimum annual survival rate of breeding adult Fulmars (*Fulmarus glacialis*) on Eynhallow, Orkney, from observational data, 1950-62

Year of ringing	Number first ringed	1	2	3	4	5	6	7	8	9	10	11	12	Accumulated total ringed
1950	11	10	10	10	9	9	9	9	8	8	7	7	5	11
1951	66	59	59	57	55	50	42	36	36	35	32	21		77
1952	28	25	24	20	19	14	13	13	10	10	9			105
1953	2	2	1	1	1	1	1	0	0	0				107
1954	4	4	4	4	4	4	4	3						111
1955	51	49	45	42	41	36	28							162
1956	13	13	11	11	11	9								175
1957	5	2	2	2	2									180
1958	19	16	15	11										199
1959	8	8	7											207
1960	26	22	17											233
1961	3	3												236
Total	236	215	203	178	158	142	123	97	60	53	48	28	5	
Proportion surviving	$\frac{215}{236}$	$\frac{203}{233}$	$\frac{178}{207}$	$\frac{158}{199}$	$\frac{142}{180}$	$\frac{123}{175}$	$\frac{97}{162}$	$\frac{60}{111}$	$\frac{53}{107}$	$\frac{48}{105}$	$\frac{28}{77}$	$\frac{5}{11}$		
If annual survival rate is P, these proportions equal	P	p_2	p_3	p_4	p_5	p_6	p_7	p_8	p_9	p_{10}	p_{11}	p_{12}		
Thus P equals	0.9110	0.9333	0.9511	0.9430	0.9537	0.9430	0.9294	0.9260	0.9250	0.9247	0.9133	0.9365		
							Mean P = 0.9325							

Table 6. Expected numbers of previously marked breeding adult Fulmars (*Fulmarus glacialis*) surviving year by year on Eynhallow, Orkney, assuming an annual survival rate of 0.9420 (see Table 7), and the numbers actually identified

Year of ringing	Number of first ringed	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
1950	11	10	10	9	9	8	8	7	7	6	6	6	5
1951	66		62	59	55	52	49	46	43	41	39	36	34
1952	28			26	25	23	22	21	20	18	17	16	15
1953	2				2	2	2	2	1	1	1	1	1
1954	4					4	4	3	3	3	3	3	2
1955	51						48	45	43	40	38	36	34
1956	13							12	12	11	10	10	9
1957	5								5	4	4	4	4
1958	19									18	17	16	15
1959	8										8	7	7
1960	26											24	23
1961	3												3
Total expected		10	72	94	91	89	133	136	134	142	143	159	152
Number identified		4	36	43	54	63	69	99	85	51	102	133	116
Percent identified		40%	50%	46%	59%	71%	52%	73%	63%	36%	71%	84%	76%

which survive a period of one year, two years, etc. They are therefore not directly comparable with the statistical estimates given below. An annual survival rate of 0.9325 represents a mean length of adult life of 14.3 years.

Maximum likelihood estimate of annual survival rate

A statistical procedure for estimating both survival and population size of a species from capture-mark-recapture data has been given by Darroch (1958, 1959). This approach involves four basic assumptions about the sampling procedure adopted:

- (1) All live birds are equally likely to be captured.
- (2) Ringed birds are representative of the population in so far as survival is concerned; in other words, the ringing of a bird does not alter its probability of dying.
- (3) The effort put into sampling on each occasion is in some sense predetermined and not fixed by the number of captures effected.
- (4) Death rates are independent of age (though, of course, they may vary from year to year).

In the present study the first assumption clearly does not hold since previously marked birds may be identified in flight, whereas unmarked birds have to be captured to be ringed. This implies that the size of the colony cannot be estimated from the data (this is, of course, no great loss since the population is defined as the population of breeding birds and, with no evidence of migration to another colony, this can be obtained by counts of eggs laid). If, however, the first assumption is replaced by one that all live ringed birds are equally likely to be identified, then an estimate of the yearly survival together with the asymptotic variance of that estimate can still be obtained by the maximum likelihood approach.

Observations used in the estimation are:

a_i : number of previously ringed birds seen in year i .

b_i : number of new birds marked in year i .

c_i : number of birds seen in year i and not after year i .

From these observations the two sets of parameters, P_i (probability of a bird alive in year i surviving to the next year) and E_i (probability of a marked bird alive in year i being seen then), can be estimated. The P 's represent the survival rate of the birds, the E 's the 'effort' of the observers in identifying the individuals. The required sets of estimates are:

$$\hat{P}_i = \frac{(a_i + b_i - c_i) [v_i (a_{i+1} + b_{i+1}) - a_{i+1} c_{i+1}]}{v_i (a_i + b_i) (a_{i+1} + b_{i+1} - c_{i+1})}$$

$$\hat{E}_i = \frac{a_i (a_i + b_i - c_i)}{v_{i-1} (a_i + b_i) - a_i c_i}$$

BRITISH BIRDS

In these $v_i = \sum_{j=1}^i (b_j - c_j)$, the total number of marked birds known to be alive in year i . The parameter P_{n-1} , representing the survival over the final year of the study, cannot be estimated. It is intended to publish the derivation of these estimates separately. The average survival rate over the complete period of study, P , is then estimated as the geometric mean of the \hat{P}_i . Since in this study disappearance from the record is equivalent to death, these estimates of survival rates will also be underestimates.

The observations and estimates for 1950-62 are given in Table 7. These estimates give an average yearly survival of 0.9420, to which may be attached a standard error of 0.0100. This corresponds to a expected duration of adult life of 16.74 ± 2.98 years.

The separate annual survival rates in Table 7 may be seen to be fairly regular, with two exceptions. One of these, 1960-61, is to some extent expected since there have been so few later occasions on which birds surviving that year could have been seen. But the other, 1957-58, is not explicable in terms of the method of analysis. No clear ecological explanation is forthcoming: apparently there was no unusual scarcity or unusual distribution of plankton during the winter of 1957-58.

Table 7. Estimates of annual survival rates (P) of Fulmars (*Fulmarus glacialis*) and effort expended by observers (E) in identifying ringed birds, Eynhallow, Orkney

The survival rates refer to the year preceding the observations. a is the number of previously ringed birds seen, b is the number of new birds marked, and c is the number of birds seen in the year concerned but not afterwards. The calculations involved are shown on pages 15-16

Year	a	b	c	P	E
1950	0	11	1	0.9697	
1951	4	66	7	0.9287	0.3750
1952	36	28	4	0.9735	0.5056
1953	43	2	3	0.9619	0.4453
1954	54	4	4	0.9593	0.5695
1955	63	51	10	0.9664	0.6646
1956	69	13	9	0.9419	0.4897
1957	99	5	18	0.8546	0.6830
1958	85	19	10	0.9444	0.6633
1959	51	8	4	0.9662	0.3670
1960	102	26	16	0.9028	0.7183
1961	133	3	34		0.8769
1962	116	20	136		

Average survival = 0.9420 ± 0.0100 , corresponding to adult life of 16.74 ± 2.98 years

SURVIVAL OF ADULT FULMARS

Table 7a. As Table 7, but with the eleven birds of 1950 eliminated (because the variance of the estimate of survival over the first year is very high on such a small population)

Year	a	b	c	P	E
1951	0	66	7	0.9248	
1952	31	28	4	0.9712	0.5079
1953	39	2	3	0.9504	0.4510
1954	48	4	3	0.9724	0.5709
1955	57	51	10	0.9674	0.6655
1956	63	13	9	0.9364	0.4766
1957	91	5	17	0.8539	0.6693
1958	78	19	10	0.9282	0.6480
1959	48	8	3	0.9838	0.3711
1960	96	26	16	0.8975	0.7104
1961	126	3	32		0.8713
1962	111	20	131		

Average survival = 0.9378 ± 0.0075 , corresponding to adult life of 15.58 ± 1.93 years

The estimated standard error of the mean survival seems reasonably small when the total number of birds marked (236) is so moderate. Even so, a substantial improvement in precision may be gained by omitting from consideration the eleven birds marked in 1950. With a population of eleven the variance of the estimate of survival over the first year is very high and this contributes appreciably to the final figure. Table 7a makes use of the same data as Table 7, but has the history of these eleven birds omitted completely. Average survival is now 0.9378 ± 0.0075 , corresponding to a life span of 15.58 ± 1.93 years. This improved precision is more acceptable statistically since the population of 66 in 1951 satisfies better than the eleven in 1950 the assumption of a large population inherent in the estimation of the variance.

SUMMARY

(1) The field study of Fulmars (*Fulmarus glacialis*) on Eynhallow, Orkney, begun in 1950 and still continuing, is outlined.

(2) It is shown that both males and females leave the breeding area for about a fortnight immediately before egg-laying, but owing to the spread of egg-laying within the colony (16-20 days) the area is never completely deserted.

(3) The female returns, lays and departs again within, usually, a few hours, leaving the male to undertake the first major incubation stint. This is much longer than any subsequent stint, averaging six to seven days and sometimes exceeding eleven days. Later stints probably average four to five days.

(4) Egg-loss is high during the first three days of incubation, but much less later.

(5) The problems of ringing long-lived birds, with both coloured and metal rings, are discussed in detail.

(6) Although the above biological and technical situations make it impossible to detect and identify all the previously ringed birds surviving in any year, useful estimates (in every case underestimates) of mean annual survival rates for breeding adults have been calculated. A simple analysis gives a mean rate of 0.9325, while a

more complex statistical treatment, described in detail, gives a value for each year interval from 1950 to 1961, and the most precise overall mean is 0.9378 with a standard error of ± 0.0075 . This last estimate indicates a mean duration of adult life of 15.58 ± 1.93 years.

ACKNOWLEDGEMENTS

We wish to acknowledge our great indebtedness to Miss J. Robertson, of Grantit House, Kirkwall, Orkney, and Mr. M. Jenkins, of Woodwick, Orkney, for continuing permission to use Eynhallow and for many other favours. Dr. E. A. G. Duffey, of the Nature Conservancy, played a prominent part in the study from 1953 to 1957 and very kindly made his data available to us. Other members of the Conservancy staff, staff and students of the University of Aberdeen and local ornithologists have helped from time to time, and we have greatly appreciated their assistance. Professor V. C. Wynne-Edwards has not only taken part in many of the field trips, but has also helped and encouraged us in numerous ways.

REFERENCES

- AUSTIN, O. L., and AUSTIN, O. L., JR. (1956): 'Some demographic aspects of the Cape Cod population of Common Terns (*Sterna hirundo*)'. *Bird-Banding*, 27: 55-66.
- CARRICK, R., and DUNNET, G. M. (1954): 'Breeding of the Fulmar *Fulmarus glacialis*'. *Ibis*, 96: 356-370.
- DARROCH, J. N. (1958): 'The multiple-recapture census. I. Estimation of a closed population'. *Biometrika*, 45: 343-359.
- (1959): 'The multiple-recapture census. II. Estimation when there is immigration or death'. *Biometrika*, 46: 336-351.
- DAVIS, P. (1957): 'The breeding of the Storm Petrel'. *Brit. Birds*, 50: 85-101, 371-384.
- DUNNET, G. M., and ANDERSON, A. (1961): 'A method of sexing living Fulmars in the hand'. *Bird Study*, 8: 119-126.
- FISHER, J. (1952): *The Fulmar*. London.
- LACK, D. (1954): *The Natural Regulation of Animal Numbers*. Oxford.
- PAYNTER, R. (1949): 'Clutch-size and the egg and chick mortality of Kent Island Herring Gulls'. *Ecology*, 30: 146-166.
- PRÉVOST, J. (1953a): 'Notes sur l'écologie des Pétrels de Terre Adélie'. *Alauda*, 21: 205-222.
- (1953b): 'Notes sur la reproduction du Fulmar antarctique *Fulmarus glacialis* (A. Smith)'. *Alauda*, 21: 157-164.
- RICHDALE, L. E. (1949): *The Pre-egg Stage in Buller's Mollymawk* (Biological Monographs 2). Dunedin, N.Z.
- (1950): *The Pre-egg Stage in the Albatross Family* (Biological Monographs 3). Dunedin, N.Z.
- RICHTER, R. (1937): 'Einiges über die Lebensweise des Eissturmvogels'. *J. Orn.*, 85: 187-200.
- SERVENTY, D. L. (1958): 'Recent studies on the Tasmanian Mutton-bird'. *Aust. Mus. Mag.*, 12: 327-332.
- WILLIAM, J. (in press): 'Aspects of the breeding behaviour of the Procellariiformes'. *Proc. S.C.A.R. Symp. on Ant. Biol.*
- WILLIAMSON, K. (1952): 'The incubation rhythm of the Fulmar'. *Scot. Nat.*, 64: 138-147.

Studies of an aggressive Capercaillie

Photographs by C. E. Palmar

(Plates 1-5)

THE FIRST FOUR PLATES in this issue are all of a remarkably aggressive cock Capercaillie (*Tetrao urogallus*) which lived in a small wood near the top of Glen Lethnot, near Brechin, Angus, for at least four years up to June 1961. Each spring, from late February to the end of June, it would persistently attack all human beings, most other large animals and even any vehicles which entered its territory during the hours of daylight. The incident has been described in some detail by Jenkins (1962) and the next paragraph is a summary of the main points.

This Capercaillie was the only male in the area. It was most aggressive inside the wood, which was some 35-40 acres in extent, but it also readily came out on to the road and a neighbouring grass field. Fortunately the place was very quiet and traffic infrequent, or the bird would probably not have survived as long as it did, for it many times attacked cars, land-rovers and post office and other vans, occasionally even landing on them. C. Crystal, the head keeper, could often summon it by calling or by sounding the horn of his land-rover. When attacking human beings, it would deliver quite hard blows with its wings and peck vigorously with its beak, sometimes even holding on; its nip could be felt through rubber boots. It was so aggressive in 1961 (more so than in 1960) that it was necessary to hold it off with a forked stick in order to photograph it (plate 4). That year it also jumped on top of Mrs. Palmar when she tripped and fell, and it drove C. K. Mylne backwards through the wood, battering his camera tripod. It attacked sheep in the wood and a horse in the meadow outside, frightening the latter to such an extent that the unfortunate animal confined its movements to the far end of the field. On the other hand, it never attacked a dog and it bit off more than it could chew when it was trapped against a tree by a ewe with a lamb; it lost some of its tail-feathers in this encounter and the gap can be seen in plates 1 and 3. There was no obvious resurgence of aggressiveness in autumn when, for example, Blackcocks (*Lyrurus tetrix*) often return to their leks. It finally disappeared in June 1961 and was presumed to be dead.

Jenkins also quoted three other cases of similar behaviour. Two of these had previously been published, the first concerning a bird in Rothiemurchus Forest, Inverness-shire, which attacked children

going to school and ladies with silk stockings (Gordon 1951), and the second an aggressive individual in Glen Lyon, Perthshire (Richmond 1958). The third case, reported to him by A. Walker of the Grouse and Moorland Ecology Unit, involved attacks on people near Corrou Station, Inverness-shire, in the springs of 1940-43. In a lifetime's experience of keeping in Scotland, this was the only directly comparable instance that Mr. Walker had come across, though he was able to add that in Glen Tanar in August 1926 he was attacked by a cock Capercaillie which he had shot and wounded, and that a farmer near Banchory, Kincardineshire, in June 1961 was set upon by a hen Capercaillie when he approached her brood.

A fifth case of regular attack on human beings was described by Mylne (1962). This bird lived in an extensive larch wood near Dunkeld, Perthshire, and, like the Glen Lethnot one, was believed to be the only male in the area. Its territory was smaller than that of the Glen Lethnot bird, but it would still attack fifty yards or so from the mound which appeared to be its chief display ground. In 1961 its mate had a nest about the same distance away, but the aggressiveness was in no way affected when the eggs came to grief. This cock Capercaillie had been quite notorious in the district for at least five years, but it also could not be found in 1962. It was apparently easily scared by dogs, but it would attack any human being or vehicle which entered its territory. It was so aggressive, in fact, that it always had to be held off with a forked stick, against which it would make persistent rushes; once it kept up the onslaught for over an hour without any sign of flagging. A 16 mm. film was obtained of this bird attacking first a car and its occupants, then its own reflection in a mirror and finally a stuffed cock Capercaillie. It attacked mostly with its wings, using one at a time to deliver a hard blow with the carpal joint. It also used its bill, but to a lesser extent. When it attacked the mirror, it hit the glass so hard with its wing that its carpal joint was bleeding after three or four blows and the mirror had to be withdrawn to prevent further injury. Mylne concluded his article by describing the reactions of this bird to stuffed Capercaillies of both sexes.

The small number of records of this kind suggests that such highly aggressive Capercaillies are not very frequent, or at least that they do not normally overcome their fear of human beings. In most of the cases quoted, the birds concerned lived near roads and saw people fairly frequently, as a result of which they may have grown bolder. Mylne, reasoning from the fact that the Glen Lethnot and Dunkeld birds were believed to be the only males in their respective areas, suggested that isolation from rivals might be the explanation: with no rivals to attack or display against, the aggressive drive of such birds



PLATE 1. Male Capercaillie (*Tetrao tetrix*), Angus, spring 1901. This is threat posture, with the bill partly raised, the 'bristles' under the chin standing right out, and the feathers of neck and upper breast ruffled. Note also the white carpal patch, drooping wings and fanned tail. (pages 10-22. *Journal C. I. P.* 1901)





PLATES 2 and 3. Further views of the same Capreolite (*Lagopus lagopus*). The neck-feathers are flattened in the picture above (cf. plate 1), and this difference in intensity of throat is shown graphically in the close-ups opposite page 21; the bill is whitish and the bare skin round the eye bright red. (phot. C. E. Pearson)

Private *Chas.* Keeper Charles Crystal keeps the male Caperaille (*Larus borealis*) at bay with a forked stick while the Palmer family look on from a few feet away. This bird would deliver quite hard blows with its wings, and peck and nip with its beak. It would attack any people, vehicles, sheep or horses but never dogs which entered its territory between February and June. It lost some of its tail feathers in an encounter with a ewe (page 19).





PLATE 5 (above). A Capercaillie (*Tetrao urogallus*) flying over Loch Lomond. Weighing up to 14 lb., these birds are noisy and awkward as they break cover, but travel easily and silently once under way. Like other game-birds, they fly with a series of quick wing-beats interspersed by periods of gliding. They usually fly for short distances only, but at times well up in the air for several miles. Note the long, thick neck and broad wings (photos: C. E. Palmer)



PLATE 6. Hybrid ducks from above and below. In each case the upper is a male Scaup-Tufted Duck (*Aythya marila* x *fuligula*) and the lower a male Tufted Duck x Pochar (*A. fuligula* x *ferina*). Compare shapes of bills and nails, vermiculations on mantles, and colours of under-parts (pages 24 and 22-27) (photos: Bryan L. Sage)

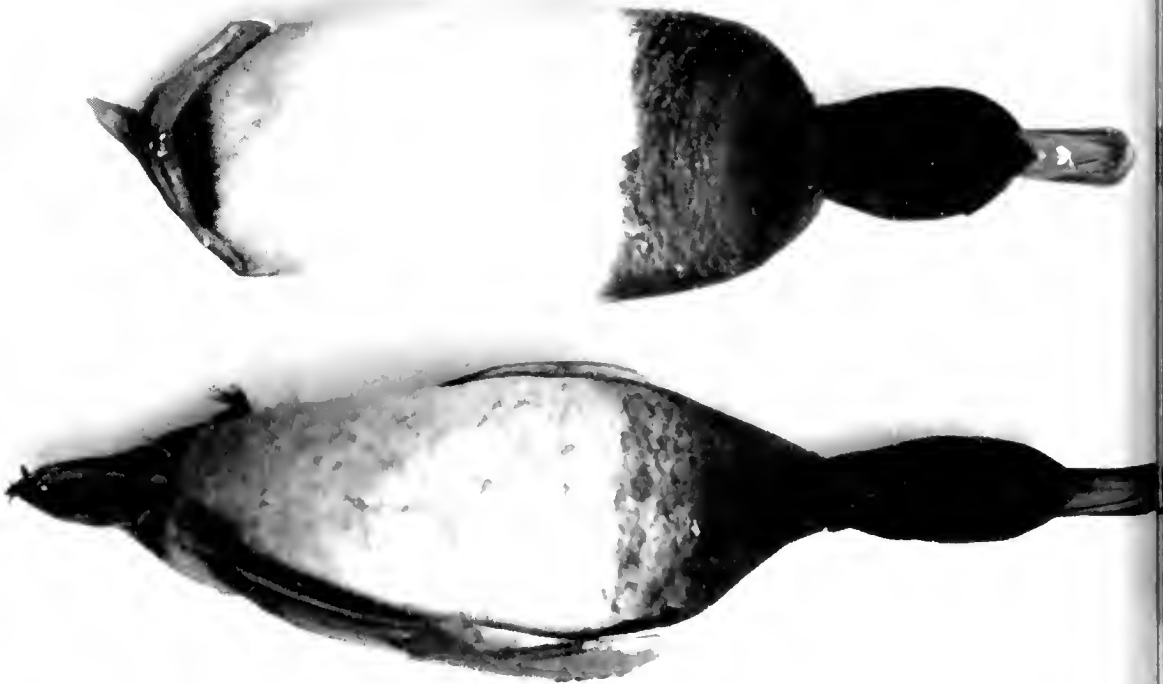




PLATE 7a. Nest of Herring Gull (*Larus argentatus*), with two young, built on top of dead body of adult Herring Gull, Pembrokeshire, July 1962. The corpse was itself lying across another nest containing a single egg (page 28) (photo: R. C. B. Coleman)



PLATE 7b. Mounted head of hybrid Scaup x Tufted Duck (*Aythya marila* x *fuligula*), showing 'peaked' outline of head (page 24) (photo by permission of ARDI: 1)



PLATE 5. Greenfinches (*Chloris chloris*), fighting over food, Glamorgan, January 1962 (page 31) (photo: C. Stockton)

might be turned towards any other large moving object. Jenkins pointed out that Scandinavian biologists with whom he had discussed this behaviour had never recorded a Capercaillie attacking a human being. In Norway and Sweden, however, Capercaillies are important game-birds and bold ones would be likely to get shot; in those countries, too, there are more natural predators to destroy the incautious individual.

Although only one of C. E. Palmar's excellent photographs of the Glen Lethnot bird shows it actually attacking (plate 4), the others serve to illustrate some of the points lately brought out in this journal by Lumsden (1961). In both song and threat postures (including the first stage of the bowing display or high intensity threat) the neck is held upright and the long feathers beneath the bill are erected like a beard, while the wings are drooped to expose the white shoulder patches and the tail is spread like a fan. The essential difference between the song display and the threat and bowing displays is in the sounds made and the resulting positions of the feathers on the neck and upper breast. In song the neck is more vertical, the bill is pointed skywards and the neck and breast feathers are flattened. In threat the bill is in a more normal position and the neck and upper breast feathers are usually erected, thus substituting a dense black area for the green sheen which otherwise shows on this part of the plumage. The different appearance of the neck when the feathers are erected from when they are not can be seen by a comparison of plates 1 and 3, and more graphically in plate 2. It should be added, however, that the neck and breast feathers are not always raised in threat and, judging from the position of bill, neck and tail, plate 3 (and plate 2a which is an enlargement of it) actually represents a lower intensity of threat rather than the true song posture. The differences in the postures were perhaps best shown by some Scandinavian photographs of Capercaillie by Kurt Ellström, Enar Sjöberg and Jonas Svensk, which were reproduced in *British Birds* in 1958 (51: plates 29-32). There the high intensity threat (with the feathers of the upper back of the neck only slightly erected and their tips flat to present a smooth appearance, but the feathers of the rest of the neck and upper breast standing out raggedly) was well illustrated on plates 30 and 31b, while the true song posture (with raised bill and flat neck) was shown on plate 29. As pointed out by Lumsden, the caption to plate 30 wrongly suggested that it was the song posture. For a full discussion of Capercaillie displays, and some excellent drawings, the reader is referred to Lumsden's paper.

The last Capercaillie picture in this issue (plate 5) has no connection with the others, but we are glad to take this opportunity of using it as there can be few photographs of one of these magnificent birds in

flight. Mr. Palmar's shot of a male over Loch Lomond well shows the distinctive silhouette of long, thick neck and broad wings.

I. J. F. - L.

REFERENCES

- GORDON, S. (1951): *The Highlands of Scotland*. London.
 JENKINS, D. (1962): 'Aggressive Capercaillies'. *Scottish Birds*, 2: 81-82.
 LUMSDEN, H. G. (1961): 'The display of the Capercaillie'. *Brit. Birds*, 54: 257-272.
 MYLNE, C. K. (1962): 'Aggressive Capercaillies'. *Scottish Birds*, 2: 82-84.
 RICHMOND, W. K. (1958): In *Annual Report of Scottish Field Studies Association*.

Notes on Scaup × Tufted Duck hybrids

By Bryan L. Sage

(Plates 6 and 7b)

SINCE THE LENGTHY controversy over the 'Lesser Scaup' problem, which was finally settled by Perrins (1961), most field ornithologists have been alive to the occasional occurrence of hybrid ducks. Hybrids of various parentages are very frequent in the Anatidae, both in captivity and to an unknown but possibly quite considerable extent in the wild. In addition to individuals of wild origin, many of the hybrids bred in captivity are left full-winged and frequently take to a feral existence.

The most aggravating aspect of the whole problem to the field worker is the almost total lack of descriptions and illustrations of these hybrids in the normal identification books. The object of this short paper, therefore, is to give as much information as possible about two hybrids, one drake and one duck, bred in captivity from a male Scaup (*Aythya marila*) and a female Tufted Duck (*A. fuligula*), to compare them with other recorded hybrids between these two species, and to see what conclusions can be reached about the field-characters of this cross. The emphasis is very much on the drake, partly because I am now fortunate enough to have the skin as a study specimen and partly because most of the other records refer to males; in any case, females would be very difficult to identify in the field.

PLUMAGE DESCRIPTION OF A MALE SCAUP × TUFTED DUCK HYBRID

This drake hybrid and the female discussed later on were, as already mentioned, the progeny of a male Scaup and a female Tufted Duck. They were bred by J. O. D'earth at Hadley, Hertfordshire, in 1959.

The drake died in December 1960 and was presented to me. It is now preserved in my collection, and the following is a summary of its plumage characters (see also plate 6):

General appearance similar to male Scaup, though 'peaked' outline of head very striking. In life the head and neck showed marked metallic-green reflections, but at some angles and in certain conditions of light a very strong purplish gloss was noticeable; in the study skin the purplish reflections are more conspicuous than the green. Back and mantle slightly darker grey than in male Scaup, the vermiculations being finer than in either Scaup or Lesser Scaup (*A. affinis*). Breast blacker than in Scaup, with greyish tips to feathers of lower two-thirds. Under tail-coverts black as opposed to brownish in Scaup and Lesser Scaup. Wings as in male Scaup.

OTHER RECORDS OF HYBRIDS BETWEEN SCAUP AND TUFTED DUCK

Hybrids between Scaup and Tufted Duck have probably occurred in the wild on a number of occasions, not a surprising thing as the two species are sympatric over a wide part of their breeding range. Philip Wayre tells me that in 1956 he reared hybrids of this parentage from wild-taken eggs sent as those of Scaup from Lake Myvatn, Iceland; both Scaup and Tufted Duck are common there. Voous (1955) described and figured two wild-taken Dutch specimens of this hybrid, and his paper was the first to provide an adequate account of the male. As the specimens concerned were shot in the wild the identification could not be conclusively proved, but the fact that the male in my collection and another reared by Philip Wayre are both very similar to the Dutch birds tends to confirm Voous's diagnosis.

Some earlier cases of Scaup × Tufted Duck hybrids are less certain. Suchetet (1896) described hybrids of this parentage, but their exact identity is open to question and the specimens cannot now be traced. Van Oort (1908) described a female in the Leiden museum, but I have personally examined this specimen and find it to be nothing more than a female Tufted Duck with a considerable amount of white at the base of the bill; Prof. Dr. K. H. Voous had earlier reached the same conclusion. Hartert and Jourdain (1920) gave details of the possible hybridisation of Tufted Duck and Scaup at Tring Reservoirs, Hertfordshire, in 1912, but the evidence is purely circumstantial.

FIELD-IDENTIFICATION

I have already mentioned that there is a great similarity between the male in my collection, the two Dutch specimens and the drake reared by Philip Wayre. Indeed, the only differences between my bird and one of the Dutch specimens which I have personally examined (No.

5050 in the Zoological Museum at Amsterdam) are that the latter's back and mantle are a little darker and rather browner, its breast is browner, its under tail-coverts are brownish instead of black and its general size is a trifle smaller. It seems likely, therefore, that Scaup × Tufted Duck hybrids show fairly constant characters, in which case it is not unreasonable to draw certain conclusions about their identification in the field.

The male should not prove too difficult, given reasonable conditions of range and light, once one knows what to look for. In a suitable light the presence of the purplish gloss on the head at certain angles should immediately distinguish it from the green-glossed drake Scaup, even though the slightly darker back and mantle of the hybrid would be difficult to detect (in any case, the fact that one of the Dutch specimens, which was taken in February, is browner on the back and mantle suggests that the colour of these areas is probably variable). However, the male's most noticeable feature is the 'peaked' appearance of the head, which is well illustrated here in plate 7b. This character, coupled with the purplish gloss, results in a superficial resemblance to the male Lesser Scaup, in the same kind of way as Perrins (1961) has shown happens with hybrids of Tufted Duck and Pochard (*A. ferina*). Nevertheless, confusion with Lesser Scaup is precluded by the obviously greater size of both hybrids and the fact that their heads are more pointed, with the peak almost immediately above the eye; the head of the Lesser Scaup is more domed with the highest point a little behind the eye. It should also be remembered that, in addition to the purplish iridescence which shows only at certain angles, the male Scaup × Tufted Duck has a distinct greenish gloss on the head (again evidently a variable character as one of the Dutch specimens shows more green than purple). On the other hand, the male Lesser Scaup also occasionally has a very slight greenish iridescence on the head.

Perrins (1961) mentioned the possibility of Tufted Duck × Pochard hybrids resembling those of Scaup × Tufted Duck, and we are reminded of this by the above comparison of both with the male Lesser Scaup. However, I have already stated (Sage 1961) that confusion in this direction need not arise and the differences can now be amplified. The first and most noticeable distinction between the males of these two hybrids lies in the colour of the head and neck. In the field these parts of the male Tufted Duck × Pochard appear black with a strong purplish-brown gloss; there is no trace whatever of the greenish iridescence found in the male Scaup × Tufted Duck. Secondly, the mantle of the Tufted Duck × Pochard appears a uniform drab grey, whilst in the Scaup × Tufted Duck the vermiculations (though less marked than in the male Scaup) are noticeable at reason-

SCAUP × TUFTED DUCK HYBRIDS

able range. A final and very useful character concerns the colour and pattern of the bill. The male Scaup × Tufted Duck has a pale blue-grey bill with a black nail as in the Scaup and Lesser Scaup, whilst the Tufted Duck × Pochard male has the whole tip black and also the base. The latter hybrid has a bill that is almost of even width throughout its length, whilst the Scaup × Tufted Duck's is at least a spatulate as the Scaup's. These bill differences are illustrated by the measurements in Table 1, while plate 6 compares specimens of males of the two hybrids.

Table 1. Measurements of males of *Aythya* species and hybrids

All measurements are in millimetres and, except in the cases of Dutch hybrid 2877 (Dr. K. H. Voous) and those in italics (Delacour 1959), were taken by the author

	Exposed culmen	Width at nostrils	Depth at nostrils	Maximum bill width	Wing
Scaup (<i>A. marila</i>)	43-47	22	19-20	23.5-25.5	220-230
Lesser Scaup (<i>A. affinis</i>)	38-42	20-21	18-19	24	190-201
Tufted Duck (<i>A. fuligula</i>)	38-42	20-21	20	19-23.5	198-208
Scaup { 1 (Sage collection)	45	24	22	28	220
× { 2 (Dutch 5050)	43	21	19.5	23	210
Tufted { 3 (Dutch 2877)	43	19.2	16	23.2	200
Pochard (<i>A. ferina</i>)					
× Tufted Duck	45	20.5	23	21	213

The female Scaup × Tufted Duck presents rather more difficulties and may well pass undetected, particularly if seen only at a distance. The general characteristics of the one individual I have studied trended towards the female Tufted Duck, and in size it was clearly not as large as a Scaup. The white area at the base of the bill was nowhere near as extensive as it is in the female Scaup, and this could be a useful character for distinguishing it from that species (though it must be remembered that first-winter Scaup show little or no white). Confusion with female Tufted Ducks would be more likely, particularly with those which have white at the base of the bill, but the complete lack of a crest in the hybrid should preclude this. It may also be noted that the hybrid female studied did not have any 'peaked' appearance to the head, the outline being quite rounded, which immediately rules out confusion with the female Lesser Scaup. J. O. D'eath, who bred this bird, was able to pick it out easily by the above-mentioned characters, but there is little doubt that under field conditions considerable difficulties could be experienced. It is impossible at present to give any differences between the females of the Scaup × Tufted Duck and Tufted Duck × Pochard hybrids as the female of the latter cross is still unknown.

Finally, though body size and shape have already been briefly touched on in this discussion, these points merit further consideration. The Tufted Duck exhibits a characteristic appearance due to its rather rotund, squat body with a head that is a little too large in proportion. The Scaup, on the other hand, is far better constructed—less squat in appearance, with a longer body and a head more in proportion; in general it also appears more heavily built. The Tufted Duck × Pochard hybrid at Sutton Courtenay in Berkshire (Perrins 1961), whilst not appearing as heavily built as a Scaup, was longer in the body than a Tufted Duck and, as Perrins put it, ‘broader in the beam’. The male Scaup × Tufted Duck hybrid in my collection was identical in general build and shape to a Scaup, and its much greater weight compared with the average weight of the Scaup (see Table 2) is probably accounted for by its having been reared under ideal conditions of captivity. Philip Wayre informs me that the male he bred looked much more like a Scaup than a Tufted Duck. It was considerably larger than the latter species, and altogether heavier-looking; it was noticeably larger than a Lesser Scaup.

Table 2. Comparative weights (in grams) of *Aythya* species and a hybrid
Means and ranges are based on Kortright (1943) and Dementiev and Gladkov (1952). The former's figures for Lesser Scaup are from 112 males and 118 females, but otherwise the sizes of the samples weighed are not stated

	—Males—		—Females—	
	Mean	Range	Mean	Range
Scaup (<i>A. marila</i>)	870	715-1220	840	760-930
Lesser Scaup (<i>A. affinis</i>)	850	620-1050	790	540-960
Tufted Duck (<i>A. fuligula</i>)	780	600-1180	750	540-970
Pochard (<i>A. ferina</i>)	860	670-1100	770	600-900
Scaup × Tufted Duck	1247			

ACKNOWLEDGEMENTS

I have to thank Mr. J. O. D'earth for permitting me to study his pair of Scaup × Tufted Duck hybrids, and for subsequently presenting me with the male. Prof. K. H. Voous very kindly lent me one of the Dutch hybrid specimens from the Zoological Museum at Amsterdam and supplied details of the other. In the same way the late Dr. G. C. A. Junge was good enough to send me the supposed Scaup × Tufted Duck female from the Leiden Museum, and Mr. Philip Wayre supplied details of the male hybrid which he reared in 1956. Mr. J. D. Macdonald very kindly gave me facilities for studying material in the Bird Room at the British Museum (Natural History), and Dr. James M. Harrison also lent me comparative material from his collection. Finally, Mr. Hugh Boyd compiled the comparative weights from the American and Russian literature and I am most grateful to him.

NOTES

REFERENCES

- DELACOUR, J. (1959): *The Waterfowl of the World*. London. Vol. 3.
 DEMENTIEV, G. P., and GLADKOV, N. A. (1952): *The Birds of the Soviet Union*. Moscow. Vol. 4.
 HARTERT, E., and JOURDAIN, F. C. R. (1920): 'The birds of Buckinghamshire and the Tring Reservoirs'. *Novitates Zoologicae*, 27: 171-259.
 KORTRIGHT, F. H. (1943): *The Ducks, Geese and Swans of North America*. Washington, D.C.
 PERRINS, C. M. (1961): 'The "Lesser Scaup" problem'. *Brit. Birds*, 54: 49-54.
 SAGE, B. L. (1961): 'An immature male Tufted Duck \times Pochard hybrid'. *Brit. Birds*, 54: 399-402.
 SUCHETET, A. (1896): *Des Hybrides à l'Etat Sauvage (Classe des Oiseaux)*. Lille. pp. 163 and 726.
 VAN OORT, E. D. (1908): 'Contribution to our knowledge of the avifauna of the Netherlands, being a list of all the species of birds hitherto observed, with special references to specimens in the Leyden Museum'. *Notes Leyden Museum*, 30: 129-314.
 VOOUS, K. H. (1955): 'Hybrids of Scaup Duck and Tufted Duck (*Aythya marila* \times *Aythya fuligula*)'. *Ardea*, 43: 284-286.

[This is perhaps a suitable opportunity for drawing attention to the existence of Ferruginous \times Tufted Ducks (*A. nyroca* \times *fuligula*). Mr. Sage has pointed out elsewhere (*Bull. B.O.C.*, 82: 55-60) that hybrids between these two species 'have frequently been reported both in the wild and in captivity'. Several descriptions of supposed Ferruginous Ducks sent to the Rarities Committee in the last four years have included features which made it seem more likely that they referred to Ferruginous \times Tufted Ducks, probably escapes from captivity. In any case, this possibility should be borne in mind.—EDS.]

Notes

Water Rail taking Moorhen's egg.—In early May 1962, at Raughlan on the south shore of Lough Neagh in Co. Armagh, Dr. J. MacLoughlin was watching the nest of a pair of Moorhens (*Gallinula chloropus*) at close quarters, from a hide erected for photography. A Water Rail (*Rallus aquaticus*) was seen to approach the front of the nest, which contained a full clutch of eight eggs. Without hesitation it lifted out one of the eggs and, carrying it to the back of the clump of rushes which concealed the nest, broke it open and ate the contents.

On 13th July 1962, from another hide in the same area, he watched a Coot (*Fulica atra*) break open and eat the single egg in the nest of a pair of Great Crested Grebes (*Podiceps cristatus*), but there are previous records of this (see *The Handbook*) and, indeed, he himself had observed a similar incident the year before. It may well be that Coots and Water Rails are a greater menace to the eggs of reed-nesting birds than is generally supposed.

C. K. MYLNE

Spotted Redshanks and Greenshanks feeding in unison.—In a previous note (*Brit. Birds*, 48: 233-234) G. Bundy and G. Kinsey recorded a Spotted Redshank (*Tringa erythropus*) feeding by sweeping its bill from side to side rather after the manner of an Avocet (*Recurvirostra avosetta*). On 25th August 1962, in a creek at Ashlett, Hampshire, I watched a party of five Spotted Redshanks and two Greenshanks (*T. nebularia*) feeding in a compact group for about five minutes. Almost touching one another, the seven birds would walk in one direction and then wheel in unison before walking back again. Each one was feeding with side-to-side movements of the head, a left and right swing taking about one second of time, and their bills could be seen opening and shutting. The birds were quite obviously working together, so concerted were their movements, and in this respect the performance was very similar to that of a feeding group of pelicans (*Pelecanus* sp.). They were wading with the water up to their tarsi and the flock finally broke up when it moved into a deeper part.

J. H. TAVERNER

Herring Gull's nest on dead Herring Gull.—On 10th July 1962, while ringing young Herring Gulls (*Larus argentatus*) on the cliffs of Skokholm Island, Pembrokeshire, we came across a most curious nest of this species. It was not so much the actual nest as its site which was so odd, the structure having been built on the body of a dead adult Herring Gull. As can be seen from the photograph (plate 7a), it contained two small and healthy chicks.

We examined the nest again when the chicks had fledged and found that the dead Herring Gull was itself lying across a nest, in which was a single infertile egg. It is tempting to draw the conclusion that the dead bird was a female who had perhaps died in the process of laying her second egg, and that the male had then found a new mate, but could not overcome the stimulus provided by the original nest-site: the result a new nest on the body of his old mate!

DON GLANVILLE and R. C. B. COLEMAN

Juvenile Cuckoo's method of feeding upon Cinnabar Moth caterpillars.—During the last week of July 1962, at Fingringhoe, Essex, G. McKillop and I watched a young Cuckoo (*Cuculus canorus*) repeatedly flying out from a line of fence posts, and from the wire between, into an adjoining field. It did not alight in the field at all, but paused briefly in flight each time before turning back to the fence. The field supported a considerable growth of ragwort (*Senecio jacobaea*) and eventually, from a distance of some twenty yards, we clearly established that the bird was picking the larvae of the Cinnabar Moth (*Hypocrita jacobaeae*) from these plants in flight. It is usually held

that the black and gold banding of these caterpillars acts as a deterrent to birds, and certainly neither of us had noted this food or the method of capture before, but there was no doubt that this young Cuckoo was not only catching the larvae but eating them. K. R. CRAWSHAW

Reactions of Carrion Crows to Foxes and a captive Crow.—On 10th April 1962 my children caught and brought home a Carrion Crow (*Corvus corone*) which had evidently been in captivity as its wing-feathers were short and ragged and it could not fly properly. It was placed in a six-foot, wire-covered chicken-run in our garden near Woking, Surrey, and kept there for a couple of weeks. It at once became an object of considerable interest and repugnance to a pair of Carrion Crows nesting in the garden (building, I think, some 50 yards away), and repeatedly at all times of day one or sometimes both birds of the pair were near or beside the chicken coop. The one most frequently there, which I took to be the male, often stood facing the coop in an aggressive posture, rather upright with the feathers of its head and neck partially raised. As a result it appeared at least half as large again as the captive which at these times generally hopped nervously to and fro along the far side of the coop. On several occasions the free bird flapped against the wire as if attempting to attack the inmate.

During the second week one or other of a couple of Foxes (*Vulpes vulpes*) which regularly frequent the garden visited the chicken coop almost daily for some minutes between 4.30 and 5.30 a.m. GMT. This would evoke some feeble calls from the Crow in the coop, but aroused from the free pair of birds a tremendous outcry which generally awakened two or three members of the household. A Crow would dive down at the Fox as it stood or sat a foot or so from the wire netting, pressing the attack so nearly home that the Fox ducked each time the bird came down and then raised its head to watch out for the next swoop. Thus, while they lasted, the attacks undoubtedly diverted the Fox's attention from the coop and what was in it, but after a series of dives the Crow would settle low in a tree near-by, still calling, and the Fox would resume consideration of the wire coop, or scabble at and shift one or two of the loose bricks laid round its base. We never observed the Fox to stay more than three or four minutes, but its departures did not seem in any way influenced by the Crows' attacks.

A month seldom passes without my wife or myself seeing one or two Foxes, and the resident Crows must see them much more frequently, yet normally no mobbing or outcry occurs. Indeed, on one occasion during the mid-April period mentioned above, the Fox, after leaving the coop, spent several minutes searching round other

parts of the garden and briefly stalked a Blackbird (*Turdus merula*) on the lawn, but the frenzied protests of the Crows had subsided as soon as the animal left the close vicinity of the coop. It seemed curious that the Crows should object so violently to the threat to the captive bird whose presence they in any case clearly resented. It should be added that during their regular movements about the garden the Foxes often reached points nearer to the Crows' nest than the coop was, without arousing any reaction from the birds. For example, on one occasion when a Fox was being mobbed at the coop, the second Fox which was on the lawn and nearer to the nest was completely ignored.

On 29th April the captive Crow was released. It still could not fly well, but it worked its way to the top of a tree near the nest, whereupon it was chased down into bushes near the ground by one of the resident birds. Early the following morning the nesting Crows, having by then apparently conditioned themselves to take alarm on seeing a Fox by the (now empty) coop, as usual heralded the animal's arrival loudly enough to waken me. If diving attacks took place I was too late at the window to see them, but the Fox unhesitatingly entered the coop, the end of which had been left open, apparently to take some meat scraps or a bone still lying there.

P. A. D. HOLLOW

A fourth Yellow-headed Wagtail on Fair Isle.—The fourth Yellow-headed or Citrine Wagtail (*Motacilla citreola*) to be recorded on Fair Isle and in Britain was present on the island from 4th to 13th September 1961. The previous records were on 20th-24th September and 1st-5th October 1954 (*Brit. Birds*, 48: 26-29) and 17th-22nd October 1960 (*Brit. Birds*, 54: 125-126). The 1961 bird was watched at various times by over twenty observers, including the writer and G. J. Barnes, R. H. Dennis, T. W. Gladwin, D. F. Harle, B. S. Nau, P. J. Slater, W. H. Truckle, Dr. A. G. G. Thompson, J. Websper, E. J. Wiseman, S. L. White and D. Wooldridge. Numerous attempts were made to catch it, but none was successful; it was very wild and unpredictable in its behaviour, and almost impossible to drive.

The most useful field character was the call, reminiscent of the flight-call of a Yellow Wagtail (*M. flava*), but louder and shriller, and often, though not always, more drawn-out. This agrees with B. S. Milne's description of the calls of the 1960 bird (*loc. cit.*), but those of the 1954 birds were said to be less drawn-out than a Yellow Wagtail's (*loc. cit.* and *Brit. Birds*, 48: 358-362). No Yellow Wagtails were present at this period of 1961, so a direct comparison was not possible.

The bird was watched at various times at ranges down to as little as twenty yards, in excellent light. The upper-parts and tail were like those of a well-marked White Wagtail (*M. alba*), a species which

was usually present for comparison. The tail was noticeably shorter, however, and the grey of the mantle duller, even appearing to be tinged with brown, in sunlight. The prominent white wing-bars, formed by the tips of the greater and median coverts, contrasted sharply with the blackish wing, and these, with a distinct white line made by the edges of the closed inner remiges, were excellent field-marks. The crown was darkish-grey, looking browner in sunlight, and the forehead was just perceptibly paler. The lores and ear-coverts were greyish-black. There was a clear buff-white supercilium, broader behind the eye, and linked by a vertical pale mark behind the ear-coverts to a buff area extending from the throat on to the side of the neck. The chin and throat were entirely yellowish-buff, gradually becoming paler down the breast; the belly and under tail-coverts were white. There was a small dark mark at either side of the upper breast; the flanks were tinged greyish. The bill, legs and eye were black. The size was similar to that of a White Wagtail, apart from the shorter tail.

The bird fed on short grassland, in the tide-wrack, and also among pebbles on an artificial 'beach' formerly used for drying fish. It wagged its tail frequently during its rapid feeding-movements, as it probed into the grass or crevices among the stones. Although frequently in company with White Wagtails, it seemed only loosely attached to them and seldom flew far in their company. It joined them in a roost of up to 70 wagtails in the Shirva corn and potatoes, and continued to roost there after most of the Whites had left. On the occasions when it was disturbed here, it apparently favoured the potatoes.

PETER DAVIS

Aggressive Greenfinches.—During the cold spell in early January 1962 a flock of about a dozen Greenfinches (*Chloris chloris*) visited my garden at Mumbles, Swansea, Glamorgan. I was struck by the aggressive nature of these birds, particularly the males, when they came down to the food I was providing. They drove off all the smaller garden birds, but the really pugnacious side of their character became evident when they were dealing with their own kind. On occasions the males would adopt a forward threat posture, like that which one associates with thrushes, to discourage other members of the flock from approaching the food. In the main, however, they would fly straight at their opponents and this invariably resulted in aerial fights. The two photographs on plate 8 give some indication of the vigour of these. The squabbling usually took place only during the first few minutes after the flock had arrived at the food, and in a short time they would feed together in a comparatively peaceful manner.

C. STOCKTON

Reviews

A Glossary for Bird Watchers. By Michael Lister. Phoenix House, London, 1962. vii+96 pages. 8s. 6d.

Technical terms are often essential in scientific papers, saving both space and time, though some writers, intoxicated by their own jargon (or 'gobbledygook' to take the wider and more expressive American word), use them far too recklessly. This can be a serious hindrance to many readers, who abandon in despair a paper which interests them or struggle on with only a confused idea of the author's meaning. There should be a ready welcome, therefore, for this useful compilation by Michael Lister, a more comprehensive version of the glossary in his earlier *The Bird Watcher's Reference Book* (1956).

It covers a wide range of subjects, from anatomy, behaviour and ecology to falconry, migration and statistics, and in most cases gives the Dutch, French and German equivalents of the terms defined. His selection is a full one; indeed, he might well have been more ruthless, for some of the terms have now gone out of use and others have found little favour except with their original inventor. The definitions are clear and concise, and wherever possible he gives those agreed by representative groups of experts in the subject. Sometimes, as with 'navigation' and 'orientation', he has to admit that there is no general agreement on the precise meaning, and with 'territory' he merely lists the many papers where different definitions have been attempted, though with a term of such wide use and importance it would surely have been helpful to quote them all in full.

Slim though it is, the glossary includes a high proportion of terms usually encountered, but in a future edition I would suggest the addition of 'xerophilous', 'eutrophic' and 'preparatory phase', and perhaps something on the main groups of toxic chemicals which now, unfortunately, are appearing more and more frequently in ornithological literature. These are minor points; a difficult task has been done well, and there can hardly be a more useful or inexpensive addition to an ornithological library.

STANLEY CRAMP

The Bird Notes Bedside Book. Edited by Gwen Davies. The Royal Society for the Protection of Birds, Sandy, 1962. 138 pages; 16 monochrome plates; line-drawings. 10s., plus 1s. postage (obtainable only from the R.S.P.B.).

Bird Notes is the official quarterly journal of the R.S.P.B., and this anthology, compiled from the issues of the past few years, reflects well its range and style. *Bird Notes* normally eschews the purple passage as fiercely as the dully scientific, but between these extremes

there is a good variety of matter, uneven in literary merit, but revealing always the enthusiasm of the authors. One can read of young men doing ornithological "trips" in Scotland and Suffolk, and the strictures of the Rev. P. H. T. Hartley on such, to him, arid sport; of the ornithology of inn signs; of poets as bird observers; and of the breeding habits of the Hornbill. We find observations on the Golden Oriole, Sussex Nightjars and Bitterns; and there is Peter Conder's excellent little article on Skokholm's cliffs. There are, in fact, thirty-four items to choose from in this anthology, including the cream of that original humorist, M. F. M. Meiklejohn. Here we have his notes on the Hoodwink (*Dissimulatrix spuria*) and on 'How to Identify Birds' (punctuated by Professor Peewit's startling advertisements), together with selected verse which includes such classic couplets as the Duntrook's lament:

That egg you laid to-day was blotched:
I think it comes of being watched.

All in all, this is a charming and unpretentious book for the bedside of unpretentious bird-watchers. RAYMOND CORDERO

Letters

The Hastings Rarities and the 'British List'

Sirs,—Although I was one of the people who had heard something of the Hastings Rarities before the publication of your August issue (*Brit. Birds*, 55: 281-384), and therefore wished to see the record realigned, I was considerably startled to find it done in such a public way. However, now that the nine days' wonder is over, it seems difficult to disagree with the editorial and letters in your October issue (55: 425-427 and 453-459) in reaching the conclusion that it should have taught us a number of useful lessons. It also seems to me that some further points remain to be made.

The picture of British ornithology fifty years ago given in your editorial for August (55: 281-282) does not seem to me entirely fair. The amateur collectors of that day may have had their drawbacks, unlike the bird-watchers of the present time, but the ultimate result of their activities was to give us a commanding lead in the field of ornithological systematics throughout the world. It is so long since we saw such works as the *Catalogue of the Birds in the British Museum* (1874-98) that the present generation appears to have forgotten what we have lost. Possibly it is time we again read H. F. Witherby's lament, exactly a generation ago (*Brit. Birds*, 26: 17-22), for the loss to

America of the greatest of our private collections. This, the Rothschild Collection at Tring, had formed the main foundation for E. Hartert's *Die Vögel der paläarktischen Fauna* (1903-23), the last basic textbook on European birds, and for the plumage and moult sections in the *Practical Handbook* (1919-24) (which were largely retained in the 1938-41 *Handbook*); it is now playing no less a part in the latest revision of Hartert's work, *The Birds of the Palearctic Fauna* by Charles Vaurie, the first volume of which came out in 1959. It seems time attention was drawn to the fact that whereas Hartert was a German who worked in England, and the authors of *The Handbook*, undoubtedly the greatest general ornithological textbook of its day, were English, this latest textbook on the systematics of European birds is being prepared in America.

Lord Rothschild knew all about fraudulent collectors, since they used to obtain whole new species for him. Owing to the generous hospitality of its present custodians in the American Museum of Natural History I have recently been able to examine the Rothschild Collection, and it affords interesting light on the possible origins of some of the Hastings Rarities. A considerable number of the Rothschild specimens come from Leadenhall Market. To quote only those of which I made notes, a young female Trinidad Petrel (*Pterodroma arminjoniana*) which has already been reported by R. C. Murphy and J. M. Pennoyer (*Amer. Mus. Novit.*, no. 1580) is labelled 'Bought in Leadenhall Market, 8 Dec. 1889; C. & A. Brazenor, Brighton'; and four Wilson's Petrels (*Oceanites oceanicus*), including the type of the most southerly race '*exasperatus*', are labelled as bought frozen in a London market on 2nd March 1905. The Trinidad Petrel was bought at the time of the occurrence of the most incredible record on the British List, the Collared Petrel (*Pterodroma leucoptera brevipes*), and it breeds in much the same area in the South Pacific; the Wilson's Petrels can hardly have occurred naturally in the northern hemisphere in March. In any case the existence of the first specimen demonstrates that Sussex taxidermists used to visit Leadenhall Market, and the earliest Hastings Rarities began to appear immediately after the acceptance of the Collared Petrel by *The Ibis*.

The Rothschild Collection also indicates a possible source for some genuine occurrences among the Hastings Rarities, since it contains at least eight finch hybrids caught by bird-catchers on the South Downs on various dates between 1896 and 1912. It appears to have been forgotten that Sussex used to be the headquarters of the old British bird-catching industry. The old catching techniques were described by G. D. Rowley in his *Ornithological Miscellany* (1875-78) and he made it clear that they must have been appallingly effective even by present standards; they included even the use of mist-nets. The trade was

outlawed shortly afterwards, but according to Richard Kearton in *With Nature and a Camera* (1897) it was practised clandestinely on a very large scale into the nineties, and it seems likely that it must have continued for some time after this if Rothschild was prepared to accept such unlikely objects as wild-caught finch hybrids as late as 1912. It seems possible that some of the rarities which turned up around Hastings about this time may have been obtained by illegal bird-catchers who forbade the revelation that their trade still existed in the area, or the exact scene of their operations. They may then have begun to die off, leave the area or discover easier ways of making money during the social revolution which accompanied the outbreak of the 1914-18 war. It has required the rediscovery of mist- and clap-nets in recent times to reveal the prodigies which can be produced by a determined bird-catcher.

A third possibility which is only touched upon in your August issue is the fact that it should be just as easy to import birds alive as dead. It would not be very difficult to keep alive for a few days the fat migrants which so often visit ships in the Mediterranean area. They would remain in much better condition, and it would be unnecessary to obtain ice, which might not be easily accessible to the sort of person likely to engage in this sort of trade. Live birds should be no more difficult than dead ones to smuggle through the Customs, and, though they might find an even better market among bird-fanciers in many cases, there would always be a residue of soft-billed species more interesting to taxidermists. In *Shearwaters* (1942) R. M. Lockley described how Manx Shearwaters (*Procellaria puffinus*) were taken alive from Wales to Venice and the Faeroes, and it would probably be no more difficult to bring (for example) an Audubon's Shearwater (*P. l'herminieri*) alive to Britain on a fast ship from the West Indies, and arrange for some unsuspecting witness to find it expiring on a convenient beach afterwards. It is not correct that small sums of money were charged for stuffing these birds, because, if I remember rightly, the correspondence attached to the only British specimen of the Kermadec Petrel (*Pterodroma neglecta*), which is in the Chester Museum, is mainly concerned with the difficulty experienced in raising £5 to pay for stuffing it (this seems excessive, though the need for such a sum was not questioned).

It appears to me that several morals can be drawn from the Hastings affair. In the first place, it affords an interesting light on events during a key period in our ornithological history. The most significant predisposing factor appears to me to be not the existence of numbers of private collectors competing for rarities in the country, but the disturbance to people's ideas of the normal pattern of the occurrence of rarities which followed the discovery of Fair Isle and then of the Isle

of May. It had suddenly been realised that extraordinary prodigies might occur on the most barren islands off the north of Scotland, and in consequence the inhabitants of the south were prepared to believe that the natives there might be able to produce battered marvels out of their pockets as well, especially in the vicinity of W. Eagle Clarke's 'great migratory trunk route' across the Straits of Dover. In consequence they did produce them.

In the second place, although you do not mention this among our gains in your editorial for October, it ought to be pointed out that nobody should now ever be able to take rarities seriously again. For one thing, it has been shown statistically that it is not respectable to see too many rare birds, especially class I rarities. It has also been shown that even the very best witnesses may not be reliable if the sponsor of a rarity is determined to deceive. Since it is much easier to import field notes and photographs than dead birds, it seems clear that we shall never be able to place complete faith in records of rarities again. It has also been shown that this does not matter much, because as far as one can discover nobody except the sponsors has cared two pins that half a dozen impostors got on to the British list, managed to stay there fifty years, and have now been ejected again. The situation would have been different if it involved House Sparrows or Starlings.

In the third place, it seems difficult to disagree with your final point that it is high time we did some fresh thinking about the 'British List'. The first British 'Check-list' was prepared by the B.O.U. at the end of the last century, with the aim of producing order among chaos, during a period when the authors of increasing numbers of ornithological textbooks were most uncertain what birds occurred here, or what their names were. This list was rather rough, but it served a useful purpose for many years, until it became obsolete and was replaced over various dead bodies by a new 'Hand-list' produced in 1912 by Hartert, Jourdain and Witherby in order to introduce trinomial nomenclature to British ornithologists and clear up various other outstanding points. It seems a good idea to remember the 'Hand-list' as well as the Hastings Rarities just now, because it is also fifty years old and it eventually developed into the best ornithological textbook of its day, *The Handbook*. Then it in its turn was displaced in 1952 by a new B.O.U. 'Check-list' which was apparently intended to put trinomials back in their proper place and bring us in line with the Gadow-Wetmore order widely used abroad.

Unfortunately this latest list also seems unsatisfactory on many counts, the least of which is its treatment of marginal rarities. Although it was apparently supposed to bring us into line with foreign usage, its authors introduced new variations of their own so that it agrees neither

with our own traditional order of species and nomenclature dating back to Hartert, nor with the most widely-used modern international check-lists such as J. L. Peters's *Birds of the World* or Vaurie's *The Birds of the Palearctic Fauna*. It provides no reasoned justification for its idiosyncrasies, no useful information or documentation concerning the status here of the species which are included, and no explanation for its rulings with regard to marginal records. It does not include marginally unacceptable records at all, though many of these look at least as probable as some which are accepted, and the birds seem at least as likely to occur again.

In fact, the 1952 B.O.U. 'Check-list' appears to be significant mainly as a source of geographical variation in zoological nomenclature and, as recently pointed out by Sir Landsborough Thomson (*Ibis*, 104: 5579-580), as an agent causing the appearance of accounts of some bizarre and improbable exotic species in British bird books, but the exclusion of others which seem at least as likely (or unlikely) to occur here.

Personally, I feel that the time has come when we should cease to try to set our own standards for classification and nomenclature in B.O.U. 'Check-lists'; instead we should concentrate on trying to find some more widely accepted, internationally agreed standard such as Peters, and set an example in following that instead. It seems to me that the time for the exercise of local initiative in the field of classification and nomenclature is past. But it would still be useful to have a concise check-list of British birds which conformed with some agreed international usage for the order of species and nomenclature, and which gave a clear, concise, critical, well-documented account of the status of all birds in the British Isles, in the way found first in the 'Hand-list' and then in *The Handbook*.

In the past this has been regarded as a function of textbooks rather than check-lists, and the inevitable result has been the appearance of a large number of accounts of rarities in our textbooks. Now that *The Handbook* has come of age and is getting increasingly out of date, and the present B.O.U. 'Check-list' has been rather thoroughly discredited, it seems time that we thought of developing new sorts of check-lists and textbooks. I suggest that it should be the function of check-lists to keep classification and nomenclature as closely in line as possible with international usage, and not to introduce new variations; and to give as accurate an account as possible of the status of all birds in a particular area, including all the more likely rarities whether the records are entirely acceptable or not, and also introductions occurring in a wild state. Personally I would not wish to see such lists divided up into categories or hung about with appendices, because these usually introduce artificial distinctions and make lists

difficult to use easily. But it might save space and help to give a better idea of their significance if the rarities were given in small print which varied in size in direct proportion to their frequency, while the introductions and doubtful cases were enclosed in different kinds of brackets, much as in the best preceding list, the 'Hand-list' of 1912.

While I should like to see all the birds which have ever been reported in an area included in check-lists, with details of occurrences, it does not seem a good idea to include all of them in standard textbooks. These should be restricted to the birds normally occurring in the area, with only brief references to rarities which are commoner elsewhere. In our own case it seems to me reasonable that our next 'Handbook' should either be restricted to birds which are reasonably common in the British Isles, or that it should be developed into an international undertaking covering all the birds normally occurring in either Europe or, preferably, the western Palearctic. If it is restricted to Britain it should not cover stragglers from elsewhere, while if it is restricted to Europe or the western Palearctic it should not cover stragglers from Africa, Asia, America or the Antipodes. These should be left to textbooks covering their area of origin.

If we are to have a new 'Check-list' and 'Handbook' as outlined above, the makers have two important tasks before them. They will have to secure more international agreement on classification and nomenclature (even at the price of occasionally following other people themselves). And they will also have to initiate a planned campaign to elucidate the past and present status of all birds in Britain in the first place, and possibly Europe or the western Palearctic later. This is a rather urgent problem, because in four years we shall be acting as hosts to an International Ornithological Congress, and our work will be on show to the world. We shall make a much better impression on our visitors, and any observations which we care to offer concerning the value of international uniformity of nomenclature and textbooks will carry much more weight, if by then we can show them not only an unprecedented collection of fraudulent rarities, but also the draft of a really impressive new 'Check-list of British birds'.

W. R. P. BOURNE

News and comment

Edited by Raymond Cordero

A new British List.—It was announced at the October scientific meeting of the British Ornithologists' Union that the Union proposes to prepare a new list of British birds, and that consideration is being given to the form this should take; as a first step, the British Records Committee has been asked to draw up plans. Since the last publication of such a list, the *Check-list* of 1952, about thirty new species

have been accepted, while the effect of the recent 'Hastings Rarities' report has been to eliminate six species and thirteen subspecies and to reduce the number of accepted records of many other birds. Further changes could of course be involved in any alteration in the concept of what constitutes a British bird, or how marginal cases should be treated.

It is believed that the Union is seriously considering making the list more appealing in appearance and of greater general interest and value.

Campaign to safeguard Europe's wetlands.—An informal international meeting on the wetlands of Europe and North Africa was held, rather appropriately, at Les Saintes Maries in the Camargue from 12th to 17th November 1962, under the short title MAR. Leading officials from United States and Canadian government agencies concerned with wetlands and from France, the Netherlands and elsewhere in Europe joined with ornithologists, invertebrate and fishery biologists and botanists in reviewing the severe and varied threats to the future existence of these valuable habitats and in taking the first steps towards agreement on an international list of actual areas between the Atlas Mountains and the Black Sea in the south and the North Cape which ought to be safeguarded.

Although much excellent preliminary documentation had been circulated in advance, it proved difficult to cover so much ground in such a short time, especially in view of language barriers. Nevertheless, a remarkable degree of agreement was reached, on which action can now proceed both through national and international channels. One basic obstacle which was recognised is the still widespread apathy and even hostility towards the preservation of marshes, fens, bogs, estuaries, lagoons and other wetlands; these are traditionally regarded not only as wasteland which should be put to more productive use, but also as sources of disease or at least of nuisance from overabundant biting insects. The true values of such wild places are still far too little recognised and there is a need for much effort in educating public opinion if particular threats are to be successfully resisted. Some of these threats, such as those to the marshes on the French Biscay coast and the Delta area of the Netherlands are especially acute already, and the *marismas* of the Spanish Guadalquivir estuary have largely been lost through failure to tackle the problem earlier (although the important Las Nuevas area now seems certain to be preserved through the intervention of the World Wildlife Fund and other international bodies).

A large party visited the Coto Doñana after the conclusion of the MAR conference, guided by Dr. J. A. Valverde who has been so active and effective in the effort to save as much as is still possible of this magnificent region. Previously, in the Camargue, the conference had enjoyed the hospitality of Dr. and Mrs. Lukas Hoffman at La Tour du Valat and had also made visits to Bardouine and to Badon, the headquarters of the reserve, from which an expedition was made to the Bois de Rièges in the middle of this great wetland region.

Conference on birds of prey, March 1963.—One of the most distressing features of man's intolerance of wild life has been his savage and often irrational hatred of birds of prey. Yet the damage wrought by gun and trap has been nothing to the disastrous effects of modern agricultural methods, and especially the growing use of chemicals. Trees and hedgerows are being destroyed, and perches and nesting sites lost. Agricultural pesticides, many of them containing insidious poisons, have destroyed a high proportion of our Peregrines and have reduced the Sparrowhawk to the status of a rare bird in many parts of England, a fact recognised by the Home Secretary who recently made an order protecting the Sparrowhawk for five years.

BRITISH BIRDS

On the Continent eagles and vultures have suffered grievously from eating poisoned carcasses put out to kill wolves.

It is against this sombre background that a conference on birds of prey is to be held at Cambridge from 1st to 3rd March 1963. It is being jointly organised by the British Trust for Ornithology and the Royal Society for the Protection of Birds. To it are being invited not only naturalists and falconers, but also landowners, sportsmen, gamekeepers, pigeon-fanciers and others whose interests may appear to conflict in some way with those of raptorial birds. Representatives of the national Press will also be asked, because one of the objects of the conference will be to draw public attention to the increasingly precarious position of our birds of prey.

A film of London's birds.—The London Natural History Society, whose successful monograph *The Birds of the London Area since 1900* (published in 1957 in the 'New Naturalist' series) was believed to be the first book compiled by a local natural history society, is just completing another 'first', a full length colour film. This, which is entitled 'London's Birds', aims at showing something of the richness of the bird life of the Metropolis (since the war over 250 species have been recorded within a radius of 20 miles of St. Paul's Cathedral) and of the continual impact of urban changes. The speed and extent of this impact are emphasised by the radical alteration or destruction of several habitats since filming started four years ago: the buildings on the Cripplegate blitz site where Black Redstarts bred for many years have been flattened; the gravel areas where nesting Lapwing and Little Ringed Plover were filmed are now many feet beneath the surface of Walton South reservoir; and a sewage farm which was visited by a Grey Phalarope is now a housing estate. Highlights of the film include the Heron colony at the Walthamstow reservoirs; the ceremony of Swan-upping; Waxwings; and the evening Starling flocks over central London.

The first public showings of the film will be eight evening performances at the St. Pancras Town Hall on 26th, 27th, 28th and 29th March 1963. Commentaries will be given by well-known London ornithologists. Booking details are available from Mrs. L. M. P. Small, 13 Woodfield Crescent, Ealing, London, W.5.

B.O.U. conference at Chester.—The British Ornithologists' Union's annual general meeting and conference is to be held at Chester during the weekend 22nd-24th March 1963. The main theme of the conference will be 'The parent bird and its young', but, in fact, the papers that are being offered cover a wide range of breeding biology.

New warden for Skokholm.—M. P. Harris, of the Department of Zoology, University of Swansea, has been appointed warden of Skokholm Bird Observatory by the Edward Grey Institute and the Field Studies Council. He succeeds D. Glanville. Many readers of *British Birds* will remember Mr. Harris's excellent short paper on the 'Weights from five hundred birds found dead on Skomer Island in January 1962'.

The West Wales Naturalists' Trust Ltd

(formerly the West Wales Field Society)

Membership of the Trust is open to all who are interested in the study and conservation of wild life in Wales. The annual subscription of £1 1s. 0d. (£1 by Bankers' Order) entitles members to:

- (a) free issue of *Nature in Wales* which appears half-yearly;
- (b) field excursions, lectures and meetings;
- (c) visit, without landing fee, the island sanctuaries and nature reserves of Skomer, St. Margaret's, Skokholm, Cardigan Island and Grassholm (owned by the Royal Society for the Protection of Birds and wardened by the Trust).

The activities of the Trust include the co-operative study of animals, birds and seals and the recording of their distribution and habits.

PUBLICATIONS (post free): *Island of Skomer*, ed. John Buxton and R. M. Lockley, 18s. (few copies left); *The Birds of Carmarthenshire* by G. C. S. Ingram and H. Morrey Salmon, 5s. (in stiff covers 1s. extra) (4s. to members); *A List of Pembrokeshire Plants* by F. L. Rees, 3s.; *The Flora of St. David's Peninsula* by C. L. Walton, 3s.; *Skokholm Bird Observatory Reports* for the years up to 1961, 3s. each; *Nature in Wales*, back numbers, 3s.

THE WEST WALES NATURALISTS' TRUST LTD

4 Victoria Place, Haverfordwest, Pems

Zoological Record

Section Aves 1961

The Aves section of the *Zoological Record*, the only annually published and comprehensive bibliography of ornithological literature, is an indispensable work of reference for those who need to know of recent research and developments in the study of birds in all parts of the world.

Compiled by Lt.-Col. W. P. C. Tenison, D.S.O., the current issue documents references to over 2,500 articles and books that appeared mainly in 1961.

Obtainable from the Zoological Society of London, Regent's Park, London, N.W.1. Price 13/6d (including postage).

BOOKS ON BIRDS

Catalogue on request

WHELDON & WESLEY LTD

Lytton Lodge
Codicote, Hitchin, Herts

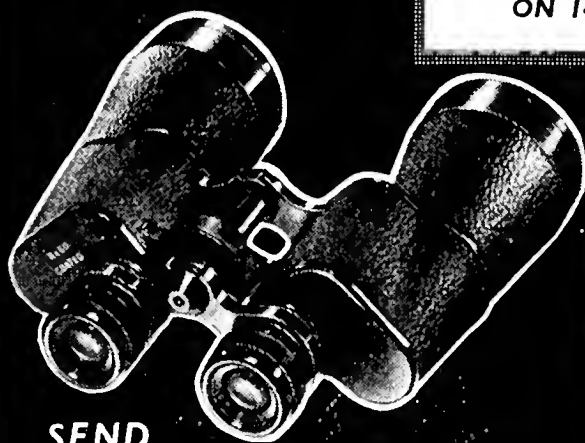
Ex-Admiralty 7 × 50 CANADIAN & U.S. NAVAL BINOCULARS

Ideally suited to bird-watching requirements, this instrument has many outstanding characteristics which combine to make it one of the world's greatest binoculars. The advanced optical system produces an extraordinarily high light transmission, giving maximum performance even under the dulldest conditions. Another feature is the wide field of approximately 660 yards at 3 miles, plus an excellent stereoscopic or 3D effect. These binoculars are in perfect condition and are supplied complete with leather case and straps. Current value estimated at £60. Offered under our 5 years' free maintenance service at

£24



**THE PICK OF THE WORLD'S
GREAT INSTRUMENTS
ON 14 DAYS' FREE TRIAL**



**SEND
FOR NEW
ILLUSTRATED CATALOGUE
CHARLES FRANK LTD.
67-75 Saltmarket Glasgow C.1.
Phone. BELL 2106/7 Est. 1907**

**Britain's greatest stocks of New, Used and Ex-Govt.
Binoculars, Telescopes and Navigational Equipment.**

**The CHARLES FRANK 22 × 50
Prismatic Telescope** Definition is unsurpassed—compare it without obligation with your present telescope. Supplied with tripod. Can be comfortably hand-held. **£22 . 10 . 0**

8 × 30 WRAY BINOCULARS This NEW fully coated binocular is compact and weighs only 19 oz. Definition is excellent and we can thoroughly recommend this instrument to the ornithologist who wishes a first quality, general purpose binocular. Complete with hide case and straps. **£18 . 14 . 1**

6 × 30 ARMY BINOCULARS An excellent general purpose binocular of good performance, which will stand up to a great deal of rough usage. Cost approximately £20. **£7 . 15 . 0**

12 × 80 LINDERMANN Fully coated binocular. **£57 . 10 . 0**
Tripod or leather case, optional extras at 50/- each.

HERTEL & REUSS POCKET TELESCOPE Power zooms from 25× to 60×. **£39 . 16 . 0**

CHARLES FRANK Large Tripod Mounted TELESCOPE 3" aperture. **£57 . 10 . 0**

British Birds

Principal Contents

The significance of the New Forest to the status
of the Dartford Warbler in England

C. R. Tubbs

Three additions to the British and Irish List:
Summer Tanager, Baltimore Oriole and Western Sandpiper
(with one plate)

Studies of less familiar birds: 121—Roller
M. D. England
(with three plates)

Notes

Reviews

News and comment



- 3 APR 1963

PURCHASED.

Three
Shillings



February
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by

Stanley Cramp I. J. Ferguson-Lees
P. A. D. Hollom E. M. Nicholson

Photographic Editor: Eric Hosking

Hon. Editors: W. B. Alexander N. F. Ticehurst

Editorial Address: 30 St. Leonard's Avenue, Bedford

Contents of Volume 56, Number 2, February 1963

	<i>Page</i>
The significance of the New Forest to the status of the Dartford Warbler in England. By C. R. Tubbs	41
Three additions to the British and Irish List: Summer Tanager, Baltimore Oriole and Western Sandpiper	48
Summer Tanager on Bardsey, Caernarvonshire (1957). By R. W. Arthur. Photographs by W. M. Condry (plate 12)	49
Baltimore Oriole on Lundy, Devon (1958). By W. B. Workman ..	52
Western Sandpiper on Fair Isle, Shetland (1956). By the editors and Dr. I. C. T. Nisbet	55
Studies of less familiar birds: 121—Roller. Photographs by M. D. England (plates 9-11). Text by I. J. Ferguson-Lees and M. D. England	58
Notes:—	
Solitary Sandpiper in Nottinghamshire (A. Dobbs)	63
Stilt Sandpiper in Sussex (M. J. Carter, C. J. Mead and A. B. Sheldon) ..	64
Rock Thrush on St. Kilda (Dr. J. Morton Boyd and Dr. W. E. Waters) ..	66
Reviews:—	
<i>The Birds of the British Isles. Volume XI: Glareolidae, Otidae, Burhinidae, Gruidae, Laridae.</i> By D. A. Bannerman; illustrated by G. E. Lodge. Reviewed by Dr. Bruce Campbell	67
<i>Portrait of a River.</i> By Guy Mountfort; illustrated by Eric Hosking. Reviewed by R. C. Homes	70
News and comment. Edited by Raymond Cordero	71

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 5 Warwick Court, London, W.C.1

British Birds

Vol. 56 No. 2
FEBRUARY 1963



The significance of the New Forest to the status of the Dartford Warbler in England

By C. R. Tubbs

Nature Conservancy

THE DARTFORD WARBLER (*Sylvia undata*) is a species whose habitat, and therefore distribution, has been and continues to be subjected to reduction and fragmentation in Britain. In the foreseeable future it may become virtually restricted, as a regular breeding species, to the New Forest in Hampshire. This paper draws attention to the possible significance of the New Forest as a biological 'reservoir' for smaller sites of similar habitat which may in the long term prove to be ecologically unstable as entities. The status and habitat of the Dartford Warbler in the New Forest are examined against this background, and as fundamentals to its conservation there.

GENERAL SIGNIFICANCE OF THE NEW FOREST

During the 19th century the breeding distribution of the Dartford Warbler in England appears to have extended from Suffolk and Kent on the east to Cornwall and Devon in the west (Witherby *et al.* 1938). Apart from the more or less irregular establishment of small colonies in Sussex, Devon and the Isle of Wight, it is today confined to the lowland heaths of Dorset, the New Forest, and at times north Hampshire and Surrey. The New Forest carries the bulk of the breeding population. In north Hampshire and Surrey the species retains only a very insecure foothold, the breeding stock having apparently been wiped out two or three times in the last 25 years.

The major factor operating in the reduction of the total breeding population of the Dartford Warbler in England during the present century has undoubtedly been the sharp increase in human pressure on areas of semi-natural vegetation. Reclamation for agriculture and forestry, and urban and industrial development, have reduced and

fragmented the species' breeding habitat. With the lapse in traditional pastoral land management, many of the remaining areas have become subject to rapid colonisation by birch (*Betula*) and Scots pine (*Pinus sylvestris*), which has in turn still further reduced the habitat available. This is evident on the heathlands of north Hampshire and Surrey, and in certain sites in Dorset.

It has been shown (Moore 1962) that the total area of heathland in Dorset has been reduced from about 75,000 acres in the early 19th century to about 25,000 acres at the present time, and that the process of reduction has been accompanied by the fragmentation of the heaths into more than one hundred separate areas. These changes are fairly typical of those taking place elsewhere within the breeding range of the Dartford Warbler in England, and they are likely to continue.

Little is known about the amount of space the Dartford Warbler requires in order to survive in any particular site. It would, however, be fair to say that the smaller the individual area of habitat, and thus the smaller the population, the more vulnerable the species is to adverse circumstances. Outside the New Forest and the heaths of the Poole Basin in Dorset, its breeding distribution is fragmentary and the fragmentation of habitat is continuing. It is probable that many more or less isolated breeding sites are too small to facilitate the permanent survival of the Dartford Warbler within them without recolonisation from outside, particularly in view of the periodic population 'crashes' to which the species is subject (see under POPULATIONS).

The New Forest contains the only large area of heathland (approximately 38,000 acres) which is within the breeding range of the Dartford Warbler and has a prospect of relative ecological stability in the future. It may, therefore, prove to be of more than intrinsic importance in providing a reservoir from which the species can recolonise much smaller heathland sites where it has become extinct. That such a hypothesis is feasible is demonstrated by the recolonisation of sites in the Isle of Wight, north Hampshire, Surrey and Sussex after the crash of 1947. There is evidence (*Proc. Hampshire Field Club*, 1952, 1958-61; *Sussex Bird Report*, 1956, 1958, 1959, 1961; etc.) that there is a marked dispersal movement from the breeding grounds during the winter months, which must be regarded as playing an essential rôle in recolonisation.

POPULATIONS

Until recently there has been very little evidence to show the size of the breeding population of the Dartford Warbler, either in total or for any given area within its range in England. An examination of available sources (Wise 1863, Mansell-Pleydell 1888, Bucknill 1900,

(Kelsall and Munn 1905, and the relevant county reports) demonstrates clearly, however, that the species is subject to periodic population crashes apparently correlated with particularly severe winters, and normally following a steady build-up in numbers over a period of years. Such sources suggest that the major 'crashes' since about 1850 took place during the winters of 1860-61, 1880-81, 1886-87, 1916-17, sometime during the late 1930's or early 1940's, 1946-47 and 1961-62.

Table 1. Recorded and estimated numbers of breeding pairs of Dartford Warblers (*Sylvia undata*) in the New Forest, Hampshire, 1955-62

Not necessarily the same areas were examined in each year, except in 1961 and 1962 (the figures for which are therefore directly comparable). The habitat estimates for 1955-57 were made retrospectively and so are tentative. Theoretical total populations are based on the assumption that suitable areas not examined will have carried the same densities as those examined; where the estimated percentage of habitat examined is given within limits, the upper figure has been used in the calculation

Year	Percentage habitat examined	Breeding pairs recorded	Theoretical total of pairs	Observers or other authority for the total of recorded pairs
1955	15-25%	20	80	<i>Proceedings Hampshire Field Club</i>
1956	25-35%	56	160	<i>Proceedings Hampshire Field Club</i>
1957	25-35%	67	192	<i>Proceedings Hampshire Field Club</i>
1958	'similar to 1957'			<i>Proceedings Hampshire Field Club</i>
1959	c. 35%	98	280	N. W. Orr, K. H. Palmer, C. R. Tubbs
1960	45-50%	152	304	Orr, Palmer, Tubbs
1961	c. 60%	229	382	Orr, Palmer, Tubbs, G. H. Rees, M. C. Adams, J. Wright
1962	c. 60%	36	60	Orr, Tubbs, Adams, Wright, J. S. Ash

The available data on the size of the population of Dartford Warblers in the New Forest (including the adjacent commons of Rockford, Ubsley and Hale Purlieu) for the period 1955-62 are set out in Table 1. As it might be argued that the actual numbers recorded reflect an increase in the percentage of habitat examined, rather than a true build-up of birds, Table 1 also includes theoretical calculations of the total population each year. These are based on the assumption that, in any particular year, the areas of suitable habitat not examined will have held populations of a similar density to those that were. The resulting figures are probably somewhat exaggerated, but they clearly support the impression of a steady increase from 1955 to 1961. In fact, the theoretical figure for 1960 was thought at the time to be a slight underestimate, and that for 1961 rather on the high side (N. W. Orr and others *in litt.*).

The increase in population up to 1961 would be best reflected by

comparative figures for individual areas examined each year. Unfortunately, the pattern within a limited area is generally complicated by variations in conditions, usually associated with heath-burning. However, the following figures, supplied by K. H. Palmer from a relatively undisturbed section of approximately two hundred acres of gorse (*Ulex*) in the southern part of the New Forest, are of interest in this connection:

1956	12 pairs	1958	19 pairs	1960	15 pairs*
1957	20 pairs	1959	28 pairs	1961	23 pairs

A survey in 1960 showed some 60 pairs of Dartford Warblers in Dorset and in the same year it was estimated that there were approximately 25 pairs in north Hampshire and Surrey (Moore 1962). Numbers in Dorset were probably maintained in 1961 (*Proc. Dorset Nat. Hist. Soc.*) and appear to have increased in north Hampshire and Surrey to 40-45 pairs (*Proc. Hampshire Field Club*, L. J. Raynsford *in litt.*). Even so, and including small, isolated colonies elsewhere (details not for publication), it would appear unlikely that the total number of breeding pairs in England exceeded 450 in 1961, when the population was at its peak. Of these probably more than 300 pairs bred in the New Forest.

Following the severe weather early in 1962, the species seemed to have disappeared from Surrey (L. J. Raynsford *in litt.*) and many other 'outlying' sites. In the New Forest it was considerably reduced in numbers. In Dorset, which was not subjected to such severe weather as elsewhere within the bird's range, a substantial proportion of the population apparently survived.†

HABITAT REQUIREMENTS

In 1961 the writer examined 77 breeding territories of Dartford Warblers in the New Forest, making brief notes on the vegetation and on that of the immediate environs. The feature common to 67 territories was a dense cover of gorse (*Ulex europaeus*) rarely exceeding four or five feet in height and usually, but not necessarily, mixed with heather (*Calluna vulgaris* and *Erica* species) close to the ground. An absence of sizeable trees in the general area was also characteristic. At the remaining ten sites, two pairs were breeding in tall, 'leggy' gorse without a thick ground cover, and eight pairs in high, dense heather without gorse. There was some indication that where gorse

*70% of previous habitat destroyed by fires during July and September 1959.

†This paper was in proof before the onset of the exceptional cold spell which has been such a feature of the 1962-63 winter. It is, of course, far too early to assess the full extent of the damage done to the already depleted Dartford Warbler population, but preliminary reports make a gloomy picture.—EDS.

was associated with grasses (*Agrostis setacea* and *Molinia*), instead of heather, high population densities of Dartford Warblers did not occur. Moore (1962) noted that in Dorset the species preferred a south-facing aspect; the writer did not find any evidence of this in the New Forest in 1961, but such a preference might have been obscured by the size of the population.

A preliminary survey of the distribution of gorse in the New Forest (E. L. Jones and C. R. Tubbs, paper in preparation) shows that approximately three-quarters of the total area covered by this shrub is closely associated with past human land use, which, although perhaps not the sole determinant in its distribution, has certainly exerted a major influence. Moore (1962) went further and stated that on the Dorset heaths gorse is virtually restricted to features associated with past human activity. He concluded that 'The Dartford Warbler in Dorset is therefore wholly dependent on the past and present activities of man'. Without concurring with this extreme view, it is certain that a broad correlation between features of human land use and the distribution of gorse has been established. Most of these features may be attributed to human activity during the past three or four centuries, and one implication is that in earlier times gorse and (presumably) Dartford Warblers were relatively scarce in the New Forest.

CONSERVATION

The New Forest Act 1949, Section 11, provides that it shall be the duty of the Forestry Commission to ensure that the grazings will be kept sufficiently clear of coarse herbage, scrub and self-sown trees. This is fulfilled mainly by a régime of annual, controlled burning of the heaths. The period during which burning may take place is confined by the Heather and Grass Burning (England & Wales) Regulations (Statutory Instrument No. 386, 1949) to the period between 1st November and 31st March. In practice, controlled burning in the New Forest takes place in late February and March, the only time during the legally permitted period when heath vegetation has been found to fire effectively.

In a broad sense, the rotational burning of the heaths of the New Forest fulfils the purpose of habitat conservation in that, together with the maintenance of a large head of stock on the open forest, it is the major feature in the prevention of a succession to woodland. The report of the New Forest Committee, 1947, however, drew attention to the need for a closer examination of heath-burning practices in relation to the conservation of individual species of birds and insects, of which the Dartford Warbler was one. At that time, and for some years afterwards, it was the practice to burn a small number of large

areas of heathland in preference to a large number of small areas. This frequently resulted in the elimination of such species as the Dartford Warbler from big sections of the Forest.

In March 1960, for example, at three separate sites which together held a large proportion of the Dartford Warbler breeding population, a total of approximately 540 acres of gorse were burnt under control. Later the same year, in July and September, 70% of the occupied habitat at a fourth important site was destroyed by accidental fires. It was believed that had the total breeding population been at a very low ebb—as, for example, in 1962—the simultaneous destruction of four major areas of habitat could have had a serious effect on the whole status of the species.

It was during 1960 that the writer first considered the management of the heathlands of the New Forest, with a view to making recommendations for the conservation of the Dartford Warbler. It was thought unlikely that indiscriminate implementation of controlled burning could in itself seriously affect the status of the species in the Forest, but it was considered that the principles of management should be adjusted to encourage the maximum population and prevent any risk of fragmentation, however temporary. This was important in view of the probable function of the Forest as a reservoir from which more vulnerable sites could be recolonised.

A survey of the area of heathland occupied by gorse, which the writer carried out in 1960, gave a total of approximately 8,000 acres. Experience has shown that between four and six years elapsed between burning and recolonisation by Dartford Warblers. Theoretically, if one allows an average of five years before recolonisation, then burning on a ten-year rotation—that is about 800 acres annually—would ensure that approximately 4,000 acres of gorse were always available as breeding habitat.

The conservation of the Dartford Warbler is, however, only one of a number of considerations involved in the planning of the annual heath burning. The rotation may be considerably lengthened or shortened with the varying requirements of the commoners, the need to break up large areas of dense heath vegetation against fire hazard, the occurrence of accidental fires in summer, the necessity for retaining stands of old and tall gorse as stock-shelter or to facilitate deer control, variations in the rates of regeneration of the gorse itself from site to site, and other factors.

Allowing for all these, it is proving possible to burn most of the gorse occupied by Dartford Warblers on a rotation of between six and eight years. Since after seven or eight years gorse becomes leggy, with little dense cover, and therefore unsuitable for the species, this rotation is eminently satisfactory. Individual sites require individual

attention, however, and the heath burning is the subject of close liaison between the Forestry Commission and the Nature Conservancy.

A further consideration in conservation, already touched upon at the beginning of this section, is the prevention of the steady fragmentation of the Dartford Warbler's distribution within the Forest by the burning of large acreages at one time and in one place. The need here is for the development of a mosaic of the widest age range within individual areas of gorse, thus providing for the permanent retention of the same proportion of suitable breeding habitat in each such area. This is now being achieved by the burning of numbers of small areas from a wide range of sites, as against the complete burning-out of single gorse concentrations.

The wide range of considerations in heathland management, other than those of conservation, precludes the long-term planning of the burning régime in the New Forest. Some of the remaining areas of heathland are nature reserves, however, and others may be acquired as such in the future. Here it should be possible to apply the general principles of Dartford Warbler conservation in the New Forest more rigidly, with a view to building up minor reservoirs of the species. The survival of the Dartford Warbler outside the Forest may in the future depend to some extent on the function of these nature reserves as reservoirs. Venables (1934) showed that the species was capable of existing in high density populations. Management aimed at producing a maximum area of ideal breeding habitat may therefore help to offset the necessarily small size of such reserves. This would depend basically on the development of a mosaic of age classes in vegetation, often preceded by the clearance of self-sown Scots pine and birch. The deliberate cultivation of gorse might be a further requirement: gorse was cultivated extensively as a fodder crop in Britain during and before the 19th century (see, for example, Elly 1846, page 1788) and there is no reason why its cultivation should not be a practical consideration in Dartford Warbler conservation today.

SUMMARY

- (1) The whole of the area of suitable habitat for the Dartford Warbler (*Sylvia undata*) in England has long been subject to processes of reduction and fragmentation; these have accelerated during recent times and are continuing.
- (2) There is some doubt whether many of the remaining habitats outside the New Forest in Hampshire are large enough to permit the permanent survival of the species within them.
- (3) The New Forest contains the largest area of suitable habitat now remaining and reasonably certain of ecological stability in the future. A high proportion of the breeding population of the Dartford Warbler in England is concentrated there.
- (4) In addition to its intrinsic importance, the New Forest may function as a reservoir from which the species can recolonise smaller sites where it has become

extinct. The maintenance of the highest possible population in the Forest is therefore important.

(5) Fundamental to the conservation of a species are a precise knowledge of its habitat requirements, of the size of its population, both in total and in a given area, and of its reaction to adverse circumstances in terms of population fluctuations and isolated areas of habitat. These aspects are discussed for the Dartford Warbler.

(6) The heathland of the New Forest is subject to a régime of controlled burning. The conservation of the Dartford Warbler is a consideration in the planning of this régime. Certain specific principles, based on the fundamentals noted above, are involved in this consideration.

(7) The application of these and other management principles in smaller heathland sites, outside the New Forest, may be necessary or at least advantageous to the survival of the species elsewhere within its breeding range, as the processes of reduction and fragmentation continue.

ACKNOWLEDGEMENTS

Thanks are due to the observers whose names appear in the body of this paper, and to various colleagues in the Nature Conservancy for their help and advice. More particularly should be placed on record the ready understanding and acceptance of conservation interests shown by Mr. Arthur Cadman, Deputy Surveyor of the New Forest, and his keepers.

REFERENCES

- BUCKNILL, J. A. S. (1900): *The Birds of Surrey*. London.
 ELLY, S. (1846): 'On the cultivation and preparation of gorse as food for cattle'. *J. Royal Agric. Soc. England*, 1st series, 6: 523-528.
 KELSALL, J. E., and MUNN, P. W. (1905): *The Birds of Hampshire and the Isle of Wight*. London.
 MANSSELL-PLEYDELL, J. C. (1888): *The Birds of Dorset*. London.
 MOORE, N. W. (1962): 'The heaths of Dorset and their conservation'. *J. Ecol.*, 50: 369-391.
 PAGE, T. (1788): 'On the culture of furz'. *Annals of Agriculture*, 9: 215-217.
 VENABLES, L. S. V. (1934): 'Notes on territory in the Dartford Warbler'. *Brit. Birds*, 28: 58-63.
 WITHERBY, H. F., JOURDAIN, F. C. R., TICEHURST, N. F., and TUCKER, B. W. (1938): *The Handbook of British Birds*. London. Vol. 2.

Three additions to the British and Irish List Summer Tanager, Baltimore Oriole and Western Sandpiper

NONE OF THE THREE records which follow is recent. The Summer Tanager (*Piranga rubra*) and Baltimore Oriole (*Icterus galbula*) occurred in 1957 and 1958 respectively, and the Western Sandpiper (*Calidris mauri*) was a 1956 vagrant which was originally identified and published (*Scot. Nat.*, 69: 145-147; *Brit. Birds*, 50: 350-351) as a Semi-palmated Sandpiper (*C. pusilla*). All three were trapped, ringed and

examined in the hand, but each has presented its own peculiar problems before it could be regarded as completely authenticated. Much of the delay in acceptance and publication has been due to the need for exhaustive researches, on both sides of the Atlantic, to rule out closely similar birds. The confusion between Western and Semipalmated Sandpipers has already been mentioned; the Summer Tanager and Baltimore Oriole, both young birds in their first autumns, needed conclusive separation from Scarlet Tanager (*P. olivacea*) and Bullock's Oriole (*I. bullockii*) respectively. The Records Committee of the British Ornithologists' Union has now finally accepted all three identifications, but we must apologise both to the observers concerned and to our readers for the hesitation that these records have involved. Sections on all three species were included in P. A. D. Hollom's *The Popular Handbook of Rarer British Birds* (1960), on the assumption that they would eventually be accepted.

Summer Tanager on Bardsey, Caernarvonshire (1957)

(Plate 12)

At 7.20 a.m. on 11th September 1957, on Bardsey Island, Caernarvonshire, R. Moss and R. Stjernstedt had brief views of a bird resembling a large, bright male Greenfinch (*Chloris chloris*) without the wing and tail patches. Unfortunately it dived into cover and was lost, but at 12.15 p.m. on the same day it was caught by J. D. Gay in the Lane Heligoland trap and then examined in the hand by M. R. Buckley, R. V. Collier, E. R. Corté, A. Cumber, R. C. Lee, A. Morley, the three observers already mentioned, and myself. The following detailed description was taken:

Upper-parts: forehead olive, slightly yellowish, with some rusty-red feathers; crown and nape similar, with two reddish feathers at front of crown; sides of head also similar, but lores appearing darker; mantle, scapulars and upper rump less yellow, with three large red feathers; lower rump similar to head, with four paler reddish feathers. *Under-parts:* chin and throat deep yellow mixed with orange feathers; breast, belly and under tail-coverts similar but without orange feathers (these parts were stained with fruit juices, though this possibly happened while the bird was being carried to the laboratory in a bag). *Tail:* upper-side olive, darker at tips, outer webs slightly yellowish; under-side dull, tinged olive. *Wings:* primaries and secondaries brown-black, broadly fringed olive on outer webs (less distinctly on 2nd primary); inner secondaries with whole outer webs olive; primary coverts similar to primaries but with less distinct fringes; greater coverts similar to inner secondaries; median coverts olive with dark shafts; lesser coverts mainly olive, with one reddish feather among those on right wing; under wing-coverts pale, tinged olive-yellow; axillaries olive-yellow. *Soft parts:* upper mandible dark horn on culmen, paler in centre and very pale horn at sides; lower mandible very pale horn; gape-flange yellowish; legs and feet bluish-slate; iris dark brown. *Measurements:* wing 99 mm. (primaries straightened), tarsus 20 mm., bill from nostrils 14 mm., bill from hinge 22 mm., bill depth at forehead *c.* 10 mm.; weight 24.6 gm. *Wing-formula and tail structure:* 3rd primary longest, 4th 1 mm.

shorter, 2nd 2.5 mm. shorter, 5th 4 mm. shorter, 6th 13 mm. shorter, 7th 18 mm. shorter, 8th 21 mm. shorter, 1st 11 mm. shorter than longest primary covert; 3rd, 4th and 5th emarginated; 12 tail-feathers, all slightly abraded but still showing pointed tips; no obvious damage to shafts of wing or tail feathers.

On being released, the bird immediately flew to cover among brambles at the foot of a wall. It was caught again on 15th and 20th September, when its weight had increased from 24.6 gm. to 26.6 gm. and 36.7 gm. respectively, and it was last seen on 25th September.

It had, on the first day, been provisionally identified as a Summer Tanager (*Piranga rubra*) and on 20th September it was compared in the hand with a male specimen of this species which, in the meantime, had kindly been lent by R. Wagstaffe of the City of Liverpool Public Museums; it was found that the scattered red feathers in various parts of its plumage very closely resembled those on the specimen.

In the field it was noted as smaller than a Song Thrush (*Turdus philomelos*) and all observers were struck by the resemblance, already remarked, to a very large male Greenfinch without the yellow flashes. The upper-parts appeared olive-green with darker primaries and secondaries, the under-parts deep yellow. The bill looked pale, blunt and heavy, and with the steep forehead gave a distinctive shape to the head. The legs appeared darkish and very short for the size of the bird. The tail, blunt but slightly forked, extended well beyond the wing-tips. The shapes of bill and tail, and the proportions of the latter in relation to the wings, are well illustrated in the photographs reproduced on plate 12, as are the uniformity of the body-feathers and the darker wings with their pale-edged inner secondaries.

During its stay of 15 days the bird spent most of its time in an area which included much bramble and gorse, and some small willows and plum trees, in addition to the laboratory buildings. Normally, when undisturbed, it perched openly in a rather upright, shrike-like manner, but as soon as it was alarmed it generally flew to some adjacent cover; occasionally it crouched in an almost horizontal position. Its flight was rapid, low and undulating, variously likened to that of a woodpecker or heavy finch, and it arrived at a perch with an upward-sweeping curve. It was seen to make flycatcher-like sallies on two occasions, and occasionally to flick its wings like a flycatcher; it also cocked its tail and raised its crown-feathers from time to time. On 12th September it uttered a double note *chic-chic* as it took flight on being disturbed, and then a similar but single *chic* when it reached cover.

Blackberries were apparently its main food. These it often merely chewed, seeming to take only the juice, but it passed seeds in the laboratory on 20th September. On the 13th it was seen to pick a blackberry, place it on a fence post and then peck at it. W. M. Condry once watched it take a small fly in the air.

Observers who saw the bird, apart from those listed at the beginning of this paper, and being present on the first day, included W. M. Condry, D. Condry, J. Griffiths, B. Little, R. C. Pratt, M. P. M. Richards, A. Soper and W. B. Workman.

R. W. ARTHUR

[The breeding range of the Summer Tanager extends from the east-central United States south to Florida and Mexico, and the species winters from Mexico south to Peru. As briefly mentioned above, the verification of this record has largely been concerned with the elimination of the possibility of confusion with an immature of the Scarlet Tanager (*P. olivacea*), another North American summer visitor, whose breeding range extends into the eastern province of Canada, and the rarities Committee would like here to acknowledge the great help which has been received in this connection from Dr. Charles Vaurie and Dr. Eugene Eisenmann, both of the American Museum of Natural History, as well as from J. D. Macdonald of the British Museum (Natural History) and R. Wagstaffe of the City of Liverpool Public Museums.

Dr. Vaurie wrote: 'I believe your bird is a Summer Tanager. These documents and photos have been pored over by a number of good field men and, of course, some of these and myself have looked at skins. Everyone decided that, on the basis of the photos, it was impossible to be certain of whether the bird had been a Summer or Scarlet Tanager. The coloration, including the wings, varies individually, and if the bird had been immature the identification was even more uncertain. However, one measurement in your documents offered a chance to be diagnostic, namely the length of the bill measured from the nostril, which you said was 14 mm. Mr. Paul Buckley was kind enough to measure 40 mixed specimens (♂, ♀ and imm.) of each and found that in *rubra* the bill measured 12-15 and in only one was the bill as short as 12, against 10-12 in *olivacea* with only 4 birds measuring as much as 12. As your bird measured 14, the chances are therefore greatly in favour of *rubra*.'

Mr. Eisenmann later wrote, however: 'Banders can separate the immatures of the two species by the larger bill of the Summer and the richer, more orange (or sometimes buffy) tone of the yellowish underparts. The Scarlet is a more greenish yellow below. These are fine points, but are discernible by those familiar with these species and are obvious in skins. In addition, young *male* Scarlets have black lesser (and sometimes also middle) wing-coverts; adult and moulting males have the wings wholly or largely black.' Thus, while the scattering of red feathers on the head, mantle and rump of the Bardsey bird allowed it to be a male, the fact that the lesser coverts were mainly

olive (and even had one reddish feather on the right wing) showed that it was not a male Scarlet Tanager.

The identification established, it was necessary to examine the possibility of its being an escaped cage-bird. In view of the restrictions on the export of birds from North America, it seemed unlikely that any immature Summer Tanagers would be found in captivity in Europe as early as the beginning of September. In fact, we were informed by the avicultural authorities we consulted—notably Derek Goodwin, R. A. Richardson and R. C. J. Sawyer—that they did not believe this species to be kept in captivity at all in this country (though the Scarlet Tanager is). Moreover, the increase in this bird's weight, from 24.6 gm. on 11th September to 26.6 gm. on the 15th and 36.7 gm. on the 20th, strongly suggests an arduous passage before arrival at Bardsey. In this connection, Mrs. M. M. Nice and Dr. Robert Storer kindly provided us with data on the weights of Summer Tanagers in America: apart from one very light individual, all the figures were well above the initial weight of the Bardsey bird and the normal range for this species appears to be 30-36 gm.—EDS.]

Baltimore Oriole on Lundy, Devon (1958)

At 2.30 p.m. on 2nd October 1958 R. H. Dennis flushed an unfamiliar bird from an open grass field on Lundy, Devon, where it was keeping company with a flock of Meadow Pipits (*Anthus pratensis*). It was noticeably larger than the pipits and its flight was heavy, but what particularly attracted attention were its black wings with white bars, its bright orange-yellow under-parts and its yellow tail. It landed on the side of a dry stone wall and hung there for a few minutes with its tail fanned and pressed against the stone, before flying down into some bracken and starting to search for food. R.H.D. fetched me and together we watched the bird for the next half hour. It appeared exhausted and whenever flushed would immediately drop into the next clump of bracken to continue feeding. We had excellent views of it and managed to obtain full field notes. It was slightly larger and heavier than some Pied Wagtails (*Motacilla alba*) with which it was associating on the ground. The upper-parts appeared brownish-olive and the wings were black with two very conspicuous white wing-bars; the tail was dull orange and the rump similar but lighter, both being very conspicuous in flight. The under-parts were orange-yellow, especially bright on the throat and under tail-coverts. The bill was large, pointed and appeared blue-grey in colour, as did the legs. The flight was heavy and direct, low over the ground. Although the bird was fond of perching in conspicuous positions on the tops of walls, where it would frequently hop from stone to stone, it would also skulk in the undergrowth looking for food (apparently insects).

It was reminiscent in size and shape of the Summer Tanager (*Piranga rubra*) which I had seen on Bardsey the previous September, but its head was noticeably flatter (less humped) and its bill slimmer and more pointed. No call was heard.

The bird avoided a mist-net which we erected, but was finally caught in the Garden Trap. It was taken to the laboratory for detailed examination at 3.15 p.m. and the following description noted:

Upper-parts: forehead orange-yellow slightly tipped grey-brown; crown and nape grey olive-brown, with dark centres and grey tips; ear-coverts slightly yellower than crown; no supercilium; mantle and back grey-brown with wide tips of olive-grey and darker centres; rump and upper tail-coverts deep orange-yellow tipped greyish; tail slightly rounded, three outer feathers on each side dull orange-yellow with outer webs tinged brown and inner webs tipped pale yellow, central feathers darker and more brownish; primaries black with outer webs fringed whitish and large white margins on inner webs; secondaries black with outer webs thickly edged white; primary coverts black slightly fringed brownish; greater coverts blackish with large white tips on outer webs, forming conspicuous wing-bar, and inner webs slightly tipped white; median coverts black with large white tips on both inner and outer webs, forming thicker wing-bar, and dark shafts; lesser coverts black fringed pale olive-grey; bastard-wing black. *Under-parts:* throat and upper breast bright orange-yellow with pale yellow tips; chin and lower breast similar but paler; belly rich cream washed yellow; flanks buff-grey tinged yellow; under tail-coverts bright orange with slightly paler tips; under-tail pale brown washed bright yellow (more noticeably yellow than dorsal surface); under-wing white washed pale yellow; axillaries bright yellow. *Soft parts:* feet and legs blue-grey, soles brownish-grey; upper mandible slate with paler cutting edges, lower mandible pale bluish-white; gape flesh-pink with very slight pinkish, soft flange; iris dark brown. *Measurements:* wing 90 mm. (normal) or 91.5 mm. (flattened), tail 74 mm., tarsus 24 mm., bill from feathers 17 mm., bill from base of skull 19.5 mm., depth of bill at base 7.5 mm.; weight 26.95 gm. at 16.00 hours. *Wing-formula:* 3rd and 4th primaries equal and longest, 5th 2 mm. shorter, 2nd 3 mm. shorter, 6th 6 mm. shorter, 7th 10.5 mm. shorter, 8th 14 mm. shorter, 9th 17.5 mm. shorter, 10th 19 mm. shorter, 1st primary minute; 3rd, 4th and 5th deeply emarginated, 6th slightly; tips of primaries slightly abraded.

During handling, the bird occasionally uttered a short, soft squawk. In addition to R.H.D. and myself, a number of other people saw it in the hand and these included Miss B. Bizzel, Mr. and Mrs. F. W. Wade, F. G. Lyall, John Ogilvie, J. M. R. Reakes Williams, and Mr. and Mrs. V. Squires. After being photographed and ringed, it was released at 5.30 p.m. in Stonecroft garden, where it flew into low cover and remained near the ground.

From the above description we concluded that the bird was an immature female. It stayed on the island for the next seven days and was last seen on 9th October. It was trapped a second time at 8 a.m. on the 7th and it then weighed 29.58 gm. (an increase of 2.63 gm.). When released on this occasion it flew off quite strongly and perched on top of a wire fence.

W. B. WORKMAN

[The Baltimore Oriole breeds in North America from Alberta and Nova Scotia to Texas and Georgia, wintering from Mexico to Colombia. As in the case of the Summer Tanager, the verification of this record has been concerned with the elimination of a closely related species with an overlapping range and a rather similar immature plumage. In fact, Bullock's Oriole (*I. bullockii*), the other bird involved, which breeds from British Columbia and Saskatchewan to Lower California and Texas, actually hybridises widely with the Baltimore Oriole where their ranges meet in central North America (C. G. Sibley and L. L. Short, *Auk*, 1959, 76: 447) and the two birds are considered by many authorities to be conspecific or at least a species-pair. However, the *A.O.U. Check-List* (1957) treats the two as separate species and at the present time we believe it safer to follow that decision. We are very grateful for the advice of Dr. Dean Amadon, of the American Museum of Natural History, in this connection.

Although the eastern Baltimore seems much more likely than the mid-western Bullock's Oriole to occur in Britain, it should be added that the latter appears regularly in the eastern United States in late autumn and winter; in fact, this record is on the late side for a Baltimore Oriole and the weather in America at the end of September 1958 was typical of the situations which produce western vagrants in the north-east. However, a remarkably thorough analysis of the field and laboratory descriptions which has been made by Dr. K. B. Rooke, until 1961 a member of the B.O.U. Records Committee, has shown that the Lundy bird could only have been a Baltimore Oriole and that *bullockii* is ruled out. We are particularly grateful to Dr. Rooke for his work, which takes special account of the general colours and dark centres of the crown, mantle and back, of the absence of a supercilium, of the bright orange-yellow of the throat and the degree of orange of the rump and under-parts, and of the distribution of white on the greater and median coverts. Occasional examples of *bullockii* can be quite bright and show some of these features to a greater or lesser extent, but the combination of them is conclusive. The measurements of the two birds overlap to such an extent that these are not a great help in the present case, although those of the Bardsey bird would be on the small side for *bullockii*. Finally, although the lack of black on the throat suggests an immature female, the brightness of the rest of the plumage led Dr. Rooke to the conclusion that it was more likely to have been a male.

On the question of possible escapes from captivity, we can find no evidence that any Baltimore Orioles were in captivity in Britain then, and the same arguments about North American species and immature birds apply as in the case of the Summer Tanager. Indeed, it seems

worth quoting from a statement by A. A. Prestwich in the *Avicultural Magazine* (1959, 65: 145-146) which says, 'The typical Hangnests of the genus *Icterus* number some forty species, of which about thirty have from time to time been imported into Europe. . . . They are almost unknown to present-day aviculturalists in Great Britain. . . . Even when available Hangnests do not appear to have been particularly popular with aviculturalists, mainly, perhaps, because it was difficult to obtain pairs, the more colourful males being imported in preference to the females. . . .' The Lundy bird's weight of 26.95 gm. is also at the bottom of the scale given by Mrs. K. B. Wetherbee (*Bird-banding*, 1934, 5: 60-61) for 52 immature Baltimore Orioles trapped between 12th July and 14th August: she gave a range of 26.88-39.98 gm. (average 32.60 gm.).—EDS.]

Western Sandpiper on Fair Isle, Shetland (1956)

This record is best explained by the publication of the following letter which Dr. I. C. T. Nisbet, then in America, wrote simultaneously to the B.O.U. Records Committee and to the editors of *British Birds* at the beginning of 1959. The original descriptions, and the analysis and arguments put forward by Dr. Nisbet, have since been carefully examined by a number of experts on both sides of the Atlantic and the conclusions reached in this letter are now unanimously accepted. In particular, it should be added that Kenneth Williamson and H. G. Alexander, who handled the bird and first identified it as a Semipalmated Sandpiper, are in complete agreement. The Western Sandpiper breeds in Alaska, and winters from the southern United States to Venezuela.—EDS.

Refs.—Williamson and Alexander (1957a) reported the occurrence of a Semipalmated Sandpiper (*Calidris pusilla*) at Fair Isle from 28th May to 3rd June 1956. After studying their detailed description, however, I have come to the conclusion that the bird was in fact a Western Sandpiper (*C. mauri*), and should be considered as the first British record of that species. Many reference books do not emphasise sufficiently strongly the difficulties which can arise in distinguishing some individuals of these two species, and the Fair Isle bird appears to have been one of the more 'difficult' examples. The webbing of the toes, in conjunction with other characters, suffices to exclude all other species but the two mentioned above. Specific identification is based on the following points from Williamson and Alexander's full account.

Measurements. The bill-length (19½ mm.) was measured from the gape and so cannot be compared with those given in standard American reference books. I have therefore measured 50 specimens

of each species from the collection of the Museum of Comparative Zoology, Harvard University, and give the results in the following table:

	Bill-length from feathers (millimetres)												
	16	17	18	19	20	21	22	23	24	25	26	27	28
<i>C. pusilla</i>	3	11	14	9	8	3	1	1	-	-	-	-	-
<i>C. mauri</i>	-	-	-	-	2	6	11	12	4	4	7	3	1

It will be seen that 19½ mm. is just below the minimum of this sample of *mauri*, and it was doubtless for this reason that the Fair Isle bird was identified as *pusilla*. However, the difference is much too slight to be conclusive.

The wing chord (97 mm.) might also be taken to support identification as *pusilla*, for it is longer than that of any short-billed example of *mauri* in my sample: the longest wing on a bird with a bill of 20 or 21 mm. was only 94 mm., the shortest-billed bird with a wing of 97 mm. having a bill of 22 mm. However, 97 mm. is too long for *pusilla* also (range of 50 measurements: 86 to 96 mm., mean 92.5). Thus, on the basis of wing- and bill-length alone, the Fair Isle bird could have been either an unusually long-winged *pusilla* or an unusually short-billed *mauri*, and identification must be based on other features.

The tarsus (23 mm.) is typical of *mauri* and unusually long for *pusilla*, but I found a few specimens of the latter which were equally long.

Head-colour. The Fair Isle bird had 'ear-coverts reddish-brown . . . crown-feathers were blackish-brown edged with grey, more rufous on the sides of the crown and nape', these rufous areas being striking in the field as well as in the hand. The reddish ear-coverts are diagnostic of *mauri*, and are *never* found on *pusilla* (Ridgway 1887, Witherby *et al.* 1941, etc.); I have confirmed this by examination of over 150 skins, including many in full breeding plumage.

Upper-parts. The Fair Isle bird was in moult to breeding plumage, having 'longest tertiaries dark brown with some sepia and warm whitish edgings, the new feathers being black edged with orange-brown and tipped with white. There were similar new feathers in the scapulars and mantle'. Together with those on the crown and nape, these orange-brown feathers on the back are also diagnostic of *mauri*, these areas in *pusilla* never being brighter than 'pale buffy cinnamon' (Ridgway 1887) or 'pink buff or pink cinnamon' (Witherby *et al.* 1941). In one or two exceptional skins of *pusilla* in the Harvard collection the edgings of the scapulars were brighter than this, approaching the colour of those of *mauri*, but even on these birds the



PLATE 9. Roller (*Coracias garrulus*) at nest hole, Spain, June 1961. Note its crow-like shape, heavy head, powerful bill, and spread tail used as a support. Its colour is mainly greeny-blue, with chestnut back, blackish primaries, and deep blue base to tail. Large insects are its chief food—pages 58-62 *pl. 1* M. D. Ireland.



PLATE 10. Roller (*Coracias garrulus*) struggling out of nest hole, Spain, June 1961. This old Green Woodpecker's hole was a tight fit and the bird sometimes got jammed. Once it had such a struggle that, as shown below, it hung quite exhausted for several moments before it finally freed itself (page 65) (photos: M. D. England)





PLATE 11. Above, nest site of Rollers, *Coracias garrulus* in a vast pine wood with little ground cover, Spain, June 1961. Below, tree tapped for resin; this has an indirect effect on Rollers and other hole-nesting birds, for the scar grows with the tree and facilitates boring by woodpeckers. pages 59-62, *photos M. D. England*





PLATE 12. Young male Summer Tanager (*Piranga rubra*), Bardsey, September 1957, the first recorded in Europe. Like an outsize Greenfinch without the yellow marks, it was olive-green above (with darker wings and odd red feathers) and yellow below. Note the thickish bill and slightly forked tail (pages 49-52) (photos: W. M. Corby)



edgings of the mantle and crown feathers were buffy, much too dull to fit the description of the Fair Isle bird.

Bill-shape. The field description of the Fair Isle bird—'black bill, slightly decurved at the tip, was slender and rather long for a stint and just about as long as the head'—could not possibly apply to *pusilla* and is typical of the appearance of a short-billed *mauri*. It is most unfortunate that the bill-shape was not mentioned in the laboratory description, but the more flattened bill-tip of *pusilla* should have attracted attention in the hand.

Voice. The *chirr-rr-rr* note mentioned by Williamson and Alexander fits neither the *chriip* flight-note of *pusilla* nor the shriller *chiet* of *mauri*, and was probably a form of the twittering note common to many small waders. I myself have never heard a Western Sandpiper call in spring, but I have heard both species twitter on autumn passage.

Other field-characters. The warm tone of some feathers on the upperparts doubtless helped to cause the confusion with Baird's Sandpiper (*C. bairdii*) when the bird was first seen. However, the 'upright' stance and relatively long legs which Williamson and Alexander (1957b) later quoted as distinctions of their bird from *bairdii* are not characteristic of *pusilla*, but are in fact useful subsidiary field-characters of *mauri*. Furthermore, the fact that the Fair Isle bird's wings were distinctly shorter than the tail-tip when at rest shows that it must have been very large-bodied, for its wings were in fact unusually long for either species (cf. Browne 1958). Williamson and Alexander's direct estimate of size—one inch shorter than a Dunlin (*C. alpina*)—confirms that the bird was too large-bodied for *pusilla*.

In short, Williamson and Alexander's description is an excellent and unmistakable account of a small-billed example of *C. mauri*, and shows conclusively that the bird could not have been *C. pusilla*.

The Western Sandpiper, although breeding only in northern Alaska, migrates down the Atlantic coast of North America and winters quite commonly in the southern United States, occurring in hundreds north to North Carolina. Its spring migration must carry it mainly overland, for it is rare on the coast north of its wintering range. However, it is far more numerous on the Atlantic coast than some other species (e.g. Baird's Sandpiper) which are accepted as having occurred in Great Britain in spring.

I am greatly indebted to the curators of the Museum of Comparative Zoology, Harvard University, and the American Museum of Natural History, New York, for permission to examine their extensive collections.

I. C. T. NISBET

REFERENCES

BROWNE, P. W. P. (1958): 'The field identification of Baird's and Semi-palmated Sandpipers'. *Brit. Birds*, 51: 81.

- RIDGWAY, R. (1887): *A Manual of North American Birds*. Philadelphia.
- WILLIAMSON, K., and ALEXANDER, H. G. (1957): 'Semipalmated Sandpiper at Fair Isle: a bird new to Scotland'. *Scot. Nat.*, 69: 145-147.
- (1957b): 'The identification of Baird's and Semipalmated Sandpipers'. *Brit. Birds*, 50: 350-351.
- WITHERBY, H. F., *et al.* (1941): *The Handbook of British Birds*. London. Vol. IV.

Studies of less familiar birds

121. Roller

Photographs by M. D. England

(Plates 9-11)

ALTHOUGH THE ROLLER (*Coracias garrulus*) is now only a rather rare vagrant to the British Isles—there have been less than a dozen records in the last five years—it is often one of the first birds to strike the traveller in southern or eastern Europe as it sits on the telephone wires like a huge shrike or flies past like a gaudy cross between a pigeon and a crow. Its vivid blue and chestnut seem almost out of place in a temperate climate and this is, in fact, the one northern representative of a brightly coloured group of fifteen species which are otherwise widely distributed in tropical Africa and southern Asia. The name 'Roller' comes from the aerial tumblings which form part of this bird's breeding displays. The main plumage characters are brought out in the caption to plate 9.

Its European strongholds are the Balkans and southern Russia. In western Europe it is very much a southern bird, being confined to the eastern two-thirds of Spain, to the extreme south of France, and to Italy and Sardinia, but further east it extends northwards to Germany, Poland and even the Baltic States and Sweden (where it breeds at similar latitudes to Scotland). It is also found in Tunisia and Morocco and the south-western quarter of Asia, and it winters in Africa south of the Sahara.

Formerly, it used to be more widespread in Sweden, but it has steadily decreased during the past century and now the little island of Fårö, off Gotland, is the only remaining breeding locality in that country; numbers there have varied from two to three pairs in 1942-44 to ten to fourteen pairs in 1949-54. S. Durango (1946, *Vår Fågelvärld*, 5: 145-190) has suggested that this decrease is connected with the trend towards a more maritime climate in north-western Europe: the rise in the mean temperature has resulted in wetter summers; these, in turn, might be expected to have reduced the numbers of the large ground insects, such as grasshoppers and beetles, which form the

main food of this and several other decreasing birds, notably the Red-backed Shrike (*Lanius cristatus*), Hoopoe (*Upupa epops*) and White Stork (*Ciconia ciconia*). The greater rarity of the Roller as a vagrant to Britain may well be connected with the decline in Scandinavia. On the other hand, the species has spread and increased in the Baltic States and Russia. This may be because the Scandinavian population has moved eastwards, and the thinning of forests by felling and fires has doubtless helped. Rollers now breed near Leningrad, which is as far north as Shetland.

In northern and middle Europe the Roller is very much dependent on old trees with suitable holes in them, and it often occupies the disused nests of Black Woodpeckers (*Dryocopus martius*). In this connection, it is interesting to note the difficulty which the birds photographed by Mr. England had in getting in and out of the rather smaller hole of a Green Woodpecker (*Picus viridis*) (plate 10). In southern Europe, in fact, particularly where there are no Black Woodpeckers, holes in banks and old walls are normally used just as often as those in trees.

Comparatively few important studies of Rollers have been made since the publication of *The Handbook*. Ornithologists, not unnaturally, often take the greatest interest in dwindling species, however, and so it is perhaps not surprising that the two most significant general papers have both come from Sweden. One of these, that by Durango (1946), has already been mentioned; the other is H. Wigsten's study of the breeding biology of the Roller on Fårö (1955, *Vår Fågelvärld*, 14: 21-45). The latter noted that the male fed the female from the time of the first egg until the clutch of two to five eggs was complete, but that true incubation did not begin until the completion of the clutch; he gave an incubation period of 17-18 days and a fledging period of 25-30 (cf. *The Handbook*). He found that both sexes incubated, but that the female took much the greater share. When the eggs were hatching, the male again collected all the food and passed it to the female in the hole. The number of feeds varied from two to twelve per hour according to the weather. Some of these points are of interest in the light of Mr. England's observations below.

Most of the other work on this species has been concerned with food analyses, the most important studies being those of J. Szijj (1958, *Bonn. Zool. Beitr.*, 9: 24-39) and B. Klausnitzer (1960, *Abb. Naturk. Mus. Görlitz*, 36: 103-109).
I. J. F.-L.

The nest at which plates 9-11 were taken was one of a small colony situated some 70 miles north of Madrid in 150-200 acres of open-canopy forest, the trees in which are almost exclusively *Pinus pinaster*. This comparatively small area of woodland is part of a pine forest of

very considerable size, though separated from it and almost entirely surrounded by open fields. The trees are grown and tapped for their resin, and this industry has had a great effect on the ecology of the forest because of the scarring of the timber involved (plate 11b). The scar, of course, grows up with the tree (plate 11a) and greatly facilitates nest-boring by Green Woodpeckers (*Picus viridis*). This in turn provides an unusually large number of nesting sites for hole-nesting species, and this small section, which at first appeared to be a rather 'barren' wood, had in fact a large and varied bird population. The old woodpeckers' holes were occupied by Rollers (*Coracias garrulus*), Hoopoes (*Upupa epops*), Rock Sparrows (*Petronia petronia*) and four species of tits, and the crevices at the edges of the scars made excellent places for Short-toed Treecreepers (*Certhia brachydactyla*) to nest in.

So far as it was possible to tell, at least six pairs of Rollers were nesting in this part of the forest in 1961 and three occupied nests were found, all in old Green Woodpeckers' holes, at nine, twelve and 30-40 feet from the ground. The first two were in the tops of scars (as were nearly all woodpeckers' holes in the area), but the third was in the more usual position underneath a large branch. Although the two holes which we examined closely were rather larger than as originally bored by the woodpeckers, the Rollers found them a very tight fit and while I was in the hide one of the birds became jammed in the hole four times (plate 10a). On one occasion the struggle was so desperate and so protracted that before eventually freeing itself the bird hung for some moments completely exhausted (plate 10b). While it was caught, the bird would have been an easy victim for a bird of prey and so there may just possibly be some significance in the fact that we found the complete skeleton of a Roller beneath a nest of the Honey Buzzard (*Pernis apivorus*) not far away.

Although Rollers were comparatively numerous in the area they were for the most part remarkably inconspicuous and, especially during one of their sometimes very long periods of absence from the nest, one might easily have overlooked them altogether. In fact, it was purely by chance that the colony was found because a single bird was seen from a car to fly across the road. Our first visit actually proved to be the only occasion when the presence of the birds was obvious. A kind of nuptial chase was in progress and sometimes as many as six Rollers could be seen pursuing one another and wheeling among the trees—a remarkably beautiful and quite unforgettable sight. For several hours this activity went on intermittently, the chasing being occasionally interrupted by birds breaking away and visiting some of the numerous woodpecker holes. Now and again two birds would start a 'rattling' duet, though whether they were pairs or two

rival males it was impossible to tell. It is interesting that none of the holes seen to be visited during this display was eventually used for breeding, and the significance of it all is by no means clear. At first it was assumed that the birds had only recently arrived and were pairing and staking out claims to nesting sites. This proved to be quite wrong, however, because two days later a nest was found containing young and, as mentioned above, two more nests to which food was being carried were soon located.

The site chosen for photography contained small young on 10th June, though it is possible that not all the eggs had yet hatched. At this time one parent (presumed to be the female) spent long periods in the hole, but the other bird was not seen to feed her there nor even to approach the hole while she was in it. When she emerged, a period of intense feeding activity by both parents would normally ensue, with visits every few minutes; the only exceptions to this were during cold or drizzly weather, when the feeding rate dropped very noticeably. Later, when the young were left unattended except during feeding, this alternation of frequent feeding and complete absence of the parents for very long periods, sometimes for well over an hour, continued.

The young were fed mainly on large grasshoppers and cockchafers, though bees were noted and once the prey looked suspiciously like a naked young bird. However, the other birds of the area did not appear to regard the Rollers as enemies, nor did they utter alarm notes when they approached.

On one occasion one of the birds brought a roundish white object, which looked like a small egg, and sat holding it in the bill on a perch near the nest. It did not enter with it and eventually dropped it; it fell with a marked thud, thereby showing that it was not an egg. This was later to prove interesting because, when the contents of the hole were removed for examination, they were found to consist mainly of a mixture of powdered rotten wood and the remains of cockchafers, but also to include a number of small stones which must almost certainly have been carried there by the birds.

By 30th June the four young were coming up to the hole to be fed, their querulous cries being audible at a considerable distance. On 2nd July they were removed to be hand-reared (and they are now in the London Zoo). The difference in their ages was as marked as in many species of owls and parrots, and while the oldest was well feathered the youngest was completely naked on the under-parts and on most of the head and had no tail at all. The impression was of more than one day's difference between each and I would suggest that in this particular case incubation began with the laying of the first egg, with two-day intervals between egg-laying thereafter.

The birds were kept in a dark box on a layer of powdered peat of roughly the same consistency as was found on the bottom of the hole. Their habits in this 'nest' were most interesting, especially their rota of feeding and the method of nest sanitation. When the lid of the box was raised, all, unless one or more had been recently fed, would raise their heads and call vociferously for food. (Initially only the two oldest could stand.) Immediately one would turn on the others and peck viciously at their heads, appearing to aim especially at the eyes. They did not retaliate, but hastened to burrow their heads under each others' bodies, leaving one bird dominant and unchallenged to receive the expected food. If during feeding one of the others raised its head it was heartily assaulted and at once hid again.

When the feeder was gorged—and it might be added that these young Rollers would accept up to fifteen mealworms at a time—it would sink back and usually defaecate. At once another bird would rise to demand food, while the first one tried to find a place to push its head underneath. This was signal for a sort of general post, three of the youngsters struggling to get their heads tucked in (looking remarkably like a rucker scrum) while the fourth lost no opportunity of getting in a sharp jab if a head appeared. This scuffling, being achieved by much backward pushing with the feet, always raised a cloud of the nest dust and effectively mopped up the somewhat fluid faeces. The only exception to this routine was when feeding had been abnormally delayed. Thus the first feed in the morning induced a free-for-all during which a fight determined which should be fed first. Two points especially impressed me. First, it was noticeable that the youngest bird seemed to have little difficulty in subduing his much larger 'big brother' when his turn came; in other words, the urge to burrow the head when replete was very strong and, so far as I could see, was not dependent upon the size or strength of the bird. Second, it appeared little short of a miracle that all four survived with the sight of both eyes unimpaired.

They continued to call for food for a very long time after being strong on the wing, though they also began occasionally to use the adult's rattling call shortly after 'leaving the nest'.

I have to express my gratitude to Mr. John Yealland, Curator of Birds, for allowing these Rollers to be deposited at the London Zoological Gardens and for looking after them for me, and to Dr. Geoffrey Beven, who was with me in Spain, for access to his notes made on the spot.

M. D. ENGLAND

Notes

Solitary Sandpiper in Nottinghamshire.—During the period 24th-27th August 1962 a strange wader was glimpsed at Burton Meadows, on the Nottingham Sewage Farm, by A. R. Johnson, P. M. Hope and W. Priestley. Only incomplete details were noted, but it was obvious that the bird was something out of the ordinary. On the 28th I was able to spend over two hours studying it and, as a result, to identify it as a Solitary Sandpiper (*Tringa solitaria*). Since it remained in the area for several days after that, it was seen by over 25 observers altogether and was eventually caught, ringed and photographed by A.R.J. with H. Barlow. It was last seen on 2nd September. The following description is from the notes of several observers, including those mentioned above:

The crown and nape were patterned with white and dark olive-brown. At close quarters, through a telescope, the back and rump were a complicated pattern of brown, olive-brown, silver-grey and white; in the hand, this pattern was seen to be formed by variable edgings to the feathers. The central portion of the upper tail was dark brown, while the outer feathers were white variably marked with spots and bars of dark brown. The chin was white, but the throat was flecked and finely marked with buff and brown. This delicate patterning continued from the throat down the sides of the breast towards the flanks. The centre of the chest, breast, belly and vent area were white. The under tail-coverts were white with irregular bars of dark brown. The upper wing-coverts carried the patterning of the back, but the primaries were dark brown. Under the wing the primaries, the secondary coverts and the point of the carpal joint were dark brown. The rest of the under wing-coverts were dark brown edged white. The bill was slender with a slight suggestion of a down-curve at the tip. Bases of both mandibles were dull green merging into black tips; the eyes were dark brown and each was edged by a prominent white ring; the legs and feet were a dull yellowish-green. Measurements (recorded by A.R.J.): wing 130 mm., tail 53 mm., tarsus 30 mm., bill 30 mm.

The first impression in flight was of a Wood Sandpiper (*T. glareola*) without the conspicuous rump. The dark central portion of the tail was an easy identification mark, which, supported by the voice, proclaimed the bird as something special. Three calls were used and the most frequent was a thin *twik* or *pwik*. Sometimes this note was doubled into *whit-twik* or *twit-wit*. The third call was more musical, or liquid, and was recorded as *kuleet kuleet*.

The Solitary Sandpiper seems to be aptly named, if this bird was typical of the species. Although there were times when it fed with other waders, it clearly preferred to be alone. It was rather tame and would remain at the approach of an observer even when other waders had departed in a flurry of alarm. It would tolerate a watcher for long spells and then, for no apparent reason, would suddenly utter a sharp *pwik* and take flight. Its flight was unhurried, buoyant and

slightly fluttery. It had a habit of rising, circling and then setting off on a seemingly chosen course, only to check suddenly and drop down to feed again. It became less tame with the passing of time, perhaps because it was regaining condition and normal activity.

When feeding, it was equally at home on a mud patch or in water up to its belly. It picked up insects deftly, but there was nothing feverish in this activity. Several observers remarked on its habit of closing the nictitating membrane of its eye when immersing its bill, the result being a peculiar, bulging, white-eyed appearance. As it fed or stood, the white ring round its eye was a noticeable characteristic. When slightly alarmed, it would give an occasional bob.

There were occasions during its stay when it left Burton Meadows and flew off along the Trent Valley to another, unknown, feeding area. For this longer journey it would reach a height just above the electric power pylons and, when distance had reduced its size, its method of flight was reminiscent of a migrating Skylark (*Alauda arvensis*).

A. DOBBS

[With the rejection of the four Solitary Sandpipers among the Hastings Rarities, this is now only the seventh British record of this North American species.—EDS.]

Stilt Sandpiper in Sussex.—A Stilt Sandpiper (*Micropalama himantopus*) was present at Chichester Gravel Pits, Sussex, from 1st to 7th September 1962. It was found by C.J.M. at 05.00 hours GMT on the 1st and he saw it twice more that day. Realising that the species was totally unknown to him and lacking identification books, he thought it must be a Marsh Sandpiper (*Tringa stagnatilis*). It was next seen during the 2nd by R. E. Goddard, C.J.M., T. E. Palmer and M. Shrubbs. The last-named, who saw the bird after the other observers, realised that it was not a Marsh Sandpiper and identified it as a Stilt Sandpiper. Meanwhile, R.E.G. and T.E.P. had informed members of the Selsey Bill Observatory and the following watched the bird that afternoon: M. Bryant, M.J.C., M. J. Cowlard, K. D. Edwards, M. A. Jennings, A. A. K. Lancaster, M. J. McVail, J. G. Sanders, A.B.S., and E. T. Welland. During the next five days the bird was seen by a number of observers including C. G. des Forges, D. D. Harber, M. H. Port and J. T. R. Sharrock. All agreed with the identification.

During the time it was observed the Stilt Sandpiper showed a preference for a sand-covered gravel pit some four acres in extent and dotted with small shallow pools. It nearly always kept to the water when feeding and sometimes waded quite deeply. When it was feeding, its neck was withdrawn and it had rather a dumpy look; usually it made perpendicular probing actions with its bill held vertically, but at times it fed more like a *Tringa*.

The bird was relatively tame and it was normally possible to approach it within thirty yards, or even closer by using cover. When nervous it would at times stretch out its neck, holding neck and body parallel to the ground, and this gave it rather a top heavy look. At other times it would draw itself up to its full height and greatly extend its neck so that it appeared long and slender. In this upright stance it would run from one pool to another, looking very alert. When not alarmed it moved rather more deliberately. Once it was alarmed when wading in shallow water and crouched as though floating; on another occasion it crouched flat on the sand. On landing, it often, although not always, held its wings vertically above its back for a second or two before folding them.

In shape and attitude it was normally suggestive of a Spotted Redshank (*T. erythropus*) except that the legs were obviously extremely long. In flight the shape, pattern and coloration recalled a Wood Sandpiper (*T. glareola*) although the whole bird appeared larger and longer-winged than that species. At rest, from a distance, the combination of grey back, dark wings, pale grey head and neck, and whitish under-parts made a pattern somewhat reminiscent of that of a Green-shank (*T. nebularia*).

Two other species of wader present for direct comparison were Common Sandpiper (*T. hypoleucos*) and Green Sandpiper (*T. ochropus*). In direct comparison with the latter the Stilt Sandpiper was an outline larger and slightly longer in the body. Its legs were longer than those of any similar sized wader known to the observers and in flight its feet projected well beyond its tail. Its bill was about one and a half times the length of its head, thick at the base but tapering and slightly decurved at the tip. Even the thinnest part of the bill was thicker than the tarsus, but several observers (including the undersigned) did not think it appeared as heavy as depicted in the illustrations in *The Popular Handbook of Rarer British Birds* (plate 15) and *British Birds* (48: plate 32).

The wing-tips extended a short way beyond the tail. A puzzling feature was the fact that the tip of the right-hand wing was tinged bright chestnut, and that of the left-hand wing very obscurely so. This did not show in flight, but could be seen when the wings were raised on landing; it then seemed to be confined to the tips of one or two of the primaries. A similarly coloured spot of chestnut was also noted on the bird's breast by various observers. It was suggested at the time that some form of staining or dye might have been used to mark this individual, Dr. C. Suffern being of the opinion that the colour exactly matched that of mercurochrome. However, one would have expected the bird to have carried a ring as well if that were the case, and enquiries through Chandler S. Robbins (U.S. Fish & Wildlife

Service) and F. H. Schultz (Canadian Wildlife Service) have failed to reveal any records of Stilt Sandpipers being colour-marked in North America.

The following plumage details have been compiled from field notes dictated to A.B.S. by nine observers on the 1st and from notes supplied by others independently:

Upper-parts: head light grey; crown darker and finely streaked, with a prominent white superciliary from base of bill to short way behind eye (slightly more noticeable on right-hand side of head than on left); lores slightly darker than rest of face, this colour extending to just behind eye (C.J.M.) with effect of darkish line through eye (D.D.H.); nape and hind neck uniform grey with very fine striations; mantle, back and scapulars mainly uniform pale grey (sometimes slightly bluish) with a few prominent black feathers (one or two of the scapulars appeared to be wholly black). *Wings:* basically grey, coverts with more patterning than rest of upper-parts and some feathers with paler edgings; tertiaries and possibly some secondaries appeared brownish; in the closed wing the primaries appeared dark grey (almost black); tips of primaries on right wing, and very obscurely on left wing, tinged bright chestnut. *Under-parts:* generally whitish; sides of breast and neck finely streaked with grey; sides of throat darker than centre; upper breast darker than lower breast (giving the effect of a slight pectoral band without a distinct boundary, this being more marked at sides than centre); small spot of chestnut, similar in colour to wing-tips, on lower right-hand side of breast; a few short greyish-brown bars on belly and rather more on flanks, giving slightly barred effect (M.J.C. noted one almost complete but indistinct bar round the belly just in front of the legs); underwing pale grey with some barring on underside of flight feathers. *Soft parts:* eye dark; bill black; legs in sunlight greenish yellow, feet yellower (with no sunlight the legs appeared much darker and in strong sunlight they seemed pale greenish-yellow). *Flight:* wings uniform grey (secondaries paler—J.T.R.S.); rump dirty white (with some darker speckling—D.D.H.) (white confined to lower rump—M.J.C.); base of tail similar; remainder of tail closely barred. It was particularly noted that the white did not extend up the back.

Two days after seeing the bird, the three undersigned examined skins at the British Museum (Natural History) and confirmed the identification. None of the skins examined exactly matched it, but several showed upper- or under-parts very similar. It was evident from a comparison of examples obtained in autumn that there is a considerable variety of transitional plumages.

This is the first record for Sussex of this North American species, and the second for the British Isles. The only other was one at Spurn, Yorkshire, from 31st August to 4th September 1954 (*Brit. Birds*, 48: 18-20, plate 32).

M. J. CARTER, C. J. MEAD and A. B. SHELDON

Rock Thrush on St. Kilda.—On 17th June 1962, at about 2.30 p.m., we were crossing the steep rocky slopes on the Gleann Mor side of the Mullach Bi ridge on St. Kilda, Outer Hebrides. Malcolm Smith was walking about thirty yards ahead of us and suddenly he flushed

a thrush-sized bird which flew back below us. We were at once struck by its warm rusty-orange tail. The bird alighted on a large boulder and then flew to a second rock. It was fairly shy and at one time disappeared beneath the rocks. Finally, it emerged and again flew low past us, giving excellent views of its tail, before disappearing over the ridge. It was not seen again.

We had it under observation for a total of about two minutes and we recorded the following notes at the time: a fairly chunky bird about the size of a Song Thrush (*Turdus philomelos*) with a dark, thrush-like bill; top of head and nape slate-grey becoming browner and mottled on back and wings; lores and chin lighter in colour; underparts deep buff with fairly numerous heavy transverse flecks; tail rusty-orange in flight, but no colour noted at rest. From this description we have no doubt that the bird was a female Rock Thrush (*Monticola saxatilis*). The fact that we were not struck by the colour of the tail when the bird was at rest, even though we did have a clear view from above, suggests that the central tail feathers (which would then be on top) may well have been darker than the outer ones, but we did not specifically note this feature. In flight the bird could easily have been mistaken for a small thrush except for the eye-catching tail which then appeared entirely rusty-orange.

Neither of us has any previous experience of this species but W.E.W. is familiar with both sexes of Blue Rock Thrush (*M. solitarius*) from several places in the Mediterranean area.

J. MORTON BOYD and W. E. WATERS

[In connection with this record, Mr. R. Wagstaffe examined skins of all species of *Monticola* and was satisfied that the description fitted only *M. saxatilis*. With the rejection of the Hastings Rarities, this is now only the seventh British record of this Mediterranean species. It is also the first record for twenty-six years.—EDS.]

Reviews

The Birds of the British Isles. Volume XI: Glareolidae, Otididae, Burhinidae, Gruidae, Laridae. By D. A. Bannerman; illustrated by G. E. Lodge. Oliver and Boyd, Edinburgh and London, 1962. xxv+368 pages; 32 coloured plates and 23 text figures. 63s.

The eleventh volume of his great work sees Dr. Bannerman in sight of home, though of the Laridae the skuas are held over to Volume XII. Thirty-six species are covered: the Black-winged Pratincole retains its status as *Glareola nordmanni*; the Slender-billed Gull scrapes in as an addendum, not without some complaint both at the tardiness of its publication in this journal and at its acceptance on one sight record;

and the Royal Tern is rejected on the grounds that there is no proof the single specimen died in British or Irish waters. The 35 birds fully treated receive an average of ten pages each; if we divide them into the 19 rarer and 16 more common (the latter being the twelve regular breeders, together with Black Tern and Little, Glaucous and Iceland Gulls), the first group average nine, the second eleven pages each. But the longest essay of all is given to Sabine's Gull—19 pages, 18 of them provided by G. M. Sutton; this is three more pages than the Herring Gull and its races receive.

As in the previous volumes, full use is made of 'guest contributors'. Besides Dr. Sutton's comprehensive account, there are essays by J. M. Cullen and N. Tinbergen as introductions to the behaviour and displays of British terns and gulls respectively; both are model summaries, illustrated by text figures. J. C. Coulson has supplied the entire essay on the Kittiwake, and the other guests who have written specially sub-headed sections are H. M. S. Blair ('Pratincoles in Andalusia', 'The Little Gull in Finno-Scandinavia', 'On erythrism amongst gulls' eggs from Norway'), J. M. Cullen again ('Breeding behaviour of the Sandwich Tern'), L. Horvath ('White-winged Tern in Hungary'), T. E. Randall ('Breeding habits of Bonaparte's Gull'), R. Spencer ('Migrations of the Lesser Black-backed Gull') and Sir Landsborough Thomson ('Migration of the Sandwich Tern'). There are also numerous small-type quotations or hitherto unpublished notes covering anything from a quarter to a full page. This form of compilation and the author's wide reading and foreign contacts, especially in eastern Europe, enable him to present extended summaries of a great deal of recent research. Controversial points inevitably arise, but he does not usually pass judgement himself. He says, in effect, 'Here is a massive harvest which I have gathered in from all the world, and it is for you, my reader, to sift the wheat from the chaff'. There is some justification for this attitude now that ornithology embraces so many sub-disciplines in which no one man can be an expert.

But when Dr. Bannerman feels strongly on points of taxonomy and nomenclature he is not slow to enter the lists; for example, in the essay on the Herring Gull he separates the British or North Sea population as *L. a. argentus* Brehm and strikes out *L. a. benglimi*, resting on two records from the east of Scotland, altogether. He also dismisses the Irish sight record of *L. glaucoides kumljeni*, citing strong American support for his view; and he tentatively suggests 'Greenland Gull' as a much more appropriate English name for the species than 'Iceland Gull'. It is in this essay that he repeats his dislike of accepting any species or form for the first time on a sight record alone. I share his feelings about this dilemma, which results from the praiseworthy

encouragement of field identification as against collecting, combined with an exaggerated reverence for the 'British List'. Its solution lies along the road suggested by the Council of the B.O.U. in their tentative plans for a new list (*Ibis*, 105: 142): 'that species or subspecies which had not been recorded with a certain regularity (to be agreed upon) should be relegated to an appendix'.

The discursive literary treatment adopted throughout has delighted reviewers of previous volumes, and it certainly made appropriately soothing reading during the recent wintry spell. Dr. Bannerman never forces one word to do the work where two or three will preserve the generous flow; and if you are bruised by the jargon of the journals, here is balm indeed. But the balm may have a concealing quality. It is possible, for example, to read through the essays on the gulls and sit back pleasantly satiated without realising that practically nothing has been said about one of the more remarkable phenomena of recent years: the inland wintering and roosting by Herring, Common and Black-headed Gulls, though R. A. O. Hickling reported on his first enquiry for the B.T.O. in 1954. The rigid note-form used by the authors of *The Handbook* tells you pretty clearly where the gaps are; Dr. Bannerman's technique, apparently compendious, may glide you over them without a bump.

I find it hard to write about the illustrations because as a boy I spent many hours in George Lodge's studio and can summon up some of his great canvases simply by shutting my eyes. But his favourites, as everyone knows, were the birds of prey and the game birds. It is too easy a criticism to say that he made all other birds conform to these groups, but in this volume he seems to have been at his best with the bustards, which are not unlike game birds, and I sense that he had certain difficulty in painting the heads of some other species, especially the terns. Just as we identify our fellow men by their faces, so the artist must get the proportions of head and bill right if we are to recognise his birds as those we know in the field. It might also be argued that Lodge made no more attempt than Thorburn to give us the range of plumages needed for field identification, but I do not think that was his aim, any more than it is Dr. Bannerman's in the text descriptions. We now have our field guides specially designed for the job.

Some reviewers wax fat on criticising a book for not being what it never set out to be; I trust I have avoided that pitfall. I do not think either illustrator or author intended to replace *The Handbook* any more than the field guides. George Lodge painted spaciously as he had always painted and David Bannerman has written at length and quoted at length about those aspects of our birds which interest him and about which he believes his many devoted readers should be informed.

BRUCE CAMPBELL

Portrait of a River. By Guy Mountfort: illustrated by Eric Hosking. Hutchinson, London, 1962. 207 pages; coloured frontispiece and III monochrome photographs. 35s.

Guy Mountfort occupies a unique position through his enthusiasm for organising amateur expeditions to parts of Europe whose ornithology is little known outside the countries concerned. The attention focused in this way on areas that are in imminent danger of alterations to habitats, and so of drastic changes in their avifauna, has already stimulated active and successful preservation in the case of the Coto Doñana and the *marismas* of the Guadalquivir (the subject of a previous book, *Portrait of a Wilderness*).

Portrait of a River deals with visits to Bulgaria and Hungary, and no small tribute is due to the author's persistence for ever obtaining permission to make the expeditions. That once on the ground the expeditions received such excellent co-operation from local ornithologists and zoologists is one of the more heartening features of the story.

While both countries have quite extensive legislation protecting their birds, there are as everywhere many factors which frustrate it. Great Bustards suffer from egg collectors, the sale of eggs to zoos, mammalian predators and the ploughing up of uncultivated land with the use of combine harvesters before the breeding cycle is complete. The nests of Dalmatian Pelicans with young were burnt by fishermen, although they were in a national wildlife reserve, and after this no pelicans were found breeding in Bulgaria in that year. All species which nest in reeds are suffering from the commercial use of reeds for making cellulose, and there is obviously a very great need for large areas of many types of biotope to be set aside as reserves for wild life.

A review of the birds of prey is similarly disturbing, for while the most serious losses were early in the century, the more recent putting down of poisoned bait for Wolves has inevitably hastened the decline of many species of eagles and vultures. Only the Lesser Spotted, Booted and Short-toed Eagles appear to be holding their own. The effects of this bait campaign may well lead to an increase of small rodents in these countries, and if a similar practice is extended to the rodents the smaller birds of prey may soon be affected as well. Nowhere, however, is there any mention of the toxic chemicals problem and one wonders if it exists in Bulgaria and Hungary.

Species which have increased or extended their range in Bulgaria include Hawfinch, Icterine and Olive-tree Warblers, Pied Wheatear, Black-headed and Cirl Buntings, Squacco Heron, Black-winged Stilt and Avocet. The Whinchat has had a very marked decline.

In reading this book one is tempted at times to wish that it was not so much a personal record. There is a hint of a military operation in

the appointments and stern rebukes, but there is very little indeed about any of the interesting observations which some of the 'task forces' must have made. Reading the list of members it is obvious that they would not have wasted their time, and one could wish that the photographic successes and frustrations did not so dominate the story.

If this is a minor blemish, the photography of Eric Hosking richly deserves the superlatives that it always attracts. One is so used to enthusing over his results that there is little new to say, but the standard is, as always, incredibly high and the subjects include such little photographed species as Lesser Spotted Eagle, Great White Heron and Little Crake.

It only remains to add that much of the background information on peasant customs and living conditions is of great interest and the description of the country itself is well done. R. C. HOMES

News and comment

Edited by Raymond Cordero

The B.T.O.'s new policy.—With the December issue of *Bird Study* went a message from the B.T.O.'s President, C. A. Norris, bringing to the notice of all the membership the Trust's new policy and the impending centralisation of its activities at Beech Grove, Tring.

The new policy is: 'The study of the bird populations of the British Isles in respect of distribution, numbers and movements and of the ecological factors, including those of human origin, affecting them. It shall be one of the principal objects of this policy to answer the following question: In what ways is contemporary man affecting wild birds and, in particular, how are changes in forestry, agricultural and horticultural practice influencing bird populations?'

The President went on to say in his message that: 'With wild bird life under devastating attack from so many quarters, research into the factors basic to effective long-term conservation must be our task. Whilst the protection of birds is not the direct concern of the Trust, the production of data devoid of prejudice and of unquestionable reliability, is something that we can do, something that is worth doing and a task for which we have special qualifications.'

Toxic chemicals.—One of the most serious threats to wild life at present is the growing use of toxic chemicals on the land, a subject recently highlighted in this journal by contributions from Dr. N. W. Moore and Dr. J. S. Ash in October and November 1962. Anyone who is still not fully convinced of the extent and nature of this threat should read two articles in the December issue of *Bird Study*, one entitled 'Chlorinated hydrocarbon residues in the egg of a Peregrine Falcon (*Falco peregrinus*) from Perthshire' by Dr. N. W. Moore and Dr. D. A. Ratcliffe, and the other 'Purposes of chemicals used in agriculture: a threat to wild life' compiled by W. D. Campbell.

Coto Doñana Nature Reserve.—The many ornithologists who have directly or indirectly come under the spell of the Spanish Coto Doñana and its adjoining

marismas will be delighted by the news that the best part of this unique and badly threatened area has been saved at the eleventh hour. Just what this means to European ornithology can be seen by looking back at the illustrated papers on 'The Camargue and the Coto Doñana' by E. M. Nicholson, I. J. Ferguson-Lees and P. A. D. Hollom (*Brit. Birds*, 50: 497-519) and 'An ecological sketch of the Coto Doñana' by Dr. J. A. Valverde (*Brit. Birds*, 51: 1-23). It is to Dr. Valverde's tenacity, skill and resolution that this triumph is mainly due. In addition to documenting the riches of the area, *British Birds* can claim a much earlier link because the late H. F. Witherby was deeply influenced by getting to know its birds as a young man at the turn of the century.

It is understood that the first section acquired as a nature reserve is that extending north from the bank of the Guadalquivir and east of the Caño de Brenes, an area of about 16,000 acres called Las Nuevas. The second stretch of *marismas* is the much-photographed Hinojos, east of the Palacio de Doñana, which, with a large area of the adjoining duneland and fresh-water pools, brings the whole acquisition up to around 60 square miles. The cost, running well into six figures in sterling, has been a formidable obstacle which could never have been surmounted but for the lately-founded World Wildlife Fund, whose readiness to face the responsibility persuaded the Spanish Government to display an admirable and matching generosity. At the same time a single British donor has given £12,000. Nevertheless, a large debt remains to be liquidated. May we hope that a great many of our readers will lose no time in joining in this happy achievement by sending all they can spare towards the cost to the Hon. Treasurer, The World Wildlife Fund, 2 Caxton Street, London, S.W.1, marking the envelope 'B.O.U. Coto Doñana Appeal'.

Sussex Ornithological Society.—Sussex is a good county for bird watching, has produced several notable ornithologists, can boast of at least two county histories (not to mention A. E. Knox's *Ornithological Rambles* as early as the 1840's), and has, according to *Bird Notes*, a higher proportion of membership of the Royal Society for the Protection of Birds in relation to population than any other county. Yet until last year it had no county-wide ornithological society. There were, however, several local organisations, one of which, at Shoreham, was notably active with its own sanctuary and Heligoland trap, and it was several members of this which formed the Sussex Ornithological Society. One of the first jobs of the new organisation has been a breeding birds survey for the county, in which many of the 330 members took part. The society is supporting the Sussex Naturalists' Trust in its efforts to have Pagham Harbour declared a local nature reserve.

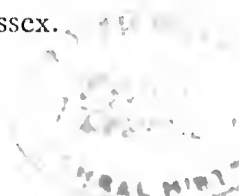
The society will in future be responsible for the *Sussex Bird Report*, the recorder for the county continuing to be D. D. Harber.

Calf of Man Bird Observatory.—The bird observatory at the Calf of Man has been officially recognised by the British Trust for Ornithology.

'Recent reports' and the Rarities Committee

We regret the continued irregularity of the 'Recent reports' feature. There was a considerable outcry from readers when it was suggested last October (*Brit. Birds*, 55: 459) that it was not sufficiently appreciated to justify the work involved, and we hope that it will soon be possible for it to appear monthly as before.

We take this opportunity of asking that detailed records of rarities should in future be sent direct to D. D. Harber, the new Hon. Secretary of the Rarities Committee. His address is 1 Gorringe Road, Eastbourne, Sussex.



PURCHASED

Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions accepted are sent to authors before publication. After publication 25 separates of papers are sent free to authors (two for more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet only. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of any publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital initials for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are those used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the English name. Subspecific names should not be used except where they are relevant to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and no other, except in tables where they may be abbreviated to '1st Jan.', 'Jan. 1st', or even 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise involve much unnecessary work. These should take the following form:

COCKER, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

ATHERBY, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34.

Various other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in the style used in this issue. They must either fit into the width of a page, or be designed to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this must be light blue or very pale grey. It is always most important to consider how a drawing will fit into the page. The neat insertion of lettering, numbers, arrows, etc., is perhaps the most difficult part of indian ink drawing and, unless he had considerable experience of this kind of work, an author should seek the help of a skilled draughtsman.

3rd Edition of
**The Popular Handbook
of British Birds**

P. A. D. HOLLOM

A single-volume work, authoritative and comprehensive, based on Witherby's *Handbook*. It lays special emphasis on field recognition, contains the latest information on distribution and gives detailed accounts of habits and breeding. These features, together with the coloured plates, enable the reader not only to identify his bird, but also to discover much about its character, environment and way of life. All breeding species, regular winter visitors, passage migrants and many vagrants are included.

EVERY BIRD IN COLOUR

Separate plumages of males, females and young birds are shown. 330 species described.

Eggs of all breeding species reproduced natural size, mostly in colour.

Plates of flight patterns of many species.

Over 100 drawings in the text, specially prepared for this edition, help resolve many identification difficulties.

Clearly and comprehensively indexed and amply cross-referenced in the text.

48/- net

H. F. & G. WITHERBY LTD

5 Warwick Court, London, W.C.1

and Lecture

British Birds

Principal Contents

Behaviour of Dippers at the nest during a flood
James Alder

The behaviour of the Shag
Barbara K. Snow
(Part 1)
(with eight plates)

Special Review: Handbook of North American Birds
I. C. T. Nisbet

Notes

Letters

News and comment

Recent reports

Three
Shillings



March
1963

APR 1963
PURCHASED



British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by

Stanley Cramp I. J. Ferguson-Lees
P. A. D. Hollom E. M. Nicholson

Photographic Editor: Eric Hosking

Hon. Editors: W. B. Alexander N. F. Ticehurst

Editorial Address: 30 St. Leonard's Avenue, Bedford

Contents of Volume 56, Number 3, March 1963

	<i>Page</i>
Behaviour of Dippers at the nest during a flood. By James Alder	73
The behaviour of the Shag. By Mrs. David Snow. Part 1 (plates 13-20)	77
Special Review: <i>Handbook of North American Birds. Volume I: Loons through Flamingos.</i> Edited by Ralph S. Palmer. Reviewed by Dr. I. C. T. Nisbet	104
Notes:—	
Variation in leg-colour of Kittiwakes (Jeremy Greenwood)	110
Juvenile-type feathers on adult Blue Tits (Edwin Cohen)	110
Warblers as pollinators in Britain (W. D. Campbell)	111
Pallas's Warbler in Co. Durham (D. G. Bell)	112
Starlings eating putty (Brian E. Slade)	113
Nestling Goldfinch ensnared by nest material (Mr. and Mrs. J. B. Bottomley)	113
Letters:—	
Birds nesting in aircraft (L. P. Alder)	114
White-throated Sparrows in Hampshire (Roy H. Dennis)	114
Some comments on albinism and melanism (C. J. O. Harrison; Bryan L. Sage)	115
News and comment. Edited by Raymond Cordero	117
Recent reports. By I. J. Ferguson-Lees	119

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 5 Warwick Court, London, W.C.1



PURCHASED

British Birds

Vol. 56 No. 3

MARCH 1963



Behaviour of Dippers at the nest during a flood

By James Alder

ON 19TH MAY 1962, after heavy overnight rain, I made the rounds of the Dippers (*Cinclus cinclus*) in an area of Northumberland where I have been closely studying these birds since 1956. The burns were in flood and I feared for the safety of the nests in four adjoining territories, which had been built in unusually low positions that year. The first, perhaps five inches above low water level and to one side of a small waterfall, was safe, for the flood arched over it and merely soaked it with spray; I was later able to prove successful fledging from this nest. The second, on the other hand, had been washed out. It had been wedged in a horizontal cleft in a large rock only about eighteen inches above low water level and the flood was nearly three feet deep at that point; not even the adults were seen.

It was therefore with some misgiving that I approached the third site. The nest there was concealed in a cavern formed by turf overhanging a washed-out clay and boulder bank, and was less than three feet above low water level. Arriving at this site I found the flood washing the overhanging turf so that the cavern was completely hidden. As a result, I had 'written off' the nest and was actually leaving when I saw the male Dipper, a colour-ringed first-year bird, carrying food. He was very excited and alert, and his behaviour was so serious that I waded through the burn (with some difficulty) to hide on the bank overlooking the site.

It was pouring with rain. After about fifteen minutes he reappeared with food, uttering his *zeet* note, and flew to a strong, thick root which served out of the bank about six feet upstream from the nest. He hopped excitedly and then flopped into the strong current which trailed the root to and fro. With remarkable 'seamanship' he swung around

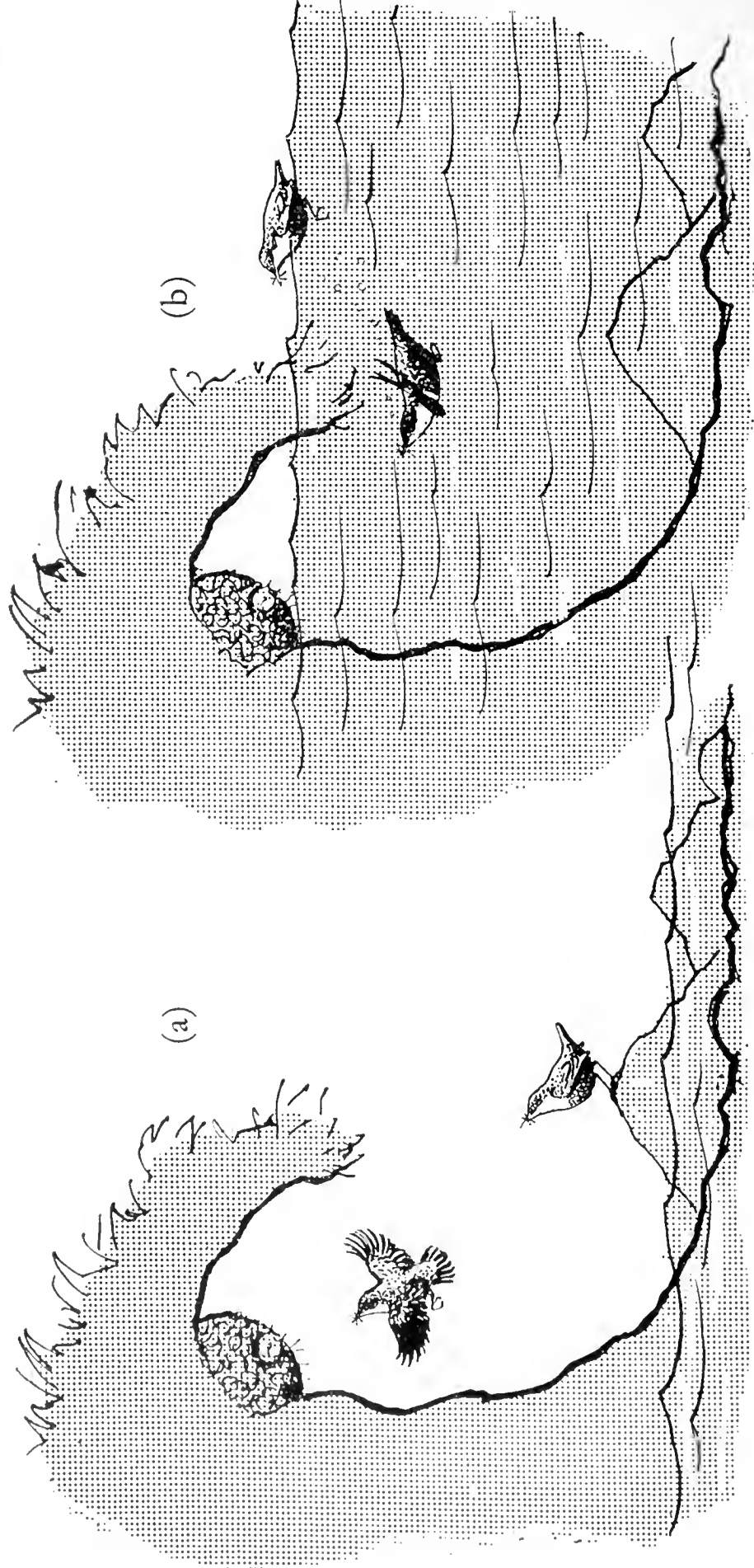


FIG. 1. Diagram to show methods used by a pair of Dippers (*Cinclus cinclus*) in approaching their nest under an overhang (a) in normal conditions and (b) during a flood, Northumberland, May 1962

BEHAVIOUR OF DIPPERS DURING FLOOD

to face the current, paddling madly with wings and feet, and was swept onto the bank. Reaching a point opposite the nest position he flipped underwater and just disappeared! Seconds later, only just visible, he reappeared on the yellow water and was carried like flotsam downstream, then took to wing and came upstream. Next he flew to the bank below me and worked a cascade of fresh water that tumbled down from a drain, flipping wet leaves and probing under little overhanging turfs and protruding stones. He collected various whitish grubs and, carrying these to the root near the nest, repeated his remarkable performance.

I stayed to watch several further repetitions of this behaviour without seeing any sign of the female (also a colour-ringed first-year bird). Meanwhile, the rain had stopped and the water which had lapped the root began to fall below it until a thin, dark gap appeared. Then the male Dipper fluttered to the bank, clung to the trailing grasses and appeared to scramble into the cavern. At that point I hastened on to the fourth site with new hope.

This fourth nest was hidden in a clay and boulder cavern a few feet upstream from a large pool formed by the meeting of two streams. The structure, an unusual one with a long tunnel-like entrance reminiscent of those of some tropical birds, was about eighteen inches above low water level. When I arrived, the water was rushing past the smooth outer wall of the bank and showed no entrance, but the pair of Dippers, a second-year male and a first-year female, both colour-ringed, were present and uttering an excited *zeet* note with food in their beaks! I hid behind a bank. Presently one of the Dippers flew upstream, slowly, with depressed tail, and flopped into the water about six feet above the nest position. It was washed downstream fast, but flipped underwater when opposite the nest. Seconds later it reappeared without food, was washed downstream and quickly took to wing. It was followed immediately by the second Dipper, which repeated the technique. Feeding carried on in this way at regular intervals and, meanwhile, the water level fell.

A narrow dark gap appeared and one Dipper was seen to swing up to this. Afterwards there was a lull in feeding for about fifteen minutes (unfortunately I had no watch) during which time the gap widened to about four inches. Then a Dipper flew up to the site, flopped into the water downstream from the nest and swam along the surface, wings flapping with desperate energy in a kind of 'butterfly stroke'. It was only just able to make headway against the current near the bank and then it disappeared. It must have reached the nest by this method, for seconds later it reappeared without food. The other bird then tried the same method, but was unable to make headway and was swept downstream (this could have been the female,

which is less powerful than the male, weighing approximately 60 gm. against his 70 gm.). The next bird to arrive flew above the site, dropped into the current and was swung easily into the cavern. Again a feeding lull, after which the gap was about six inches.

I have noted on many occasions the ability of Dippers to fly very slowly into roosts and in darkened places, and I now saw this put to good use. One bird, the female I think, flew over the surface, tail well down, and wove slowly into the cavern just clear of the water. After that I examined the nest. The flood had washed its base and various bits of debris clung to it, but it contained four strong, well-feathered young which eventually fledged successfully.

I returned to the third site, where the gap below the turf had grown to about ten inches. The previously missing female flew out and went downstream. Again, the base of the nest had been washed by the flood, but like the other it still contained four young. Although these were only four or five days old and still naked, they were warm and dry and it seemed likely that the female had been brooding them during the flood while the male brought food. Unfortunately this nest later came to grief. A depression in the soft turf immediately overhead was believed to have been made by a cow: soil had fallen into the nest, partly filling it, and the young could not be found.

It is clear that, as the water level fell, the birds varied their methods of getting at the nest. In the face of rising water these methods would presumably be reversed, terminating in the spectacular underwater approach illustrated in fig. 1b on page 74. Dippers are frequently faced with the hazard of flood water, but these observations suggest that they will not readily desert a nest because of such a threat. Most desertions attributable to flood conditions seem to be the result of the adults' inability to find sufficient food for the young.

In 1958, when I examined a nest which had been thoroughly washed by floods and heavily sprayed by an adjacent waterfall, I expected it to be deserted, but the female had her back braced against the entrance with her feet on either side of her clutch. One egg was missing and had been replaced by a piece of driftwood of the same size, but the remainder were unharmed and steaming on their soaked bed of leaves. One young later hatched, but is not known to have survived.

When the above was in proof, I happened across the following in 'Wings underwater' by Tom McHugh, published in 1951 in the magazine of the American Museum of Natural History (Natural History, 60: 160-163): 'An ouzel in Yosemite was a little too fanatic in its love for the bouncing waters. The female placed her nest so close to the river that spring floods eventually covered it on two successive evenings. Undaunted by the soaking, she still succeeded in brooding the eggs and raising four young. Presumably there was an air pocket in the nest during the nightly dunking.' The 'ouzel' referred to is the American Dipper (Cinclus mexicanus).

The behaviour of the Shag

By Barbara K. Snow

(Plates 13-20)

INTRODUCTION

OBSERVATIONS ON the behaviour of the Shag (*Phalacrocorax aristotelis*) were made on Lundy, Bristol Channel, for four years from May 1954 to May 1958. The birds were watched from hides a few feet away and from more distant positions on the cliff without cover. In an earlier paper I dealt with quantitative and ecological aspects of the breeding biology of the species on Lundy (Snow 1960).

The only previous accounts of the breeding and courtship behaviour of the Shag are by Selous (1901, 1905, 1927). He touched on many aspects of behaviour and described a few of the displays. The following study gives fuller descriptions and also makes an attempt to analyse the situations in which the different movements occur. There is also a section on the development of the behaviour of the chick. In Selous's last account he mistakenly attributed much of the male's courtship display to the female (Selous 1927), and this error was quoted by Witherby *et al.* (1940). The sexes of many of the marked birds observed on Lundy were confirmed from weights and measurements.

The term 'sea-rocks' has been used in the present paper in order to condense descriptions. It refers to bare rocks, usually with some flat areas or ridges, situated just above the high-water mark and near to a nesting colony. The rocks slope sufficiently gently for a Shag to hop out of the sea on to them without having to fly. This is of importance to juveniles, who go into the sea before they are able to take off from it. In many respects they are equivalent to the 'clubs' used by Herring Gulls (*Larus argentatus*) (Tinbergen 1953), with an additional use as the place where parents can find and feed their young when they have left the nest.

The breeding population of Shags on Lundy consists of approximately 130 pairs. The birds return to the island in late February and March and leave again in August and September. Some immature birds also return the year before they breed. The observations were therefore made on a population engaged in either courtship or breeding and the behaviour patterns described below are probably entirely related to these activities, as towards the end of the breeding season they become less and less frequent and eventually cease. Thus, a fortnight after the last young have left the nest it is rare to see any

BRITISH BIRDS

behaviour other than self-preening, stretching, yawning and wing-drying. Approximately half to a third of the population are still on the island at this time.

PERSISTENCE OF PAIRS

Ringling showed that some pairs re-mate the following year, but not all. There were only three pairs with both individuals of the pair marked: two of these re-paired the following year and one did not. Fourteen ringed males returned to exactly the same nest-site in the following year and only one male moved its site, its former site having been taken by another bird. The male that had to move paired late, apparently because it lacked a crest early in the season, so was in many ways an exception. There was further, less definite evidence used in identifying some individual males, such as behaviour, size of crest and the appearance of filoplumes on the neck. Observations on these birds also confirmed that adult males re-use their nest-sites of the previous year.

Nine marked females re-nested at the same sites in following years and 13 changed nest-sites. In six of the latter cases the nest-site of the previous year was used, presumably by the former mate. So it is probably safe to conclude that a change in mate is not uncommon.

Each year most of the marked females laid their first egg at approximately the same time in relation to the mean date (table 1). This occurred even when nest-site and mate were changed, and may be a factor in separating former pairs in subsequent years, as young males

Table 1. Laying dates of marked female Shags (*Phalacrocorax aristotelis*) in relation to the yearly average, Lundy, 1955-58

Minus signs indicate days before, and plus signs days after, the mean; *cb* shows a change of nest-site. Most of the clutches were started within a period of about thirty days in each year (Snow 1960). Note that each year most of these females laid their first egg at approximately the same time in relation to the mean date

	1955	1956	1957	1958
♀ 19	- 8	- 9	<i>cb</i> - 5	
♀ 32			+ 6	<i>cb</i> + 6
♀ 38		- 5	<i>cb</i> - 2	
♀ 51	0	<i>cb</i> + 3	<i>cb</i> + 15	
♀ 91	- 16		- 16	- 14
♀ 93	+ 3	+ 5		
♀ 122		+ 5	- 6	
♀ 125			- 3	- 8
♀ 161		- 5	- 2	<i>cb</i> - 6
♀ 180			- 3	<i>cb</i> - 11
Mean date	30th April	2nd May	20th April	26th April

After their first season tend to breed progressively earlier. In 1958, when ♂ 32 separated from ♀ 32, with whom he had mated in 1957, he mated with a female who laid 18 days earlier than ♀ 32. As shown in table 1, ♀ 32 laid on exactly the same date in relation to the average. There was no evidence of a pair bond surviving through the winter to the following spring, since pairs of the previous year engaged in courtship behaviour which appeared no different from that of birds pairing together for the first time. But other things being equal, a male would be more likely to attract his previous mate, as she would know the position of the old nest-site and the way to approach it, and would therefore be bolder in responding to a male displaying there. The elaborate courtship display evolved by the male suggests that females frequently exercise a choice. As the earlier nests are the most successful (Snow 1960), there is selective value in securing a mate early in the season, which would tend to increase sexual competition between.

VOICE OF THE ADULT

The adult Shag has a rather restricted vocal repertoire which is virtually confined to the male, the female being voiceless except for a hissing made with the 'threat-gape' and a clicking made during the greeting ceremony. The voices of the male and female nestlings are indistinguishable until the young bird reaches the age of 35 days or more, when the female begins to lose her voice.

H. Saunders (in Witherby *et al.* 1940) described the male's voice as *kroak-kraik-kroak*. To my ear it lacked the first consonants and I could describe it as a series of similar calls: *ark ark ark . . .* This call is fundamentally aggressive or possessive and apparently directly related to breeding activity as it appears to cease at the end of the breeding season. The call varies in strength according to how far the bill is open. At its loudest, with the bill open approximately 90°, it can be heard in still weather for at least 300 yards.

The male calls in many different situations. He usually calls when approaching the nest or nest-site, both in flight and on foot. This calling is most frequent and persistent early in the season, when he has a nest-site but probably as yet no mate or nest. The call in flight usually starts 100-200 yards from the nest and is uttered at full volume, with beak well open. As he approaches the nest on foot the male also utters the call at full volume each time he makes the 'landing-gape' (page 84). Within a few feet of the nest the call is reduced in volume, as the bird runs on to the nest with the bill half closed. It is not just approaching the nest from a distance which elicits the call, but also approaching from a few feet away. This was demonstrated when an unmated male, doing the courtship display at a prominent position

two or three feet outside his selected nest-site, which was under a rock, frequently ran into the nest making an *ark* call, to emerge silently a minute later and resume the courtship display. Another unmated male showed the same behaviour at two different nest-sites a few yards apart.

A male may call in flight when leaving the nest, but usually only early in the season. One rather different use of the call in flight was observed in early April 1957, when a female flying low over the sea a few hundred yards from a colony was followed by a male, who flew close above her calling and then changed course and flew to the colony and landed. The female also changed course and followed him and landed. Sometimes the male will call when flying in to feed juveniles on the sea-rocks. Throughout the season, when approaching the nest where the female or the young are, the male usually makes a landing-gape and hop accompanied by a call. During copulation the male calls while gripping the back of the female's neck in his bill and on dismounting he calls again with a landing-gape.

The *ark* call is used in all situations where aggressiveness is evoked. At the nest, a full volume call accompanies the threat-gape (page 82); but in an aggressive attack, on land or sea, the bill is only half opened (plate 13), so that the call is considerably reduced and the vowel sound drawn out to an *eark eark* . . .

THE REPERTORY OF SOCIAL DISPLAYS

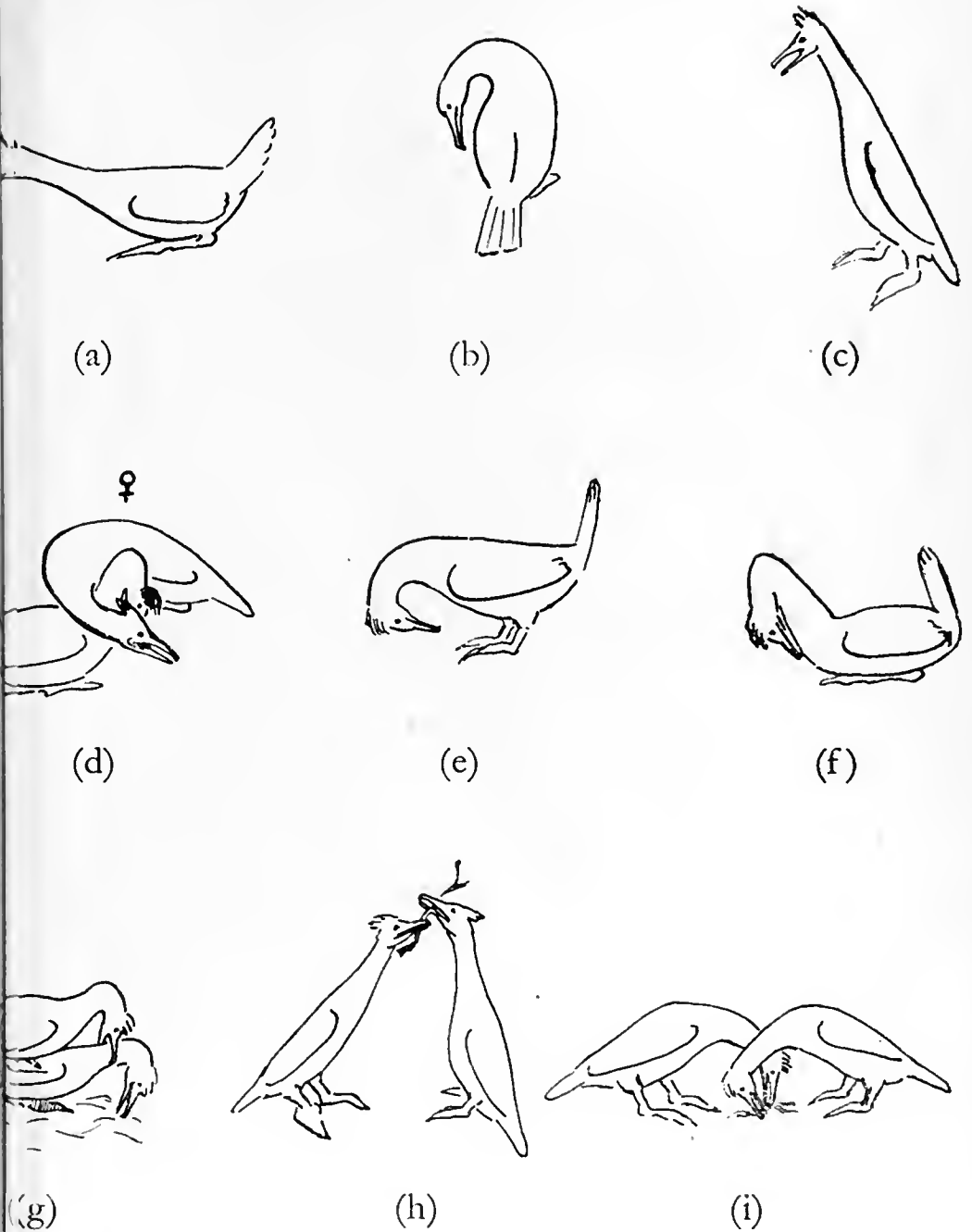
Aggressive and appeasement movements

A most fundamental division in the behaviour of the Shag is between aggressive and conciliatory movements. All aggressive movements and stances incorporate looking directly at, and thereby pointing the bill at, the object of aggression; conversely all those of appeasement, including courtship movements, show a variety of positions of head and neck so as to avoid directly pointing the bill at the object of appeasement. Movements and stances are an important mode of expression in the species because of the paucity of its calls.

Aggressive behaviour can be divided into stationary aggressive behaviour, usually shown by a bird on the nest or nest-site when it is unwilling to move, and mobile aggressive behaviour away from the nest where there is seldom any factor inhibiting movement. The former is performed with equal frequency by both sexes but the latter with far greater frequency by males.

At the lowest intensity of stationary aggressiveness, the bird on the nest or nest-site points its bill at the object of aggression with gular pouch slightly distended, and at the same time makes slight lateral head-shakes without taking its eyes off the intruder. At this stage if the bird is not brooding or incubating it may be in a standing position,

THE BEHAVIOUR OF THE SHAG



Pl. 1. Social displays and courtship of the Shag (*Phalacrocorax aristotelis*)
 (a) Threat-gape (page 82) (b) Submissive posture of juvenile (page 84)
 (c) Upright-run (page 86) (d) Throat-clicking (page 87)
 (e, f) Standing and sitting bows (page 89) (g) Copulation (page 97)
 (h, i) Mutual nest-quivering (page 90)

but with increase of aggression it sits, raises the tail, erects the feathers of the head and neck and stretches the neck right out towards the intruder; lateral head-shakes continue and the bird periodically nibbles the nest-material and makes the lateral nest-building movement with it in the beak (to be termed 'nest-quivering', page 90). This behaviour may be directed at other Shags, Herring Gulls and Razorbills (*Alca torda*), and also at a human intruder some way off.

The highest intensity of stationary aggressive behaviour is that described by Witherby *et al.* (1940) as 'opening and closing of mouth showing yellow interior accompanied by shaking of head up and down'. I use the term 'threat-gape' for this movement. The bird sits on its nest or nest-site and faces the object of aggression with the wings held slightly away from the body and the feathers of the head and neck erect; it then draws the head and neck back over its body with bill closed and suddenly stretches them forward, at the same time opening the beak wide and displaying the yellow gape (fig. 1a). When the neck is stretched out to its full extent the head is quivered laterally and the *arké* call is made by the male and a hissing by the female. The whole movement takes two or three seconds and may be repeated many times. If the situation develops so that the bird is likely to flee (e.g. at the approach of a human intruder) or attack (e.g. at the close approach of an intruding Shag), it will stand at the nest while doing the threat-gape with the body held parallel to the ground. Occasionally the threat-gape may be directed upwards. This was seen when a pair of Herring Gulls and a pair of Shags were nesting within one and a half feet of each other. One of the gulls would hover just overhead calling while the Shag on its nest threat-gaped directly upwards.

An interesting example of the importance of being on the nest when threat-gaping was shown by a pair who were trying to repel another pair starting a new nest near-by. If the male was already on the nest the female would sit on his back and both would threat-gape together; if the female was already on, it would be done with the male on her back.

Occasionally the threat-gape is used away from the nest when a bird does not want to move, for instance during courtship on the sea-rocks, when a male commands the most coveted position at the top of a ridge of rock.

As both eggs and young chicks are brooded on the feet it is important that a parent provoked to aggressive feelings should refrain from leaving the nest hastily or at all. Probably for this reason the aggressive behaviour at the nest incorporates appeasement movements such as nest-quivering, whose function is not to appease the intruder but to inhibit the owner of the nest from further aggressive action

which would involve leaving the nest, by focusing its attention on some neutral object. In the threat-gape, when the head and neck are in the most threatening position, i.e. stretched fully forward, the beak is wide open displaying the gape and not in a position for immediate grappling in fight. Displaying the gape is also used in courtship and appeasement movements, so as the culmination of the threat-gape it may act as an inhibitor to further aggressive action.

Most aggressive behaviour away from the nest differs from that at the nest because it is potentially mobile. In the mobile aggressive posture the wings are held slightly away from the body which is in a horizontal position, the feathers of crest and neck are erect, the head is thrust out towards the object of aggression with the bill partly open and the bird, if male, calls (plate 13). In this position a bird usually advances towards the object of aggression, but sometimes it stands still, in which case the head may be swayed about half an inch either side of a mid-line. The same mobile aggressive position of head and neck is used on the water usually as the aggressor swims to the attack.

Threat displays are generally used to settle disputes, particularly at the nest, where no fights were seen. Occasionally there were brief fights on the sea-rocks or in the sea, but even here when an aggressive bird attacks another it is usual for the latter to retire before they have made contact. When two birds do fight, they peck at each other's beaks. Sometimes one grasps the wing of the other; the bird thus held always tries to escape and the fight is over.

A Shag nesting in an isolated position is aggressive towards another shag at a far greater range than one nesting in a colony. Here a bird is intolerant of neighbouring birds in positions to the side of and above its nest, but shows strong aggressive reactions to a strange bird, either shag, Razorbill or Herring Gull that stands on the usual approach route to the nest. If aggressive feelings have already been aroused they may be transferred to another bird who had not previously excited aggressiveness. For instance, an adult male who had not reared any young was on the sea-rocks preening the head of a juvenile, when a juvenile male, B, hopped by. The adult male turned and pecked at B, and then turned back and pecked at A. Another instance of this type of behaviour was seen during an experiment when a chick was tethered about a yard away from its nest. When it struggled to free itself its father came over and attacked it vigorously, and also pulled at the string, which broke, so that the chick rushed back to its nest; the male then attacked a nearly full grown neighbouring chick who was on its own nest about three yards away. This chick would never normally have excited aggressive feelings.

Third- and fourth-year birds, probably non-breeding, are particularly

aggressive towards juveniles, going four or five yards across the rocks and into the sea to attack them. If the parent of an attacked juvenile is present it will attack the aggressor.

Aggressiveness is aroused amongst the juveniles on the sea-rocks in the following situations. When a juvenile has just been fed it attacks any nearby juveniles. When a very temporary pair-bond has been formed between two juveniles and they are sitting together preening each other, they unite to point their bills aggressively at any other juveniles that come within three or four feet of them. Aggressiveness is shown towards a bird that is particularly hesitant and nervous, such as a juvenile who has just left the nest and is going down towards the sea for the first time. When a juvenile is escaping from an attack in a submissive posture with head down and feathers sleeked, and in its retreat it passes within three or so feet of a group of juveniles, they will usually peck at it.

The only submissive behaviour observed that had no sexual implications was presenting the back of the head to a possible aggressor. This movement is used frequently and most obviously by fledged juveniles on the sea-rocks, who assume it when an adult or another aggressive juvenile hops past (fig. 1b). The lower the position of the head in this submissive gesture the greater its appeasement value, so a juvenile that has not averted attack by presenting the back of its head will then lower it and thereby frequently avert further attack.

A movement that appeared to be the same was used by parents on the sea-rocks. When several juveniles begged from an adult it pecked at strange juveniles but presented the back of its head to its own young. If the young continue to beg after a feed the parent again presents the back of its head.

In contacts between two adults the movement is seldom seen and never during encounters between aggressive strangers. Occasionally the female of a newly formed or temporary pair presents the back of her head to the male. This usually happens when the pair are not engaged in any activity but standing side by side on the sea-rocks both facing the sea. If, in such circumstances, both birds turn their heads to face each other at the same time, the female turns her beak away and presents the back of her head. Often such an obvious movement does not occur, because although the male turns his head freely in all directions the female usually avoids looking directly at the male.

Landing-gape

The 'landing-gape' (plate 14) is always associated with movement and is made either when landing from a hop forwards or when landing from flight. A hop with landing-gape lasts $1\frac{1}{2}$ -3 seconds. Typically the bird looks down at its feet, then hops forward, and as it lands opens

the beak to an angle of 45° and throws its head and neck back while holding its body in an upright position with feathers flattened. The beak is then slowly closed and the 'upright-aware' posture may be held for a second or more (plate 15). During courtship and the early stages of the paired state the landing-gape will be done with the breast well forward and the neck sloping back. Later in the season it is a more perfunctory movement with the head and neck more upright.

Throughout pair formation, incubation and fledgling, the landing-gape is done by a bird of either sex when approaching its own nest. When the young have left the nest it may be done by a parent approaching its young or its mate on the sea-rocks. Before the male has a mate he also does it when approaching his nest-site, whether there are other Shags in the vicinity or not. Early in the season many landing-gapes are usually made in approaching the nest, but later only one or two may be made usually when the bird reaches the nest. Its association with approaching a known nest-site is illustrated in the following incident. A marked male, who had just abandoned his original nest-site because of the erection of a hide, was seen hopping without the landing-gape up the slopes of another colony where he was prospecting for a nest-site and later nested.

The integration of the landing-gape with the completion of the act of landing was illustrated in the following incident. Early in the season an adult flew in to the sea-rocks and landed half on top of another bird, lost its balance, slithered four feet down the rock and did the landing-gape when it stopped sliding.

The landing-gape may also be done when alighting on the sea, in which case only the head and neck are involved in the movement. This was only seen early in the season, when a pair or a small group of birds had been disturbed from the cliffs or the sea-rocks and had flown out and alighted close to each other on the sea.

When one of a pair is taking leave of the other at the nest, or when a parent is moving a few feet away from a nest containing large young, it will do the landing-gape. If the nest is on gently sloping ground the departing bird may make three or four hops away, each accompanied by a landing-gape. If the nest is on a ledge the departing bird will often hop with a landing-gape across the ledge and back again before leaving. Occasionally at nests on small ledges with little room for movement, a bird about to leave may just assume the upright-aware posture before departure. As the Shag has no alarm call, sudden flight is taken as a signal of alarm. A bird leaving the nest after doing a landing-gape, or assuming the upright-aware posture, is indicating that flight is not due to alarm. If the partner fails to see the movement, as was observed on one occasion when

it was turning the eggs, it may take the departure as warning of danger and either prepare to leave or actually do so, thus endangering the eggs or chicks unnecessarily.

In courtship the male uses the landing-gape as an invitation to the female to follow him, first taking one or more hops with landing-gape away from the place on the sea-rocks where the female had been preening him, and then doing a long series when hopping up to the nest. Its use as an invitation to follow was seen on other occasions, showing interesting adaptability. On one occasion a male was preening his juvenile on the sea-rocks. He then moved about seven yards away and out of view, returning a minute or so later doing the landing-gape and followed by the female who then fed the juvenile. On another occasion, a chick aged 33 days had, at my approach, taken cover under a rock about three feet from the nest. When the male returned he went up and greeted the hiding chick and then hopped with the landing-gape down to the nest; this was repeated four times until the chick returned to the nest.

The landing-gape is fundamentally a non-aggressive or conciliatory movement. When Shags first return to the island in February and March it is always done by a bird landing among other Shags, both at the sea-rocks and on the out-lying stack-rocks. A bird doing the movement when hopping up a slope is either looking down, just prior to the hop, or upwards with the gape, thus entirely avoiding the aggressive posture of pointing its bill at the bird it is moving towards or other Shags it may pass. Aggressive attacks were never seen on a bird doing the landing-gape, so it probably has a strong inhibitive effect on potential aggressors.

Upright run

In the 'upright run' (fig. 1c) the feathers of the body are flattened except for the crest which is erect. The bird's body is in an upright position with the head curved down slightly below the horizontal. The bird runs forward quite rapidly with short steps, appearing to lift the feet at each step higher than is necessary for locomotion.

At times it appears to replace the hop with landing-gape as a conciliatory method of moving which does not invoke hostility in other birds. It occasionally replaces the hop when the ground is sufficiently flat for the bird to manage running steps. So a female leaving the side of a male during courtship will sometimes use a mixture of hops and upright-runs. If a male showing a female the way to his nest-site crosses some fairly flat ground he may use the upright-run. Normally it is used by the male for the last few feet before reaching his nest-site, whether he is alone or in the presence of other Shags. Its other uses during courtship are described later.

Throat-clicking

'Throat-clicking' is typically performed by a standing bird over the back and neck of a sitting bird, and is performed by both sexes. The posture is variable; plates 16a and 16b show typical examples, and fig. 16c shows an instance where a female, throat-clicking over a male, was prevented by a rock from standing in the normal position slightly behind him, and curved her head and neck round so that the fore part of her body was in the appropriate position.

During throat-clicking, the plumage is flattened, and usually the head, neck, body and tail are roughly in line and in a semi-horizontal position. The hyoid, covered with the black and yellow skin of the gular pouch, is lowered and moved up and down with the clicking sound.

During courtship the male is the sitting bird, and so throat-clicking is performed by the female, when she visits different males on the sea-rocks and at their nest-sites. When a pair is formed a bird wishing to mate throat-clicks and this movement is always made just before mounting and usually just after dismounting; so from pair formation onwards it becomes increasingly more typical of the male than the female. In contacts between members of a pair on the sea-rocks, both before and after nesting, the male makes the throat-clicking and the female moves towards him. This is the situation illustrated in plates 16a and 16b. On these occasions it replaces the male's courtship display as an invitation to his mate to approach. After mating between a pair has finished for the season throat-clicking is still used as a greeting by a bird returning to its mate on the nest. Frequently when the movement is performed at the nest a piece of nest-material is held in the beak.

When the chicks are old enough to move a few feet away from the nest, which they do to find shade and to take cover in an alarm, they are greeted by a returning parent with throat-clicking. Usually a parent flies in, goes first to the nest-site and greets its mate, and then greets the chicks.

On two very different occasions birds have been seen doing throat-clicking accompanied by a side-to-side head-swaying reminiscent of the young's food-begging behaviour. In one instance a male, with a strong mating drive extending late into the season, did it just below the gular pouch of his mate. The female did not respond and a few minutes later the male mounted his half-grown young. The other occasion was when a male returned to his nest and found that the chick, probably for the first time, had moved three feet away and into bedding. For the next hour he repeatedly went up to the chick, greeted it with throat-clicking, then went back to the nest where he stood usually holding nest-material and throat-clicking. After an

hour the male started head-swaying while standing throat-clicking at the nest. Another rather different instance of throat-clicking was seen when a chick was introduced into a nest and was then pecked at by the female. This caused the male to throat-click over his mate's back.

Sitting-gape

The 'sitting-gape' (plate 17) is performed by both sexes when on the nest or nest-site and also by the male during courtship on the sea-rocks. Normally in a sitting position, with plumage sleeked and the tail cocked up, the bird gapes upwards and while doing so shakes its head laterally about a quarter of an inch either side of the median position. The lateral head movement is the same as that used in the lateral insertion of material during building and in nest-quivering. Sometimes the sitting-gape is replaced by nest-quivering upwards, which is virtually the same movement as the sitting-gape except that a piece of nest-material is held in the closed beak. The sitting-gape is usually interspersed either with nest-quivering at the rim of the nest or with bows. In either case the beak of the bird points downwards just before the movement so the head moves up through approximately 180° to the gape position.

At nest relief the bird taking over usually makes the sitting-gape the moment it is in possession of the centre of the nest, which is when the bird being relieved stops making it. When pairs are first formed the male is often reluctant to relinquish the sitting position on the nest-site to his mate, in which case the female may do the sitting-gape while sitting half on her mate's back and half on the edge of the nest. In this situation both birds of the pair may be doing it simultaneously.

The sitting-gape is used by the sitting bird in response to many movements of its mate or courtship partner. It is the usual response to the throat-clicking movement, so the female does it just before and usually after being mounted. A female soliciting mounting will repeatedly do the sitting-gape followed by a bow. During courtship on the sea-rocks a female visiting a male preens the back of his head. Often when she stops preening the male makes a sitting-gape and bow, at which the female usually resumes preening.

The dart-gape and throw-back

The two movements used exclusively by the male during courtship advertising are the 'dart-gape' (plate 18a) and the 'throw-back' (plate 18b). Females were not seen to do either movement.

The male dart-gapes with the body in a semi-horizontal position and the breast thrown forward. From this position he draws the head back and then darts it upwards and forwards; at the same time he

opens the bill and displays the yellow gape at the most forward position. Throughout the movement he fans and cocks the tail and erects the cheek feathers. It is a swift movement, each dart taking about one second to perform. It has similarities to the threat-gape (page 82), but is quicker and more rhythmical and is performed silently except for a faintly audible clicking in the throat. Also in this movement, unlike the threat-gape, the neck is never stretched fully out towards the bird who elicits the behaviour, instead the gape display is directed half upwards.

The male follows the dart-gape with the throw-back, usually as the female comes nearer. In this movement the male lays his neck backwards along his back or parallel to it, points the closed or nearly closed beak upwards or slightly backwards and quivers the gular pouch. At close range the beak can be seen to be making slightly upward jerks which are rhythmically continuous with the preceding dart-gapes. The throw-back position is held for three to six seconds. Sometimes the darting display follows on from the throw-back and may then be done directly upwards from the position shown in plate 88b.

The bow

The bow may be done standing (fig. 1e) or in a sitting position (fig. 1f). The latter is the more usual and always the position when at the nest-site. Either position is seen on the sea-rocks; but the standing one appears to be more common early in the season and is also the position used by second- and third-year males, so is therefore probably transitional.

In the majority of cases the bow follows either the throw-back of courtship or the sitting-gape, so that the head moves through an arc of 80° or more. In the former context it is done only by the male; in the latter it is done by both sexes but more often by the male. Although after pair-formation the female is more frequently the sitting bird and therefore more often does the sitting-gape, she usually follows it by nibbling at the nest-material. This is the female's position during copulation (fig. 1g) and probably the position from which the bow has been derived.

Away from the nest-site the bow is done almost exclusively by the male. Only once was a female seen to do it on the sea-rocks. She was sitting close to a male and repeatedly solicited mounting by pulling the male's tail and then, when he turned to peck her, making the bow. The male refused to mount and eventually the female mounted the male.

When made by a male, the bow appears to indicate that he is accepting the female that is approaching him. Thus on one occasion two

females were approaching the same displaying male on the sea-rocks. He did not bow for the first female when she came near and she moved away again, but made a bow when the second female approached and she stayed beside him and preened him. On another occasion a male was hopping up a slope carrying nest-material to his nest when his mate suddenly landed beside him. He dropped the material and without any preliminary movement made a bow in the standing position.

Occasionally a female by herself at the nest-site will suddenly sit and bow, and a few seconds later her mate will fly in and land beside her. This is an indication that the female wishes to mate and it is unusual for copulation not to follow shortly afterwards.

The bow is a position of appeasement and avoids all the aggressive components (page 80). Third-year males sometimes quiver their wings slightly while bowing, which suggests that strong aggressive feelings are masked in the posture. During courtship a male being preened by a female will sometimes peck her and then do the sitting-gape and bow, and sometimes he will turn to peck her but instead do the gape and bow. This also suggests its importance as a movement to inhibit the male's aggressiveness.

Nest-quivering

The lateral head movement used in nest-building is extended and developed beyond its functional use and has been termed 'nest-quivering'. When doing this movement the bird holds material in its beak and quivers its head from side to side, approximately a quarter of an inch each way. Nest-quivering is normally done at the nest or nest-site; it may be done while sitting or standing, with the beak either at ground level or held upwards. When done at ground level or at the rim of the nest, it may be either an aggressive or friendly movement, but when done upwards it is always the latter. As an aggressive movement it is typically done by a bird sitting on the nest, who alternates nest-quivering with the threat-gape and other aggressive behaviour.

During the early stages of courtship, particularly between immature birds, nest-quivering is frequently mutual. One of the pair will pick up nest-material, the other will also take hold of it, and together they will quiver it first upwards and then curve their heads down together and quiver it at ground level (figs. 11 and 12). In courtship this movement is done standing, but it is sometimes seen at nest relief during incubation when one of the pair is sitting. It is usual at nest relief for the returning bird to bring and present nest-material, with which the mate nest-quivers, usually upwards at first and then at the nest-rim.

As immature birds do much of their courtship on bare rocks there

is often no nest-material present. In this situation one bird will sometimes grab and make nest-quivering movements with the tail of the other, or occasionally with the beak of the other bird if it is near the ground.

Nest-quivering at ground level often takes the place of the bow and follows the sitting-gape when a bird is on the nest. The female usually alternates nest-quivering with the sitting-gape before and after copulation.

Tail-pulling

Shags pull each other's tail in order to attract attention. The situations in which they do so vary so much that it is difficult to classify or interpret the behaviour more exactly. Tail-pulling is seen most frequently during the early stages of courtship, when the male in the sitting position pulls the tail of the female who is visiting him. It is often done when a female stops preening a male and also when she begins to move away from him. The female's response may be to resume preening or to hop back to the male's side or she may ignore it. On one occasion she responded by mounting the male. A female soliciting mounting from a male may pull his tail, if he has not mounted at the usual invitation of sitting-gape and bow. Incomplete courtship between immature pairs often includes frequent tail-pulling by the male.

On two occasions later in the season females employed tail-pulling in different contexts. One was at nest relief on the day the first egg hatched, when the female, trying to take over from the male who was unwilling to leave, pulled his tail. The other was during an experiment when a half-grown chick was tethered by the leg between two nests; the male from one nest came and attacked the chick and was shortly followed by the female who ignored the chick but pulled and pecked at her mate's tail.

Large chicks will sometimes pull at a parent's tail between bouts of food-begging. The parent is usually standing a foot or so above the chick and not responding to the begging, but has been seen to respond after the tail-pulling. An only chick aged 22 days, believed from its aggressiveness to be a male, was twice seen to pull its mother's tail. Once was immediately after the male had mounted the female. The next occasion, five days later, was when the female was greeting the returning male with sitting-gape and bow.

Alarm posture

The alarm posture, which is also the position of a bird about to fly; the bird is upright with neck stretched up. It has similarities with the upright-aware posture (plate 15) but differs in the position

of the head which is at right angles to the neck and not pointing upwards.

COURTSHIP AND COPULATION

Courtship

On returning to the island in February or March the adult males first visit the sea-rocks in the vicinity of their nest-site of the previous year. They then begin to spend short periods at the old nest-site, usually in the early morning and in the evenings, and after a week or so remain to roost there.

Both at the sea-rocks and the nest-sites, the males invite prospective mates to approach by performing the dart-gape (plate 18a) followed by the throw-back (plate 18b). On the sea-rocks the courting males jockey for the most advantageous positions, on top of the ridges of rock on the seaward side. Many incoming Shags swim in and hop out of the sea on to the sloping rocks, so the male wants to command a position where he may be seen from the sea and from the foot of the rocks; he also wants a position from which it is easy to fly if he gains the attention of a female and flies to his nest-site. The relatively flat top of the ridge is also an advantage in the next stage of courtship.

Typically if a female swims in and hops out of the water at the foot of the sea-rocks all the unengaged males present face in her direction and start darting. If she moves laterally to a male's position he may rotate himself through as much as 100° in order to dart in her direction. When the female is either looking at a male or beginning to approach, he starts doing the throw-back. It appears that the male cannot hold the throw-back position for long, for if the female delays in approaching he resumes the dart-gape; but for the last yard or so of the female's approach the male always does the throw-back.

The female's approach to the displaying male is slow. She hops towards him, making the landing-gape at each hop and then holding the upright-aware posture for several seconds. When within about four or five feet of the male she moves rapidly forward in the upright-run to a position beside and behind the male. During the run forward she makes a clicking noise in her throat. Still making the clicking noises she stretches her neck low over the male's back in the throat-clicking movement. When the female reaches his side the male makes the bow. He may continue to stand while doing this, but more often he sits.

The female now stands beside the male facing the same way and preens the back of his head and neck. When she stops preening, the male makes a sitting-gape and a bow, and the female usually resumes preening. After a few minutes the female may hop away from the male's side with a landing-gape. While the female is beside a male

and preening him she is ignored by males near-by, but the second she hops away the other males on the sea-rocks begin to display at her and she may now visit one or two of them in the manner already described.

Often the female stays and preens a male for five to ten minutes. The male may then lead the way to his nest-site, inviting the female to follow. Most nest-sites on Lundy are from 50 to 200 feet above the sea-rocks and divided from them by a cliff face. So the male usually makes one hop with the landing-gape away from the female and then flies round and up to land well below the site. He then hops up to the nest-site. For the last twenty feet or more the hops are made with a silent landing-gape until he is just short of the nest, when he calls and moves with the upright-run into the nest. He now sits in the nest looking outwards and again does the courtship display. The female, having flown after the male and landed a few yards below him, then hops after him with a landing-gape at each hop. She approaches him on the nest in exactly the same manner as she did on the sea-rocks and the male's behaviour is also similar. If space at the nest-site is restricted the female may have one foot or even both feet on the male's back while she preens him.

The sequence of courtship on the sea-rocks is unusual on the Farne Islands, where the display is done almost entirely from the nest-site (J. M. Cullen *in litt.*). These islands are low and the nest-sites command a good view of the sea and the sea-rocks. On Lundy most of the sites are such that display would either be invisible to or very distant from a bird on the sea or the sea-rocks. As display directly from the nest is quicker, more direct and less open to interruption it is probably normal, and the sequence of courtship on the sea-rocks in addition used only when the position of nest-sites makes it necessary.

At nest-sites most remote from the sea-rocks, a male with a female hopping after him may land approximately half way between the sea-rocks and his nest-site, and here the sequence of courtship display with the approach of the female is again enacted before the male, followed by the female, moves on to the nest-site.

The courting male Shag appears not to recognise the sex of other shags but performs the courtship display at all birds in the upright-awake position (plate 15) and ignores both males and females in the resting position (plate 19a). The upright position without the bill raised is the usual position of a bird of either sex when hopping out of the sea or up a rock, and it is also the position of a bird that is about to fly; so even during the courtship season there are occasions when the male assumes it.

The following example is typical of many. For an hour four males had been together on some sea-rocks; during this time two of them

(A and B) had been engaged in courtship display at a female, who visited them both and then left when they started aggressive postures at each other. Twenty minutes after this event, A was disturbed by the incoming tide and started to hop with the landing-gape up the rock. B immediately did the courtship display at him until they were within about five feet of each other, when B made an aggressive attack.

In courtship display some males appeared to be more successful in attracting females than others. These males looked larger and were particularly glossy, and they were also the boldest in defence of their nest and in attack against other males.

Young males not in full adult plumage are unsuccessful in attracting females if there are any adult males displaying. There was also an incident in which a fully adult male without a crest was unsuccessful. During thirty minutes' watching on 23rd April the uncrested male, 102, and two crested adults were displaying on the same rocks. The two crested males were each visited by at least two different females but male 102 had no visits. Male 102 eventually secured a mate and the first egg was laid on approximately 15th May, 25 days after the mean date for that year.

On the few occasions when there was more than one disengaged female on the sea-rocks, the displaying males often all directed their display at the same female, ignoring any others. The ignored birds were sometimes three- or four-year-olds, in adult plumage but probably breeding for the first time. In other instances they were adult and there was no obvious reason for the preference.

If a female approaching a displaying male hesitates when about four or five feet away instead of coming quickly up to him with the upright-run, something which young females quite frequently do, the male's behaviour usually turns aggressive and the female is driven off. This is because the male, after holding the throw-back for a few seconds without a female reaching his side, resumes the dart-gape. This brings the two birds face to face with bills pointing towards each other only a few feet apart, and the male's aggressive feelings are aroused. In the successful sequence of courtship the male is engaged in the throw-back and bow during the last few feet of the female's approach, so the potentially aggressive position of the bills is avoided. If a female successfully reaches a male's side but then fails to preen him, this may also cause aggressive behaviour in the male.

A female will visit several males at their nest-sites and then begin to visit one male more frequently. Probably the female's frequent approach to the nest in response to a male's display is the first stage in forming a pair bond. This was suggested by the following observation with marked birds. During thirty minutes' observation at mid-

On the same day a female followed a male from the sea-rocks to his site, then flew back to the sea-rocks, returning to visit him again 15 minutes later. On the evening of the same day she made three visits to his nest-site in 45 minutes, but between each visit she only moved a few feet below the nest.

At this stage a male may display and attract other females to the nest, but frequently when they reach the nest he becomes aggressive and attacks them. Until a female is accepted as a mate, the male always sits on the nest-site while the female stands beside. Probably the decisive moment of pair formation occurs when the male first stands up and moves from the small piece of level ground where the nest will be and allows the female to sit there. The first mounting by the male follows soon after this and the female will then occasionally be left alone at the site. When first paired a male will still occasionally do the courtship display to his mate when she is approaching the nest; he may also display to other females, but normally attacks them when they come up to the nest, and sometimes just before they reach it. It seems probable that to begin with he does not recognise his mate at a distance of several yards.

Soon after they have paired the adult males stop courtship display for the remainder of the season, and no resumption was seen when eggs were lost and replaced. An exception was seen on 9th July 1957, when an adult male, who had young five days out of the nest, displayed to a young female on the sea-rocks.

Copulation

Mountings and copulation normally take place only on the nest or nest-site and between paired birds. They may occur at all times of day from dawn (04.40 hours, 21st May) to dusk (18.17 hours, 27th April), but most frequently at the beginning and end of the day when both birds of a pair are present, as both roost at the nest-site before the eggs are laid. No evidence was found of promiscuous matings or mounting as described by Selous (1927), although many of the preliminary movements of courtship are promiscuous.

During the four years' study copulation was seen between 16 different pairs and mountings which appeared not to culminate in successful copulation between a further six pairs. A total of 39 mountings were seen, with 19 of them achieving copulation. In 10 of them the upper bird was known to be a male, either from ringing or because its voice was audible. Of the remaining nine, the male was thought to be in the upper position in six, and in three cases the female mounted the male.

On three occasions mounting was seen on the sea-rocks. In one of these a female was soliciting a male for five minutes and then her-

self mounted the male. Another took place on 23th July between a young male, probably a third-year bird, and an adult-plumaged female. The third was between adult birds in April and was the only one in which copulation was achieved.

In 1955, a male with a half-built nest at a new site made repeated attempts to mount the female but was unable to because of a piece of rock jutting out over the nest. This site was later abandoned, but if it had not been and the pair were to keep the eggs covered after the first was laid, as is usual, no more matings could take place and the third egg, laid seven days after the first, would probably be infertile. On the other hand, if they left the nest uncovered to mate elsewhere, the eggs, which are white and vulnerable to predation, would be endangered.

Table 2 shows when copulations, and mountings not culminating in copulation, were seen in relation to the laying of the first egg. The majority of mountings which achieved copulation occurred from ten days before the first egg was laid until the third day after the second egg was laid. Three is the usual clutch-size for the species (Snow 1960).

Table 2. Time of copulation of Shags (*Phalacrocorax aristotelis*) in relation to laying of the first egg, Lundy

Three mountings on the sea-rocks and three seen later in the season are omitted

	Days before first egg laid			Day first egg laid to third day after
	40-21	20-11	10-1	
Copulation	0	4	9	6
Mounting with no copulation	7	3	1	1

Three mountings seen later in the season are omitted from table 2. Two had an important factor in common, the temporary absence of any chicks at the nest. In one instance the single 22-day-old chick had taken cover under a rock three feet from the nest; in the other the three young, aged 45, 47 and 49 days had wandered about three yards from the nest and out of view of it. The third instance was twelve days after the first egg was laid, the only time copulation was seen during the incubation of a full clutch. There was some evidence that the breeding cycles of this pair were not well synchronised, the female being in advance of the male. Before the eggs were laid the female often solicited the male, who was frequently unwilling to mate; and when the first egg was laid there was no lining to the nest, but two days later the male was bringing in quantities of lining material.

PLATE 13. Male Shag (*Phalacrocorax aristotelis*) (on the left) in the mobile aggressive posture with wings slightly out from horizontal body and head thrust forward with bill partly open (page 83)
(photo: Barbara Snow)





PLATE 14. Adult male Shag (*Phalacrocorax aristotelis*) and the 'landing-gape', a conciliatory movement used especially after a hop forwards or landing from flight (pages 84-86). The bird opens its beak to an angle of 45° and throws back its head



PLATE 15. The 'upright-aware' posture, with upright body and flattened plumage, which briefly follows the landing-gape (page 85). Both sexes perform these actions when approaching their own nests, fledged young or mates (*photos: Barbara K. Snow*)





PLATE 17. Adult female Shag (*Phalacrocorax aristotelis*) and the 'sitting-gape' used by both sexes on the nest (e.g. during nest-relief) and in courtship (page 88)

6 (*Jaung*). Two examples of 'throat-chicking' as a greeting from the h head, neck and body roughly in line (page 87) *photo by Barbara K. Swan*



PLATE 18. The 'dart-gape' and 'throw-back', two movements used exclusively by the male Shag (*Phalacrocorax aristotelis*) in courtship. After a series of darting thrusts with open bill the throw-back follows as the female draws nearer (page 88)





PLATE 19. Above, Shag in the resting position ignored by courting males (page 93). Below, a two-year-old drying its wings after bathing; wing-drying seems to be the only reason why Shags hold out their wings (page 101). *Photo: Barbara K. Amis*





PLATE 20. Juvenile Shag (*Phalacrocorax aristotelis*) stretching. This species has two typical stretching actions: in one the neck is stretched out and the wings and tail are raised (fig. 3); in the other, shown here, just one wing and half the tail, or sometimes one leg as well, are extended (page 102) (photo: Barbara K. Simon)

This nest was the earliest of the year, the first egg being laid 17 days before the average date for that season (127 nests). It was watched on two occasions in the latter half of the nestling period and on both the male was seen attempting to mount and copulate with the chicks, behaviour which was not observed at any other nest. Normally before eggs are laid mounting and copulation take place frequently: at this nest mating took place sufficiently frequently for the eggs to be fertilised, but evidently not frequently enough for the fulfilment of the mating stage in the male's breeding cycle.

The positions of the male and female at copulation are shown in fig. 1g. Just prior to copulation the female sits with the tail cocked up and the neck curved down and the beak nibbling at the nest-material and nest-quivering. During copulation the female holds her tail slightly sideways and rhythmically opens and closes the cloacal aperture. When the male mounts the female he hops with a landing-gape and *ark* call on to her back; he then grips and slightly shakes the female's arched neck or the back of her head, depresses his tail, usually to the right, and cloacal contact takes place. The male continues to make a muffled *ark* call while mating. When copulation is completed the male hops off the female's back with a landing-gape and call, and the female usually responds with the sitting-gape. During copulation the male does not flap his wings to assist in balancing although they may be held slightly away from the body, and it is evident that the grip taken on the curved neck of the female is important in maintaining balance. For her part the female must keep her head and neck steady, and to do so she inserts her beak into the nest-material about one and a half inches from her breast. This entirely practical position of the head and neck of the female during copulation has developed into the stylised bow of courtship. Mountings frequently fail to culminate in mating because the female instead of curving her head down continues to do the sitting-gape, a movement which usually precedes copulation. Once during an attempted copulation a male pressed the female's neck flat on to the ground, which appeared to make cloacal contact between the two birds more difficult.

The need for the upper bird to obtain a grip on the lower bird was illustrated by the behaviour of the male who mounted his own nearly full-grown young aged 48, 50 and 52 days. He hopped with the upward gape on to the back of the first chick who opened its gape upwards and made a squeak of complaint. The male then turned round on the chick's back, gripped its tail in his beak, and depressed his tail in the copulatory movement into the chick's face. A few minutes later he repeated this with another chick but slipped off while trying to turn round on its back. Shortly after this he mounted the third chick, but in this instance he mounted in a back to front position

and balanced himself by holding the chick's rump feathers with his beak.

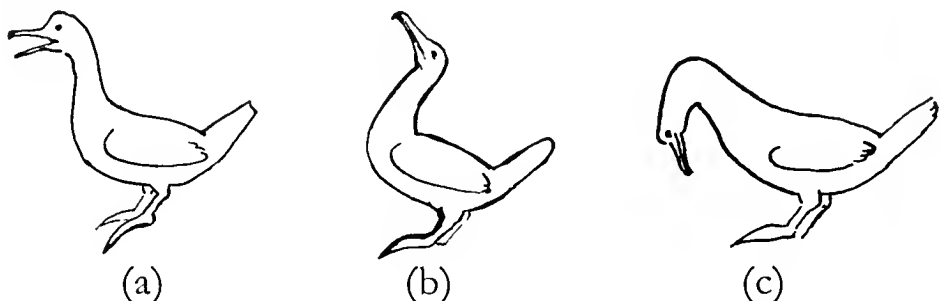


FIG. 2. Immature displays of the Shag (*Phalacrocorax aristotelis*)
 (a) Immature dart-gape (b) Immature throw-back (c) Immature bow
 (see below and pages 88-90)

Immature courtship

Two- and three-year-old birds perform many of the courtship movements on the sea-rocks from late April to mid-July. Some three-year-old birds breed but others appear not to (Snow 1960). The main difference between the adult and second-year male's courtship movements is in the position of the body (figs. 2a, 2b and 2c), the young bird's being more upright than the adult's. Nor does the young bird cock the tail up so acutely as the adult. The rhythm of the dart-gape is slightly slower in the young bird and in the throw-back the neck is not laid so far back. Both the bow and the sitting-gape are usually done standing in the young male and not sitting as in the adult.

Juveniles occasionally do the landing-gape, sitting-gape and bow, but were not seen to do the dart-gape or throw-back; neither was the one bird which visited the island when one year old, which suggests that these displays do not develop until the bird is two years old.

In general the immature males are far less aggressive than adults and sometimes contacts are made between the sexes without the formal pattern of courtship. For instance, a young male was seen to stretch out and pull at the ring of a three-year-old female who then approached him with the landing-gape while the male bowed. At other times an immature female will approach a male without his first soliciting her.

Once a young male was seen attempting to mount a female on the sea-rocks. The male repeatedly hopped with landing-gape to a suitable position for mounting, whereupon the female immediately hopped with landing-gape to face the male. In this way the two birds rotated round each other doing a landing-gape at each hop.

OTHER ASPECTS OF SOCIAL BEHAVIOUR

Recognition

Most of the examples of the ability to recognise individuals involved fledged juveniles and their parents. A juvenile has been considered as

recognising its parent if it goes right up to it food-begging, and a parent as recognising its young one if it feeds it or does not attack it when it begs. When juveniles are particularly hungry they will often beg from all parents coming in; but normally they stay just outside pecking range of the adult if it is not their parent, whereas if it is their parent they rush right up to it begging more loudly than the other juveniles. This I have termed convinced food-begging.

When the juveniles first leave the nest they do not seem to recognise their parents and do convinced food-begging indiscriminately. Thus a juvenile that had not left the nest more than two hours begged from a courting male and female of three to four years old. A juvenile that had left the nest for four days recognised its mother, going up to her from three or four yards away, when the other juveniles in its group ignored her. Just previously the mother had mistakenly flown twenty yards in response to food-begging from another juvenile not her own, but at a range of two or three yards had turned and left it. So for the first few days after the young leave the nest, parent as well as young are probably learning to become more adept at recognising each other.

Three juveniles, two of whom starved to death because their parents refused to feed them during this period of dependence, behaved as if they no longer recognised their own parents and went up to every adult with convinced begging.

Juveniles waiting to be fed would usually stand facing the sea. If the seas were not rough incoming parents often landed on the sea and then swam round to the two or three rocks where the juveniles were, looking up at them while the juveniles looked down. It seemed that the front view of the face played an important part in recognition. On one occasion a male flew in and landed six yards above and behind his offspring, so that he had a back view of it which he did not recognise. He then flew on to the sea and swam round to two other rocks, looking up at the juveniles, before coming to the rock on which he originally landed. Here he hopped out of the sea, and simultaneously the juvenile started to food-beg and hopped up to meet him. Further evidence of the importance of the face in recognition was shown when a juvenile, aged 65 days, approached a sleeping Cormorant (*Phalacrocorax carbo*) from in front and then peered round it to examine its face.

Linked with the fact that the face is probably the recognisable part of a bird is the appeasement gesture of presenting the back of the head, a posture frequently used by juveniles. If a submissive juvenile continues to present the back of its head, the attacking bird frequently stops gripping it aggressively and begins to preen it. If the submissive bird then turns to show even part of its face to its former aggressor, the aggressive attack may be renewed.

During experiments, a female attacking a strange chick added to her nest continually pecked at its face and beak, either by craning her neck round or by hopping on to the rock at the back of the nest, as the chick was facing the rock. The chick attempted to avoid the attack by presenting the back of its head and when it was so successful that the female pecked the back of its head instead of the face, the female's behaviour changed to preening the back of the head. This change from pecking to preening was seen many times during the experiment.

Recognition between the sexes early in the season has been dealt with under courtship. Established pairs with eggs or young normally recognise and do not attack one another, but in the following situation a female was seen to attack her mate. She had just driven off a Great Black-backed Gull (*Larus marinus*) and a neighbouring adult Shag from a prominent rock just above her nest, and then looked down on the top of the head and back of her mate who was just approaching the nest. She hopped down and briefly attacked him, then changed to a greeting behaviour. Her ability to recognise may have been masked by recently aroused aggressiveness or possibly by the unusual view. When returning to its mate on the nest, a Shag normally lands below the nest and hops up the last few feet, so that the bird on the nest has a view of the face.

Preening, bathing and stretching

Shags have a very strong urge to preen one another. Parents preen their young and adults preen one another during social behaviour and courtship.

A parent will occasionally make a preening motion on the bare skin of a three-day-old chick, four to five days before the first down will appear. As the down grows the parents spend more and more time preening the chicks. The following observation indicates that the thickness of the chick's down or plumage is a stimulating factor. To a nest with three chicks aged 14, 15 and 17 days, a chick aged 26 days was added. The nest was then watched for two hours. During this time the 26-day-old chick received 13 bouts of preening from the parent in attendance compared to one bout of preening to one of the other chicks. At 14-17 days a chick has a moderate covering of down except for the head, neck, shoulders and wings which are mostly bare. At 26 days, except for part of the head, a chick is thickly covered all over with down and feathers are beginning to grow beneath the down of the back.

Normally it is the dorsal surface of the chick that receives the most preening from parents, but they also preen round the anus after the chick has defaecated. No preening is done near the eyes or beak,

either by parents or during preening between adults. This is possibly to safeguard the eyes, but in the chick this area may in any case offer less stimulus to the preening adult, as throughout the fledgling period, probably as an adaptation to its method of feeding from the gullet of its parent, the down around the beak and eyes remains very sparse, giving it a vulturine appearance.

Parents preen their young up to six weeks after they have left the nest. Sometimes a parent will preen a strange juvenile, usually following an aggressive attack on the juvenile, who responds by taking up a submissive sitting position with face turned away. An adult male whose own nest failed at the egg stage was seen to preen a juvenile under these conditions.

Preening between adults of opposite sexes is frequent during courtship and fairly common between pairs during incubation. The standing bird usually preens the sitting bird, and the female is more inclined to preen the male than vice versa. The back of the head and neck are the usual areas preened during courtship, but paired birds will preen any part of the dorsal surface and the sides of the breast. The bird being preened often appears to find it irksome and twists and turns its head away and may even peck at the preening bird.

Although pairs seldom preen each other while they have young in the nest they may do so when the young have flown or if their nests fail. But this preening and the preening of fledged young stops at the end of August or in September.

The Shag normally distributes the oil from the preen-gland over the back and wings with its chin and the sides of its head. This movement is sometimes used as an appeasement gesture between pairs or temporary pairs; sometimes both birds do it and sometimes only the female does it. It may be done with or without first obtaining the coil. On every occasion when it has been seen, the pair, due to a variety of previous incidents, have been facing each other with breasts almost touching. "Appeasement preening" appears to avert hostility by keeping the beaks of one or both birds turned away, instead of pointing at each other.

The adult Shag has a typical bathing movement which consists of violently beating the top of the water with the wings and at the same time dipping the head into the water and tossing it over the back. This is alternated with bouts of simultaneous swimming and bathing, when the head is stuck forward and the whole of the front of the body is submerged, the wings continue to beat the water and the bird paddles with the feet usually at the surface or in the air, so that there is little movement forward. After bathing a bird's plumage is completely wet and it hops out on to the rocks, usually flaps its wings for three or four minutes, and then holds them out to dry (plate 19b). Shags appear

only to hold out their wings in order to dry them and not for any other purpose. Birds have been seen to bathe only when the sea was calm enough for them to hop out afterwards, and it is probable that they are unable to take off from the sea with wet plumage.

The Shag has two typical stretching movements. In one (fig. 3) both wings are raised and stretched over the back, and at the same time the head and neck are stretched out forwards and the tail is raised. In the other stretching movement the bird is in an upright position, and the neck is drawn back while the wing, leg and half the tail on one side of the body is stretched. Sometimes only the wing and half the tail are stretched, as in plate 20.



FIG. 3. Shag (*Phalacrocorax aristotelis*) wing-stretching with neck forward

Ceasing of social behaviour patterns

As mentioned in the introduction, all the social behaviour patterns appear to cease at the end of the season. The data for this conclusion were collected by regular watches after the young had left the nest, either at sea-rocks near the colonies or at some much frequented stack rocks half a mile from the nearest nests.

The latest records of the following behaviour patterns, in relation to the departure of the last young from the nest at the nearest colony, were as follows: calling by the male, nine days before; the bow, two days before; one adult preening another, two days before; one juvenile preening another, eleven days after.

The landing-gape was last seen at the sea-rocks 14 days after the last young had left the nest but at the stack rocks it stopped approximately 28 days earlier. Aggressive movements also become unusual towards the end of the season. In 1955, in a total of 15 hours' watching after the young had left the nest, there was only one brief instance of aggressiveness. None was seen in 1956 and only one brief instance in 13 hours' watching in 1957.

Relationship with other species

The other species of birds with which the Shags have most contact on Lundy are Herring Gulls, Razorbills, Great Black-backed Gulls

and Carrion Crows (*Corvus corone*). They compete for nest-sites with the first two species, particularly the Herring Gull. During 1957 and 1958 nine nest-sites used in previous years by Shags were taken over by Herring Gulls. There were, besides, many aggressive encounters between the two species when their nests were within a few feet of each other. When both species compete for a site the Shag dominates and drives off the Herring Gull.

Razorbills frequently nest under rocks at sites that appear similar to those chosen by Shags, and where the two species nest close to each other the Shag is aggressive towards Razorbills coming close to its nest. On these occasions the Razorbills retire but once a male Shag was watched trying to enter a rock cavity where a Razorbill was standing guard. It was early spring and the Razorbill had not yet laid, but a pair had nested in this cavity the previous year. The Razorbill made jabbing motions with its beak at the Shag, who retired.

In some of the encounters between Shags and Herring Gulls with nest-sites close together, the Shag appeared to learn the meaning of some of the Herring Gull's behaviour movements. For example a male Herring Gull and a male Shag had been standing for half an hour on their respective nest-sites which were three feet apart. Both birds had ignored each other until the Herring Gull's mate flew in and the pair did some 'choking', after which the male Herring Gull assumed the 'upright threat posture' (Tinbergen 1953); whereupon the Shag sat on his nest-site and did the threat-gape at the gull.

Both the adult Shags and the chicks respond to the Herring Gull's *hababa* alarm call. The adult Shags turn to face towards the sea and assume the alarm posture, the chicks go to their hiding places. An adult incubating or brooding may remove its feet from below the eggs or chicks.

It is difficult to prove that the chicks are responding directly to the alarm calls of the Herring Gulls and not to the alarm posture of the adult Shags, but from about 26 days old it appears to be in direct response to the gulls. There were many instances of chicks aged 45 days and older who were out of view of any adult Shags and responded directly to the gull's alarm.

When juveniles are fed by their parents on the sea-rocks, Herring Gulls, Great Black-backed Gulls and Carrion Crows may come and stand near and try to scavenge any food that is dropped. All three species are chased off by the parent or the juvenile involved in the feed. They are ignored by adults and juveniles not giving or receiving a feed.

(To be concluded in the May issue)

Special review

By I. C. T. Nisbet

Handbook of North American Birds. Volume 1: Loons through Flamingos. Edited by Ralph S. Palmer. Sponsored by the New York State Museum and Science Service and the American Ornithologists' Union. Yale University Press, New Haven and London, 1962. 567 pages. 5 guineas.

This book is the first in a set of at least six volumes which is intended to cover, in the style of the great European handbooks, all the species on the North American list. The lack of an up-to-date and comprehensive reference book of this kind has handicapped American ornithology for many years, and has given rise to a myth that American birds have been little studied. The myth is now resoundingly exploded, for this volume sets standards of accuracy and completeness that have never been approached before. Compiled by a single editor from the contributions of twenty-six expert ornithologists, it is written in a forbiddingly terse style, but it sets out with admirable clarity everything that is known about the appearance, distribution and life-history of the birds of the North American continent.

This volume covers the first eighty-one species, from divers to Greater Flamingo. Some European birds which are only vagrants to North America are given comparatively brief accounts, but most of the species are treated in greater detail and in a more up-to-date way than in any general work published in Europe. Thus for these species (which include all our divers, most of our grebes, petrels and shearwaters, some herons, Glossy Ibis and Greater Flamingo) this book is now the most important reference handbook.

Apart from a short introduction and concluding bibliography, the bulk of the book consists of a specific list, each species being treated in a number of sections under standard headings. These sections will be discussed one by one in the second part of this review, but it is worth while first to look at the general balance of the book. Plumage descriptions occupy a total of only about 118 pages, less than a quarter of the specific list, and a large part of the space is devoted to the sections headed REPRODUCTION (140 pages), DISTRIBUTION (85 pages) and HABITS (49 pages). The book is thus fully up-to-date in its strong emphasis on the study of the living bird, especially of its breeding-habits and day-to-day behaviour. Hence it is a little surprising that some other 'modern' topics—such as field-identification, ringing, ecology and demography—are given little emphasis. Like most of the other criticisms in this review, this is primarily a criticism of

American ornithology, whose current interests are well reflected in this book. But it is also a valid criticism that, with a few notable exceptions, the book does not seriously set out to modify these interests by emphasising new techniques and fields of study which will be important in the future. It is probably fair to say that this book is a product of the 'forties and 'fifties—the era of qualitative field observation—and that it only half-heartedly points the way towards the quantitative biology of the 'seventies.

* * *

The DESCRIPTION sections are wider in scope than those in most handbooks, including not only detailed accounts of plumages, moults and measurements, but also information on weights, hybrids, colour phases and varieties, and a summary of the geographical variation within each species. The plumage descriptions are intended to give a concise diagnostic description rather than a feather-by-feather treatment. Some museum workers and ringers may regret the fact that they are less detailed than the descriptions in, say, the British Handbook, but they should nevertheless be adequate for all but the most critical identifications.

There are two noteworthy innovations in these sections. One is a new terminology for plumages and moults: this will be unfamiliar to most readers, but it is more rigorous than the current systems and is quickly learnt. The second is that the plumage descriptions use a system of defined colours *which are printed on a chart prepared by a colour specialist and included in the book*. The advantages of this method of standardising colour descriptions are obvious; the main disadvantage seems to be that the colour charts in the book are covered with a glossy protective film, and hence look slightly different in most lights from the semi-matt charts which were originally issued to prospective contributors.

It is most unfortunate that it was not possible to make a systematic series of measurements expressly for the book. Many of the measurements included are quoted from the literature, and even the new measurements are published in the old-fashioned way, merely listing the observed extremes and the averages, proper statistical treatment being considered 'beyond the scope of this edition'. Since the samples measured were very small (usually six to twelve individuals) the figures given are absolutely useless for detailed comparisons or critical identifications.

The ILLUSTRATIONS include six colour plates, a number of whole page line-illustrations of behaviour of well-studied species (e.g. divers, grebes, herons and spoonbills) and a sprinkling of line-drawings, often merely cuts in the corners of the range-maps. In fact, except for the petrels and shearwaters, nearly every species is illustrated somewhere

in the book, and it is a pity that the coverage was not made quite complete, for many of the drawings are as helpful in field-identification as the more ambitious illustrations in other American books. In general they are attractive and accurate, even though they aim less at minute detail than at portraying the character and distinctive actions of each species.

The sections on FIELD IDENTIFICATION average less than 150 words per species—scarcely more than in Roger Tory Peterson's Field Guides. As in other American books, their treatment of young birds is often superficial (cross-referencing to the descriptions and drawings would have helped) and they are uneven in their discussion of critical identifications. For example, the young Yellow-crowned Night Heron is said to be 'readily distinguished' from the young Black-crowned Night Heron; as the characters used are minor points of shape, this statement must be intended for reasonably skilful observers. Yet the characters given for identifying young divers are much more elementary, and the important features of head-shape and head-plumage are omitted.

Detailed discussion of field-identification in text-books is not only important for ensuring the accuracy of future sight-records; it also helps to train the novice in critical observation. If this book had treated field-identification more seriously, it would have appealed to a larger number of amateur bird-watchers, and thus introduced them to other branches of ornithology not covered in elementary field-books. It is probably true that the prominence given to field-identification in the British Handbook has thus played an important part in bridging the gap between amateurs and professionals in Great Britain, and it will be a pity if its American counterpart misses the opportunity of doing the same service for American ornithology.

The sections on HABITAT and FOOD are straightforward compilations. The relation between sea-bird distribution and the oceanic circulation is lucidly described, but in general these sections seem oddly old-fashioned: most of the food-studies quoted are more than twenty years old, and the habitat sections are almost entirely descriptive. This branch of ecology is still primarily a qualitative science, scarcely advanced since the pioneering days of the German and British handbooks.

The most important parts of the DISTRIBUTION sections are the range-maps. Plotted on a variety of ingenious projections, they show at a glance the entire world distribution of each species, including not only breeding and winter ranges, but also past, present and sporadic breeding colonies, marine range of sea-birds, occurrence on migration and on post-breeding dispersal, and records of stragglers. In general they strike an excellent compromise between the two extreme methods

of preparing such maps—namely, plotting exactly what is known in a mass of confusing detail, or simplifying into a neat but inaccurate pattern. For North America itself the maps seem extremely reliable: indeed, almost the only criticism that can be made is that some of the records of stragglers could have been plotted more accurately. For other parts of the world, however, the maps seem to have been prepared less carefully, and those for western Europe are really not very satisfactory. Indeed, for the British Isles alone it is possible to find fault in some way with almost every map in the book. The treatment of our rare sea-birds is particularly cavalier: about half the records are omitted altogether, most of those that are included are misplaced, and two species are listed which are not on the official European list at all. Most of these mistakes could have been avoided if European experts had been consulted, but even so the maps are far more reliable and comprehensive than any others yet published.

It is refreshing to find that the MIGRATION sections do not contain the long lists of extreme dates and the dogmatic statements about migration routes which fill most books of this kind. Instead, they present a rather brief selection of actual observations of places and times where birds are abundant. Some of the migration dates given are those of peak abundance, and some are average dates of first arrival or last departure: it is a pity that only a few references are given to the more extensive lists of A. C. Bent and W. W. Cooke. There are also accounts of post-breeding dispersals, and notes on migratory behaviour.

The sections entitled BANDING STATUS merely list the number of birds ringed and recovered in North America and in some other countries. Their chief function is to draw attention to unanalysed recoveries. This purpose is also achieved by the SURVIVAL sections, which list what is known of mortality rates; in fact, however, only four or five of the studies quoted were made within North America. Ringing results are also conspicuously absent from the MIGRATION sections, except for a few sentences which link breeding-areas of some species with wintering-areas. These deficiencies are, of course, mainly due to the reluctance of American ringers to analyse their results, and the authors of this book can be forgiven for not undertaking the Herculean clean-up themselves, but it is a pity that the few local studies which have been published are not quoted more prominently.

The real meat of the book is in the sections on REPRODUCTION and HABITS, which, as shown at the beginning of this review, together take up one-third of the volume. The former cover in great detail the entire range of breeding activities, from arrival on the breeding grounds through courtship behaviour, nests and eggs to care of young. It is in these sections that the book is most obviously up to date, for nearly all

the studies they quote have been made in the last ten years. The HABITS sections include a wide variety of material on day-to-day habits and specific idiosyncracies, feeding, predation and other topics (even extending to folklore and gastronomy!). These sections are admirably detailed, concise and comprehensive; their sole disadvantage is that they include a good deal of trivial and incidental material, of the kind that is excluded from the other sections, so that the book seems a little unbalanced.

The quality of paper and printing is excellent, and the colour plates are especially good by American standards. The binding, however, is a little flimsy for a book intended for constant reference, and the ultra-modern layout is not always successful: the boldface sub-headings distract the eye from the capital headings, the species titles are much too insignificant, and the captions of the plates are very confusing. Production of the book has been subsidised, and at five guineas it is an excellent bargain: it has even more facts per penny than the current printing of the British Handbook.

* * *

Finally, a few general criticisms and comparisons. Probably the main defect of the book is its lack of a proper glossary. It perhaps does no harm to leave such words as 'holorrhinal' or 'schizognathous' undefined, since no one who does not already know their meanings will be interested in the table in which they occur. But how many readers will know, for example, that 'F₅ to A₅' means four and a half octaves above Middle C? And who outside California will know what 's. Cal.' means? Other terms which should have been defined include 'nonplastic', 'phenotype', 'prebreeder', 'species pair' and 'superspecies'.

Another major defect is the lack of any systematic section on numerical abundance. Some numerical information is given for most species, but it is widely scattered—most often listed under HABITS or MIGRATION, sometimes under HABITAT or REPRODUCTION, and only in three or four cases where it really belongs, under DISTRIBUTION. In at least one instance the only clue to the abundance of a species is the number of birds ringed. It is true that very few quantitative studies have been made of the abundance of these species in North America. However, a great deal of semi-quantitative information is available—for example, from oceanic transects and 'Christmas Counts'—and it is a pity that this was not quoted more prominently, as a first step towards the quantitative study of distribution.

A difficult problem for the author of any regional handbook is to decide the amount of attention to give to studies made outside the area covered by the book. Like the authors of the British Handbook, Palmer has not solved this problem quite satisfactorily. The only

definite statement of policy made in the introduction is that records of stragglers are not plotted outside North America (although, in fact, many of them are). Otherwise the distribution maps are plotted uniformly for the whole world range of each species, although, as already pointed out, they are more accurate for North America itself. 'Extralimital' subspecies are described if they have occurred in North America, even as stragglers, but they are usually listed without description if they have not. Some of the field identification sections for the petrels and shearwaters mention subspecies and even species not on the North American list, but other species which are equally likely to occur in North America at some time (e.g. Wandering Albatross, Purple Heron, Little Bittern) are not mentioned in the book at all. Migration is described in detail only for North American land-bird populations and for marine species: the treatment of European populations is a little capricious (for example, W. Rydzewski's paper on Grey Herons is quoted, but E. Schüz's papers on Black-throated Divers are not). Survival data are quoted from all over the world, but ringing totals are given for only a few countries. Food records are compiled exclusively from North American data for land-birds, but from cosmopolitan sources for sea-birds. Foreign observations on reproduction and habits are quoted extensively in places, but normally only where there are gaps in the North American data. The result of all this is that, for example, European observations on the Grey Heron, which has occurred only as a vagrant in North America, are quoted more fully than those on the Night Heron, of which a well-studied subspecies breeds there.

This book invites comparison with the three great European handbooks—Niethammer's *Handbuch der deutschen Vogelkunde*; Witherby, Jourdain, Ticehurst and Tucker's *Handbook of British Birds*; and Dementiev and Gladkov's *Birds of the Soviet Union*. Among these, it has the great advantage of being published last, so that it can use their ideas and specialised knowledge. It is also full of up-to-date material, treated in an up-to-date and original way, although it has not the *avant-garde* outlook of the British Handbook. One of its major advantages is that it has a full bibliography: this means not only that most of its summaries can be followed up and checked, but also that it will remain an important reference book long after the information in it becomes obsolete. The maps are outstandingly better than Dementiev and Gladkov's, and the illustrations, though less ambitious than Witherby's or even Dementiev and Gladkov's, all look like the birds they represent. Perhaps its greatest advantage—forced on it by the huge increase in the volume of bird literature in the past fifteen years—is that it was written by a fairly large panel of specialists, instead of a small panel of general experts. In the hands of a less thorough editor,

this might have led to serious inconsistencies in style: in fact these seem to have been very well ironed out, although the editor's personal interests appear to have influenced the balance of the book.

The *Handbook of North American Birds* demands judgment by the very highest standards, and many of its features are open to criticism in one way or another, but it is as thorough, as accurate and far more complete than anything that has gone before. This is the handbook of handbooks, and no one with any serious interest in birds can possibly do without it.

Notes

Variation in leg-colour of Kittiwakes.—Variation in the leg-colour of Kittiwakes (*Rissa tridactyla*) was first noted by Ralph Stokoe (*Brit. Birds*, 51: 398-399) and then systematically surveyed by Dr. J. C. Coulson (*Brit. Birds*, 52: 189-196), both in the north of England. One task of the Oxford Lundy Expedition 1962 was to discover whether the Kittiwakes on Lundy, Devon, differed in this respect from the northern birds. In his paper Dr. Coulson indicated that, after the first summer, individuals with highly aberrant leg-colours (e.g. red) are seen occasionally; that about one per cent have yellowish patches on the legs (most of these being in their second summer); and that all others have black-brown legs.

The legs of 236 second-summer and adult Kittiwakes were examined on Lundy between 30th June and 8th July 1962 (from no more than twenty yards with $\times 8$ binoculars and in good light). Two of these had yellowish markings on their legs and a third (a breeding bird) had extensive grey-pink markings. In every other case the leg-colour was uniform, the commonest colour being 'black-brown'. Many were 'black' or 'brown', however, some 'dark grey' or 'red-brown' and a few 'pale grey' or 'brown-red'. Thus, there was a continuous variation from 'pale grey' through 'black-brown' to 'brown-red', depending upon the degree of grey or red. The categories 'black', 'black-brown' and 'brown' together made up three-quarters of the population and the extremes were rare. This variation does not seem to have been described previously, but Dr. Coulson tells us that it does occur in the north of England.

Dr. Coulson also informs us that nestling Kittiwakes have 'dark grey or even black legs'. On Lundy the leg-colour of nestlings was definitely pale grey, and it seems possible that there may be some geographical variation here.

JEREMY GREENWOOD

Juvenile-type feathers on adult Blue Tits.—Two Blue Tits (*Parus caeruleus*) were ringed by me at Sway, Hampshire, on 30th January

1956 and 11th December 1955 and when retrapped on 17th November 1958 and 15th September 1962 respectively were seen to have some yellow, juvenile-type feathers among the white on the cheeks. The first bird had only one or two, but the second had six or more on each side and one behind and above the eye, on the crown. This bird was at least seven years old, yet I should certainly have taken it for a bird of the year if it had not been for the ring. What is even stranger is that it had been retrapped eight times in the intervening years without my having observed any yellow feathers on the white cheeks. Had they been there, it is inconceivable to me that I should have failed to see them—not *eight* times, anyway. In all other respects both birds appeared normal.

EDWIN COHEN

[While the reappearance of these yellow feathers may indicate a reversion to juvenile colour (through age?), Mr. Derek Goodwin suggests that feathers may possibly grow yellow instead of white if there has been an excess of carotenoids in the diet. In support of this, he points out that the reverse happens to captive Blue Tits and Great Tits (*Parus major*) fed on a diet deficient in carotenoids: they produce white and grey feathers where normal wild birds are yellow and yellowish-olive respectively.—EDS.]

Warblers as pollinators in Britain.—In their short paper on 'The contamination of birds with pollen and other substances' (*Brit. Birds*, 54: 93-100) J. S. Ash, P. Hope Jones and R. Melville suggested that, although warblers, particularly Blackcaps (*Sylvia atricapilla*), must act as effective pollinators when passing through orange-groves on their spring migration, it was unlikely that nectar-seeking would continue in the British Isles. There seemed to be no evidence that insect-seeking warblers in this country might act as pollinators, but the following two incidents support the authors' suggestion that observations on the activities of warblers in the vicinity of flowers might repay investigation.

On 29th July 1939, in what was then my garden in Charlbury, Oxfordshire, I noted two leaf-warblers hovering and probing at the flowers of evening primrose (*Oenanthé* sp.). On examining the blooms, I found that numerous small black beetles were present in the nectaries. I therefore baited a small chardonneret trap with a blossom into which I had shaken the beetle contents of several other infested flowers and, as a result, trapped and ringed two Willow Warblers (*Phylloscopus trochilus*). I have since repeatedly used this baiting technique with success, catching Wrens (*Troglodytes troglodytes*) as well as warblers, but until the next incident, 23 years later, the observation which started this procedure had never again preceded its use.

On 11th August 1962, in my present garden in Cholsey, Berkshire, I observed a Chiffchaff (*Ph. collybita*) hovering in front of a flower of great bindweed (*Calystegia sepium*) and then darting forward to probe deeply into the bloom. This procedure was repeated at five separate blossoms, and on one occasion a lateral view allowed me to note that the bird's head was completely hidden in the bindweed trumpet. I then found that the flowers were heavily infested with the beetle already referred to: the usual complement was five, one in each nectary right at the base of the flower. The bird was soon caught by offering it an exceptional supply of this food (which it was presumed to be seeking) and, after ringing, unthinkingly released without any thought of the pollinating aspect of such feeding-behaviour. Fortunately it was recaptured within an hour, and this time its head was closely examined for obvious pollen. None could be seen, and so a glass microscope-slide, dampened by being breathed upon, was gently stroked three times from the base of its bill to its crown. Microscopic examination disclosed three cells of pollen and, by direct comparison with pollen subsequently obtained direct from a flower, its identity was confirmed as that of *C. sepium*. From the relative positions of the nectaries, anthers and stigma in this species, it seems highly probable that cross-pollination would result from such insect-seeking visits. I am indebted to J. Balfour-Browne, of the Department of Entomology, British Museum (Natural History), for identifying the beetle as *Meligethes aeneus* (Fabricius).

W. D. CAMPBELL

Pallas's Warbler in Co. Durham.—At 14.00 hours on 12th October 1962, during a large immigration of thrushes and other birds, J. A. Bailey found a very small *Phylloscopus* warbler in some flower beds round a bowling green near the sea-front at Hartlepool, Co. Durham. Other observers arrived, including P. Reid, P. J. Stead and the writer, and all watched the bird closely. Superficially like a Yellow-browed Warbler (*Ph. inornatus*) in having a yellow supercilium and double wing-bar, it was distinguished as a Pallas's Warbler (*Ph. proregulus*) by its even smaller size—like a Goldcrest (*Regulus regulus*)—prominent pale crown-stripe, and sharply-defined creamy-yellow 'saddle' across the upper rump; it was an altogether more striking bird, with the greens and yellows cleaner and brighter. It was very active, constantly seeking insects which it took from the undersides of leaves in the manner of a tit and in flight like a flycatcher; it also had the flycatcher habit of flicking its wings and tail downwards. Its diminutive size and rapidly beating wings as it hovered to feed from an ivy-covered wall made one think of a humming-bird. Yellow-browed Warblers seen in the next few days also hovered like this, but the 'jizz' of the Pallas's was more suggestive of a Goldcrest. Its frequent call was a shrill, emphatic and

protracted *tweeet*. The bird was trapped at 17.00 hours but, because of its apparent hunger and the failing light, it was held only long enough to be photographed and the following notes made:

Head and crown dark olive-green; pale lemon crown-stripe extending to forehead; broad yellow supercilium, deeper yellow before eye than behind it; narrow blackish stripe from bill through eye, underlining and accentuating the supercilium. *Rest of upper-parts* clean, bright greyish-green, paler than crown; upper rump creamy-yellow, sharply defined as an oblong patch. *Cheeks and throat* pale greyish-yellow. *Rest of under-parts* greyish-white, flanks and undertail coverts tinged pale yellow. *Tail* dark olive-green, square at tip. *Wings* as back, but all primaries fringed yellow; tertials broadly fringed whitish, forming a double V on closed wings; tips of median and greater wing-coverts deep yellow, forming double wing-bar, but upper bar narrow and frequently obscured by ruffled feathers; both bars accentuated by a dark area between them. *Bill* dark brown, with base of lower mandible yellowish. *Legs* rather pale brown or greyish-brown.

The bird was not ringed on account of its tiny size and possibly exhausted condition; it also seemed advisable to handle it as little as necessary and release it as soon as possible. It was still present next day, 13th October, and was seen by numerous observers before it disappeared down a Hartlepool street in the mid-afternoon. This is the first Durham and seventh British record. D. G. BELL

Starlings eating putty.—On 26th February 1963 I was sent to a building site at West Huntspill, Somerset, to repair the damage caused by some birds which were eating the putty from newly glazed windows. It was also suggested that I should paint the putty and this I did. On the following day, however, the putty-eating was continuing in spite of the paint and I was surprised to find that the culprits were not Blue Tits or Great Tits (*Parus caeruleus* or *major*) but Starlings (*Sturnus vulgaris*). On several occasions that day small groups of these birds were watched feeding on the putty, some of which had been painted only about three hours beforehand. They kept mainly to the bottom and side rails of the windows as these were the easiest to reach. In fact, they removed all the putty from the bottom rails of several windows.

I can find no other records of Starlings eating putty, let alone painted putty. BRIAN E. SLADE

Nestling Goldfinch ensnared by nest material.—Miss J. Fairhurst's account of a fledgling Spotted Flycatcher (*Muscicapa striata*) entangled in nest material (*Brit. Birds*, 55: 482) reminds us of a similar incident involving a Goldfinch (*Carduelis carduelis*) at Burton, Westmorland, in early July 1961. We had noticed the persistent shaking of some leaves on an outer branch of an elm, about ten feet above ground, and

on investigating found a Goldfinches' nest empty except for one fledgling. The latter was hanging half out of the nest and fluttering vigorously, one leg being firmly entangled in hair from the nestling. There is little doubt that it could never have freed itself. However, the leg was undamaged (and completely formed) and, after being released, the fledgling fluttered away, on what was obviously a first flight, to join the adults and the rest of the brood in a tree near-by.

J. B. and S. BOTTOMLEY

Letters

Birds nesting in aircraft

Sirs,—The article by C. J. Bridgman on 'Birds nesting in aircraft' (*Brit. Birds*, 55: 461-470) brings to mind the several instances which I observed of two other species breeding in the engines of aircraft in storage in India between 1942 and 1944. While stationed at Jodhpur on the eastern edge of the Thar desert, I frequently found nests of the Collared Dove (*Streptopelia decaocto*) and Common Mynah (*Acridotheres tristis*) in the engines of the numerous aircraft parked amongst the scattered acacia thorns in the desert region. The Collared Doves also nested quite naturally in these thorn trees. Since these aircraft were often undisturbed for many months, many broods were successfully reared.

At Delhi in 1944 I knew of a few instances of Common Mynahs building in aircraft, but these nests were destroyed as soon as they were found.

L. P. ALDER

White-throated Sparrows in Hampshire

Sirs,—The following extract from the journal of the Florida Audubon Society for July 1962 (*Florida Naturalist*, 35: 67) may be of interest in view of the report of a White-throated Sparrow (*Zonotrichia albicollis*) at Needs Oar Point, near Beaulieu, Hampshire, in May 1961 (*Brit. Birds*, 54: 366-367). It is from an article by K. Seeler entitled 'Some birds of the English countryside' and the author is writing about Southampton Park, which is only a few miles from Needs Oar Point: 'Suddenly, there in the park we heard the unmistakable sound of the American White-throated Sparrow, "Peabody, peabody, peabody", and we traced it to the aviary where two of our sparrows sat singing, surrounded by English birds brought there because of some injury. The caretaker told us the whitethroats had come over in the rigging of a ship and he had called them American Brown Sparrows. We gave him a Peterson's Guide, just in case anymore stowaways arrived.'

ROY H. DENNIS

[We are very interested to have this further evidence of White-throated Sparrows crossing the Atlantic on ships. It may be remembered that A. L. Durand recorded one of these birds on R.M.S. *Queen Elizabeth* during a voyage which brought her to Southampton just three days before J. T. R. Sharrock's observation at Needs Oar Point (*Brit. Birds*, 54: 439-440).—EDS.]

Some comments on albinism and melanism

Sirs,—It is unfortunate that B. L. Sage, in his paper on 'Albinism and melanism in birds' (*Brit. Birds*, 55: 201-225, esp. 204), should have confused the terminology which was clearly defined by B. Rensch in 1925 (*J. Orn.*, 73: 514-539). *Albinism* is a total lack of pigment. *Leucism* is an absence of pigment in the feathers combined with normal body pigmentation, resulting in white birds with normally coloured soft parts. *Dilution* is a uniform reduction in the quantity of all pigments. *Schizochroism* is, as the word suggests, a condition in which a plumage colour formed by two or more pigments is split by the absence of one of them; it results in, for example, the blue and yellow varieties of the normally green Budgerigar (*Melopsittacus undulatus*) but it should be realised that it can only affect those areas of the plumage where the pigment concerned is usually present. Abnormally coloured birds which retain the carotenoid colours of the plumage but are otherwise white would be more correctly termed 'non-melanic' where the absent colours are brown or black.

Mr. Sage also makes several references to varieties of the Collared Dove (page 210 and elsewhere). Although some of these are to American papers which use the name 'Collared Dove' for domesticated forms, the so-called 'Barbary' and 'Java' doves are, in fact, varieties of *Streptopelia roseogrisea*. As far as I am aware, variant plumages of *S. decaocto* have not been described.

I would also question whether the Black-headed Gulls (*Larus ridibundus*) seen by P. R. Evans and others in Northumberland (*Brit. Birds*, 55: 275-276), and referred to by Mr. Sage (page 216), were in fact melanistic. In this connection, I had some correspondence with E. Battersby concerning a 'blue' Magpie (*Pica pica*) in his possession; it was irregularly marked with a few black feathers, but was otherwise a uniform blue-grey. At my request he sent me a few belly feathers which, it should be added, he had washed. They were a dark smoky-grey when first examined, but after repeated washing in warm soapy water and benzine (separately) they turned out to be pure white. Gulls, being scavengers at rubbish tips, are very prone to industrial contamination and I suspect that those in Northumberland were extreme cases of this. It seems significant that they appeared near industrial and mining areas. The British Museum has, in the past,

received at least one gull with a similar uniform discoloration. The existence of white feathers in the wing of the individual which Dr. Evans trapped causes suspicion, because melanisation of genetic origin is likely to be uniform. One would expect a truly melanic gull to be darker on the wings and mantle than on the underside and rump, and darker contour feathers and lighter wings are characteristic of discoloration. Only a careful examination of the feather structure can confirm melanism and I would suggest that it is as yet unproven in these gulls.

C. J. O. HARRISON

Sirs,—I am glad to be given this opportunity of replying to C. J. O. Harrison's criticisms. So far as I am aware, Rensch's terminology has never been accepted as standard, and all his terms have since been used by various people in contexts other than those he assigned to them. Several different classifications of colour variations have been drawn up at one time or another, and had I quoted one I would have had to have discussed them all. On the question of 'leucism' as defined above, I have seen no evidence to prove that white birds with normally coloured soft parts always possess the normal pigments in the body. In fact, the only term of Rensch's that I can be said to have misused is 'schizochroism' since 'leucistic' and 'dilute' individuals are similar in appearance so far as the body plumage is concerned. Whatever terminology is suggested does not alter the fact that I regard all these conditions as forms of albinism. Mr. Harrison's newly invented term 'non-melanic' seems both hair-splitting and superfluous.

On the question of the doves, I follow the school of thought which considers *roseogrisea* to be a race of *Streptopelia decaocto* and as I did not use trinomials in my paper (except in one or two special cases) I regard my statements as perfectly correct. In any event, although the majority of aviculturalists believe that the 'Java' and other varieties were bred from *roseogrisea*, there is still some difference of opinion. J. L. Peters in his *Birds of the World* treated *roseogrisea* and *decaocto* as separate species, but referred to the domestic varieties under the latter.

The problem of the melanistic Black-headed Gulls cannot be proved, of course, until some feathers have been taken for examination, and at the moment we can only accept Dr. Evans's opinion as such. However, I should like to comment on three of Mr. Harrison's remarks in this connection. Firstly, although the birds were seen in an industrial area we have no proof that this is where they originated. Secondly, Mr. Harrison's remarks about white feathers in the wing mean very little because, in fact, it is not rare to find odd white feathers in cases of melanism of genetic origin. Thirdly, since Mr. Harrison's criticisms seem to throw doubt on all observations of melanism in gulls, I must

again draw attention to H. W. Robinson's record of a young Lesser Black-backed Gull (*Larus fuscus*) on the Isles of Scilly (*Brit. Birds*, 20: 26-37): this was a 'fully feathered chick' (presumably unable to fly) with the under-parts very dark brown and in the circumstances this colour could certainly not be attributed to industrial contamination.

BRYAN L. SAGE

News and comment

Edited by Raymond Cordero

Brownsea Island Nature Reserve.—In these days, when so many interesting areas are being lost to the naturalist, it is heartening to hear the happier story of Brownsea Island in Poole Harbour, Dorset, and we are sure readers would like to know the background to this. We are indebted to Miss Helen Brotherton, Hon. Secretary of the Dorset Naturalists' Trust, for the facts.

Brownsea is an island of some 600 acres and is remarkable for being completely undeveloped although within a stone's throw of the densely populated areas of Poole, Christchurch and Bournemouth. No one was allowed to land during the late Mrs. Christie's ownership and for some 35 years the vegetation everywhere grew unchecked, smothering what once were fields and water meadows and well-kept gardens and woodlands. Virtually all the roads were obliterated. Local ornithologists had been concerned for many years as to what would happen to Brownsea when the owner died. It is the only refuge for wildfowl and waders in Poole Harbour at high tide and the only place round the harbour where Ringed Plovers, Oystercatchers and other shore-nesters can have any hope of success.

When Mrs. Christie died the island passed to a grandson and was accepted by the Treasury in part payment of death duties. The National Trust were offered the island, but as it had no endowment fund it was touch and go whether they would accept it; and local people had to undertake to do all they could to help the National Trust to raise the £100,000 needed to rehabilitate it and allow for maintenance. The Dorset Naturalists' Trust undertook to raise £30,000 locally and have nearly done that, but there is still £20,000 needed from somewhere to complete the £100,000.

The Dorset Naturalists' Trust are to lease about half the island as a nature reserve, which is in keeping with Mrs. Christie's wishes that the island should be a sanctuary. The Trust's half consists of a large salt lagoon inside a sea wall which was once water meadows, a freshwater marsh, two large artificial lakes, a small but very interesting salt marsh, ponds behind the beach and a large area of heath and woodland. It has a big heronry, the only one of any size in Dorset. The lagoon is a safe breeding place for Black-headed Gulls, terns and duck, or would be if there was a better method of controlling the water level which can rise too high with certain tide combinations. Later it is hoped to control the water level and it should then have much the same possibilities as Minsmere and Havergate.

The Dorset Naturalists' Trust has appointed a warden, Mr. Arthur Walton, who was for thirty years in the Colonial Service, and the R.S.P.B. are generously helping with his salary for the first year. It is hoped that by the time the island is open to the public, on 16th May, at least a token part of the reserve will be ready. The reserve will be open to visitors in supervised parties all the year round and there will

be scope for voluntary wardens. Bird-watchers will have to pay to enter the reserve, but it is hoped that the need for this in the early stages will be appreciated. The Dorset Naturalists' Trust has an enormous amount of clearing to do, if Nightjars and warblers are to return to old haunts, and this and many other jobs will involve heavy expenditure.

Anyone wishing to contribute to the Brownsea Island Appeal Fund should send donations to the Hon. Treasurer, J. W. Kay, Municipal Buildings, Poole, Dorset.

Handa Bird Reserve.—Last year the island of Handa became a bird reserve of the Royal Society for the Protection of Birds by agreement with the proprietors. The Society has now re-roofed, reconditioned and furnished the old bothy and up to eight members and friends can be housed at a modest charge of five shillings a night each. In 1962 thirty-one species of birds bred on the island and another fourteen nested near-by. Striking features of Handa, which lies close to the coast of Sutherland, a county with some of the wildest and most exhilarating scenery in Britain, are the 400-foot sheer cliffs on the Atlantic side and the Great Staek, where many sea-birds nest. All bookings for the bothy must be made to the R.S.P.B. Scottish Office, 21 Regent Terrace, Edinburgh 7. The warden of Handa is Alastair Munro, Tarbet, Foindle, Sutherland.

Two desert expeditions.—Two desert expeditions, led by well-known British ornithologists, are being made this spring. Guy Mountfort is taking a 13-man team to the deserts of Jordan and the party will be away from 11th April to 13th May. This region is of exceptional interest to ornithologists and is the breeding area of a number of unusual species. The expedition will be partly ornithological and partly concerned with ecological and botanical matters. Among the objectives will be a survey of wild life east of the Jordan Valley, in order to prepare a report on rare and vanishing species on behalf of the International Union for the Conservation of Nature; a pilot study of conservation reconnaissance methods and desert ecology in preparation for the International Biological Year; and a detailed study of the vegetation and wild life of the oasis at Azraq from the view-point of conservation.

The other expedition has been organised by E. D. H. Johnson and his wife. Their five-member team will be in the field around Figuig, eastern Morocco, from 31st March to 20th April, and they intend to study the passage and arrival of migrants, with particular reference to flight energy as indicated by weights and fat deposition.

Oxford University expedition to the Levant.—The principal aim of a three-man expedition to the Levant from mid-August to early October this year is to study the huge migration of storks and raptors which takes place through Lebanon and Israel. Subsidiary objects include other migration; the resident birds; and migration across the Mediterranean (during the voyages there and back). The expedition will be led by M. P. L. Fogden.

University to honour Yorkshire ornithologist.—To many people the name of Ralph Chislett is synonymous with Yorkshire ornithology, and it is in recognition of his services over many years, 'in the field and at the desk', as he puts it, that Leeds University is to confer on him in May an Honorary Degree of M.Sc. Mr. Chislett first became active in the county in 1939, when he was elected president of the Yorkshire Naturalists' Trust. He reorganised its ornithological section, was the Hon. Secretary from 1940 to 1956 and became chairman in 1957. He edited the *Yorkshire Ornithological Report* from 1940 to 1959, was largely instrumental in forming Spurn Bird Observatory, and in his *Yorkshire Birds* (1951) brought T. H. Nelson's work of 45 years earlier up to date. He has played a part in many other activities which have strengthened the county's ornithology.

Recent reports

By I. J. Ferguson-Lees

(These are largely unchecked reports, not authenticated records)

FIRST SUMMER-VISITORS

As we go to press, the first summer visitors are appearing in many counties, chiefly south of a line from Lincolnshire to Anglesey. There was evidently quite a widespread though not particularly heavy fall of **Chiffchaffs** (*Phylloscopus collybita*) in the second week of March, for during the week-end 9th-10th a number of individuals were seen in south coast counties and in a few inland areas as far north as Huntingdonshire and Northamptonshire. A week later, on the 16th and 17th, parties of five to ten were noted in, for example, Middlesex and Leicestershire. Odd Chiffchaffs were reported in various parts of the country from Cornwall to Bedfordshire at the height of the cold spell in late January and early February, and there were **Blackcaps** (*Sylvia atricapilla*) in a dozen counties between Dorset and Cheshire in the first two months of the year. Nevertheless, the total of Chiffchaffs in the second week in March was sufficiently large to suggest a genuine influx and it is interesting to speculate where they spent the winter, since conditions on so many parts of the Continent were even worse than those here.

Numbers of other summer-visitors, apart from Chiffchaffs, were still small by 13th March. The first observation of a **Wheatear** (*Oenanthe oenanthe*) came from Somerset on 10th March, but in the following fortnight only a dozen others were reported from the south coast and East Anglia, and inland in Northamptonshire. There was an arrival of **Garganey** (*Anas querquedula*) during 14th-16th March when this species turned up in ones and twos in Sussex, Kent, Suffolk, Norfolk, Lincolnshire and Northamptonshire. Otherwise we have heard of only one or two **Stone Curlews** (*Burbinus oedionemus*), **Little Ringed Plovers** (*Charadrius dubius*) and **Swallows** (*Hirundo rustica*), and an extremely early **Whinchat** (*Saxicola rubetra*) in Dorset on 15th March. Even so, this is more than we might have expected when the snow was still with us at the turn of the month.

EARLY NESTING

In the same way, it was surprising how quickly a number of resident species, notably the **Duncock** (*Prinella modularis*), came into full song the moment the cold spell ended. Indeed, a number of Duncocks and **Robins** (*Eritacus rubecula*), and especially **Blackbirds** (*Turdus merula*), **Song Thrushes** (*T. philomelos*) and **Mallards** (*Anas platyrhynchos*), had eggs in southern England and the Midlands by the fourth week of March. In this connection, there are still **Crossbills** (*Loxia curvirostra*) and possibly **Parrot Crossbills** (*L. pytyopsittacus*) in various parts of the country and some are reported to be in pairs: it is well worth watching for evidence of breeding.

EFFECTS OF THE HARD WINTER

The greatest interest of the next few weeks will be in measuring the full effects of the hardest and longest cold spell since 1947. Inevitably, attention will be centred on such local species as the **Bearded Tit** (*Panurus biarmicus*) and **Dartford Warbler** (*Sylvia undata*). As shown in our last issue (*Brit. Birds*, 56: 41-48), the Dartford Warbler took a considerable knock in the winter of 1961-62 and reports so far received from Dorset and Hampshire give a very gloomy picture of what has happened to the remainder. Bearded Tits, on the other hand, though much reduced (so that it will probably be some years before we have any more eruptions like those which have been such a feature of the past five winters), seem to have come through very much better than in 1947. The same applies to such birds as **Goldcrests** (*Regulus regulus*), **Treecreepers** (*Certhia familiaris*) and especially **Long-**

tailed Tits (*Aegithalos caedatus*), and one reason may have been that there were far fewer and less extensive falls of freezing fog and freezing rain; these cover food sources in a coating of ice and even freeze birds to their perches.

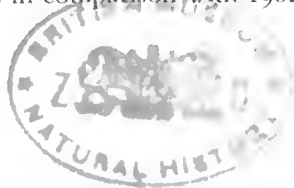
On the other hand, **Stonechats** (*Saxicola torquata*) seem to have disappeared totally from many areas (except that a small influx was reported from the south-west in the second week of March) and **Wrens** (*Troglodytes troglodytes*) were clearly very badly hit. Inevitably, few Wrens were found dead, but the numbers left in many parts of the country seem to be very small indeed. It is perhaps worth mentioning here that during the height of the cold spell as many as 51 Wrens were found roosting together in a box in the Isle of Wight. Other woodland birds which suffered very badly included **Woodpigeons** (*Columba palumbus*), **Song Thrushes**, **Blackbirds** and some of the **finches**, while **Skylarks** (*Alauda arvensis*) died in hundreds. The extensive freeze-up of everything except the fastest-flowing rivers resulted in large-scale deaths of **grebes**, **Herons** (*Ardea cinerea*), **ducks**, **Moorhens** (*Gallinula chloropus*), **Coots** (*Fulica atra*), and **gulls**. Similarly, many waders, especially **Redshanks** (*Tringa totanus*), **Woodcock** (*Scolopax rusticola*), **Snipe** (*Gallinago gallinago*), **Curlews** (*Numenius arquata*) and **Oystercatchers** (*Haematopus ostralegus*), perished on frozen coastal marshes. A high proportion of the now regular wintering populations of **Greenshanks** (*T. nebularia*) and **Common Sandpipers** (*T. hypoleucos*) was lost. In Devon, for example, 50%-80% of the Greenshanks wintering on the Exe estuary died, as did up to 25% of some of the other waders mentioned.

Two local water birds which suffered badly were the **Bittern** (*Botaurus stellaris*) and the **Water Rail** (*Rallus aquaticus*). Bitterns in East Anglia were reduced to single birds here and there, and emaciated individuals were reported from a dozen or more counties within a circle from Kent and Sussex to Pembrokeshire and Derbyshire; there was also one in Lanarkshire. Water Rails were picked up dead or in very poor condition in gardens and even streets and they were seen feeding on the dead bodies of various birds and mammals, as were **Moorhens**, **Woodpigeons**, **tits** and **Great Spotted Woodpeckers** (*Dendrocopos major*).

Several waders—among them **Snipe**, **Woodcock** and **Green Sandpiper** (*Tringa ochropus*)—were similarly reported in streets and gardens, pecking at anything edible. **Carrion Crows** (*Corvus corone*) were seen attacking birds in flight and actually killing a **Woodpigeon** and a **Lapwing** (*Vanellus vanellus*). **Kestrels** (*Falco tinnunculus*), **Sparrowhawks** (*Accipiter nisus*) and **Little Owls** (*Athene noctua*) came to gardens to hunt small birds feeding on scraps. Visitors to bird tables included such surprises as **Moorhens**, **Stock Doves** (*Columba oenas*), **Magpies** (*Pica pica*), **Skylarks**, **Treecreepers**, **Meadow Pipits** (*Anthus pratensis*), **Grey Wagtails** (*Motacilla cinerea*), **Siskins** (*Carduelis spinus*), **Snow Buntings** (*Plectrophenax nivalis*), and especially **Reed Buntings** (*Emberiza schoeniclus*) which were widely commented on from Kent and Essex to North Wales. **Robins** could even be seen in loose 'flocks' of ten to twenty!

Rarities were few in the period under review and we hope to summarise them in our next issue, but one astonishing breath of summer which must be mentioned here was a **Red-footed Falcon** (*Falco vespertinus*) near Southport (Lancashire) at the end of January. A few of these insect-eating falcons occur every May, but this is probably the earliest record in the British Isles and it came at the height of the arctic conditions to stay for at least five days.

It would be possible to go to much greater length in describing the effects of the cold spell, but space does not permit and we are, in any case, arranging for a full analysis of this period. We hope shortly to publish a detailed request for information and to issue questionnaires to those who kept detailed records. Meanwhile, we shall be glad to receive any relevant information and we hope that observers will do their best to assess the breeding populations of resident species in their areas in comparison with 1962.



PURCHASED.

Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions accepted are sent to authors before publication. After publication 25 separates of papers are sent free to authors (two or more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet only. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of any publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital initials for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are those used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the English name. Subspecific names should not be used except where they are relevant to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and no other, except in tables where they may be abbreviated to '1st Jan.', 'Jan. 1st', or even 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise cause much unnecessary work. These should take the following form:

TUCKER, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

WITHERBY, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34.

Various other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in the style used in this issue. They must either fit into the width of a page, or be designed to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this must be light blue or very pale grey. It is always most important to consider how each drawing will fit into the page. The neat insertion of lettering, numbers, arrows, etc., is perhaps the most difficult part of indian ink drawing and, unless he has had considerable experience of this kind of work, an author should seek the aid of a skilled draughtsman.



The unique

Henoldt

Diasport

smallest in the world

The Henoldt Diasport is the smallest
8 x 20 prism binocular made—a
veritable jewel of a binocular—which
can be carried in the pocket and yet
gives full 8 x magnification with the
brilliant clarity for which Henoldt—
makers of the world's largest range of
binoculars—are renowned.

An illustrated booklet on the unique
Henoldt range and name of your
nearest stockist is available from
the sole British importers:

Degenhardt
AND COMPANY LIMITED

Carl Zeiss House · 20/22 Mortimer St · London · W1
LANgham 6097/9

Printed in England by Diemer & Reynolds Ltd., Eastcotts Road, Bedford
Published by H. F. & G. Witherby Ltd., 5 Warwick Court, W.C.1

British Birds

Principal Contents

10 MAY 1963

Ornithology in action

E. M. Nicholson



PURCHASED.

Toxic chemicals and birds of prey

Stanley Cramp

Changes in the status of birds of prey in Europe

I. J. Ferguson-Lees

(with six plates)

Peregrines and homing pigeons

Thorvald Lindquist

Notes

Review

News and comment

Three
Shillings



April
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by

Stanley Cramp I. J. Ferguson-Lees
P. A. D. Hollom E. M. Nicholson

Photographic Editor: Eric Hosking

Hon. Editors: W. B. Alexander N. F. Ticehurst

Editorial Address: 30 St. Leonard's Avenue, Bedford

Contents of Volume 56, Number 4, April 1963

	<i>Page</i>
Ornithology in action. By E. M. Nicholson	121
Toxic chemicals and birds of prey. By Stanley Cramp	124
Changes in the status of birds of prey in Europe. By I. J. Ferguson-Lees. Photographs by G. A. Booth, Gösta Håkansson and Eric Hosking (plates 21-26)	140
Peregrines and homing pigeons. By Colonel Thorvald Lindquist	149
Notes:—	
Ringed Plover breeding on cliff top (C. M. Veysey)	152
Dippers fighting (D. S. Bunn)	152
American sparrows crossing the Atlantic on board ship (Clem Lewis)	153
Review:—	
<i>The Popular Handbook of British Birds.</i> By P. A. D. Hollom. 3rd (revised) edition. Reviewed by Peter Davis	154
News and comment. Edited by Raymond Cordero	156

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 5 Warwick Court, London, W.C.1





British Birds

Vol. 56 No. 4

APRIL 1963



Ornithology in action

By *E. M. Nicholson*

ONE OF THE OUTSTANDING features of British ornithology today is the continuous flow of energy from watching to systematic investigation, from investigation to settled conclusions, and from conclusions to practical action, while action in turn reveals fresh questions and problems which once more call the watchers to investigate and restart the cycle. We have seen this pattern grow in such different spheres as territory and bird numbers leading through census work to scientific conservation; noting of first arrivals and lighthouse reports leading on to ringing, bird observatories, radar watches and refuges for migratory species; pursuit of wildfowl leading to comparative studies, then ramifying out to interpretation of bird behaviour and, through rocket-netting, to world population studies and thus again to conservation; and curiosity over variations in plumage and behaviour leading by various routes to the formation of new concepts in taxonomy and evolution studies.

This tendency is strong enough not only to suck into the vortex bird-watchers who never intended their hobby to become a scientific duty, but even to absorb fascinated bystanders from the ranks of farmers, landowners or sportsmen. A remarkable example of this was seen at Cambridge at the beginning of March when falconers and pheasant preservers, gamekeepers and farmers, wildfowlers and racing pigeon fanciers, members of both Houses of Parliament and research scientists joined with a strong group of field ornithologists in a Birds of Prey Conference, jointly and excellently organised by the British Trust for Ornithology and the Royal Society for the Protection of Birds.

21. The Peregrine (*Falco peregrinus*) can be quite common, even nesting on buildings, but persecution has long been common and it now faces extinction in some areas, probably due to toxic chemicals (pages 126 and 142) (photo: G. A. Booth)

After a welcome by Lord Hurcomb and film sequences of most of the British species, I. J. Ferguson-Lees opened with a comprehensive and highly condensed up-to-date summary of the status of birds of prey in Europe, which was followed by Dr. Kai Curry-Lindahl's masterly review of conservation and predation problems in this group. Philip Brown and George Waterston then admirably summarised the state of protection of birds of prey in England and Wales and in Scotland respectively, and Stanley Cramp gave a balanced analysis of present knowledge of toxic chemicals in this connection. From a seven-year series of records of watching ten species on a 4,000-acre Hampshire game preserve, Dr. J. S. Ash described how, at various dates between 1953 and 1956, each species had entered a decline, in some cases by as much as two-thirds, the only slight increase being in the rare Montagu's Harrier (*Circus pygargus*). Dr. David Jenkins showed, from the copious results of the Nature Conservancy's Unit of Grouse and Moorland Ecology, how closely associated the losses from predation among Red Grouse (*Lagopus scoticus*) are with the numbers of displaced landless birds which are, in any case, largely doomed not to find a living. Finally, five species were reviewed by specialists, the Golden Eagle (*Aquila chrysaetos*) by Dr. J. D. Lockie, the Hen Harrier (*C. cyaneus*) by E. Balfour from Orkney, the Buzzard (*Buteo buteo*) by Dr. N. W. Moore, the Peregrine (*Falco peregrinus*) by Dr. D. A. Ratcliffe and the Kite (*Milvus milvus*) by Peter Conder, who was drawing on R.S.P.B. material.*

This well-chosen team of speakers managed within a day and a half to present clearly and succinctly a most impressive range of up-to-date and highly significant facts and interpretative material. Few can have come away without a sense of having obtained an altogether more advanced and illuminating picture of birds of prey and their roles and problems than they would have thought possible. The vast potential of a really well-planned and well-conducted small conference could hardly have been better demonstrated, both in the talks and in the discussions.

The papers gave evidence of the effectiveness of our modern capacity to find and verify even the best hidden facts and to present them in

*The papers by Stanley Cramp and I. J. Ferguson-Lees are published *in extenso* in this issue on pages 124-139 and 140-148. Dr. Kai Curry-Lindahl used much material from his paper on 'Conservation and predation problems of birds of prey in Sweden' which appeared in *British Birds* in 1961 (54: 297-306), while Dr. N. W. Moore and Dr. J. S. Ash similarly drew information from their respective papers on 'The past and present status of the Buzzard in the British Isles' (50: 173-197) and 'Bird of prey numbers on a Hampshire game-preserve during 1952-1959' (53: 285-300). Dr. D. A. Ratcliffe's data will be included in the results of the Peregrine Enquiry to appear in *Bird Study* later this year. In addition, all the papers given at Cambridge will be published in summarised form in a future issue of *Bird Notes*.

objective and significant form. The discussions which followed gave equally striking proof of the welcome, if belated, retreat of fixed ideas and prejudices which have for centuries prevented any sensible and dispassionate national attitude and practice towards the birds of prey. As leaders of the game-preservers and gamekeepers, racing pigeon keepers, game biologists and protectionists rose in turn to speak in all essentials with one voice, all chance of the conference providing what the popular Press would call 'news' evaporated, since agreement is not 'news', even if it has taken three hundred years to reach.

Special credit for this fortunate atmosphere and constructive outcome is due to the spokesmen of the gamekeepers and the pigeon fanciers, who never allowed any contrary sentiments or views which they may hitherto have held to deflect them from a straightforward and statesmanlike response to the facts put before them. They were rightly applauded for their contributions to the discussion, even when they spoke with some feeling on behalf of their fellows. It was clear that a basis had emerged for much more effective co-operation and for joint efforts in the education of those whose attitudes and understanding are most vital to the welfare and even to the survival of our birds of prey. In this we have something to learn from other countries: in Switzerland, for example, shooting men are given a fairly thorough training in everything pertaining to their responsibilities with a gun; and in Sweden enlightened protection may well have been the source of the pool of Ospreys (*Pandion haliaëtus*) on which we have been able to draw in beginning the rebuilding of our breeding stock in Scotland. A striking example of the co-operative methods which have been pioneered in Sweden can be seen in the article on 'Peregrines and homing pigeons' which Colonel Thorvald Lindquist has kindly written for us on pages 149-151. This describes the pioneer efforts made nearly twenty years ago to reach a workable solution to the bitter controversy over Peregrines which was then raging between Swedish protectionists and pigeon fanciers. Without necessarily assuming that the same formula would be applicable here, we are glad to print this as an illustration of the type of new thinking and adjustment which is needed.

While much that emerged from Cambridge was encouraging, the same cannot be said of the prospects of the birds of prey. Their future is at best precarious and alarming; it would be hard to demolish assertions that some of them are probably doomed to early extinction as British breeding birds, since, if present trends should continue, that would almost inevitably follow. The only hope is that these trends can be reversed before it is too late. The chance of this has been increased somewhat as a result of the mighty blow struck by Rachel Carson in her best-selling book *Silent Spring*, which can justly be said

to have transformed public opinion towards toxic chemicals, especially in the most influential quarters. Ornithologists, by their fact-finding and strength of purpose, secured two years ago the now famous voluntary ban on seed dressings, and there are now good prospects of more sweeping readjustments in the use of toxic chemicals. In relation to birds of prey, the situation has been authoritatively, if not felicitously, expressed in the Conference's unanimous concluding resolution, which, after copious redrafting, emerged in these words:

'This Birds of Prey Conference, of sportsmen, falconers, pigeon fanciers, landowners, farmers, gamekeepers, naturalists, research scientists and others, finds conclusive evidence of an alarming decline in numbers of birds of prey in Britain over the past six years. The Conference finds that the chief factor in this rapid decrease is the use of certain types of toxic chemicals on the land and gives warning that continuance of present trends would lead to the early extinction in Britain of one or more species. Because of their great value on scientific and economic grounds, and as part of our national heritage, birds of prey therefore urgently need all possible aid for their preservation. The Conference urgently recommends that the agricultural, horticultural and forestry use of such chemicals, especially persistent chlorinated hydrocarbons, should be critically re-examined and where necessary reduced. There is also a need for intensified research, better observance and enforcement of the Protection of Birds Act 1954, and more public education about this emergency.'

Toxic chemicals and birds of prey

By Stanley Cramp

INTRODUCTION

THE DRASTIC DECLINE in the numbers of almost all our birds of prey in the 19th and early 20th centuries, due to the increased efficiency of fire-arms, to collecting and, above all, to the spread of game preservation, was followed in the cases of most of them by a general improvement in status which lasted until about the middle of the 1950's. In this, protection, the slow spread of a more enlightened attitude and the reduced activity of gamekeepers, especially during the two World Wars, all played a part. In the last few years, however, there have again been reports of declining numbers of some species, at a time when the growing use of toxic chemicals in agriculture and horticulture has provided a new threat to many forms of wild life. It is

tempting to assume that the one has led to the other, but can this, in fact, be established? This paper examines the available evidence, much of it recent.

RECENT CHANGES IN NUMBERS OF BIRDS OF PREY

There are, unfortunately, all too few accurate census figures for any species of birds, either before or since the new synthetic pesticides began to be used on a large scale, and this applies to most of our birds of prey, both diurnal and nocturnal. The most recent assessment was made in 1957 (*Brit. Birds*, 50: 129-155, 173-197) and it dealt only with the rarer diurnal birds of prey, without attempting to cover the positions of the owls or the three commoner raptors—the Sparrowhawk, Merlin and Kestrel.* It was in the cases of two of these, the Kestrel and the Sparrowhawk, that signs of a widespread decline in numbers in recent years were first noted. After the 1960 breeding season, R. S. R. Fitter, on behalf of the Council for Nature, gathered information from observers in a number of counties in England and Wales. The results showed evidence of a fall in the numbers of Kestrels in Northumberland, Yorkshire, Lincolnshire, Nottinghamshire, Norfolk (except for marsh areas and the Broads), Suffolk, Cambridgeshire (except for the Fen Washes), Huntingdonshire, Essex and Oxfordshire, with little apparent change in Hampshire, Wiltshire, Dorset, Montgomeryshire, Merionethshire, Flint, Lancashire, Cumberland, Derbyshire and Leicestershire. The Sparrowhawk appeared to have been still worse hit, with decreases in Northumberland, Yorkshire, Lincolnshire, Derbyshire, Leicestershire, Norfolk, Suffolk, Huntingdonshire, Essex, Oxfordshire, Hampshire, Dorset and Montgomeryshire, only Pembrokeshire and Flintshire reporting no evidence of any recent changes in numbers. Thus R. S. R. Fitter's information showed that both species had declined, often markedly, in the south and east of England and that in the case of the Sparrowhawk this decline extended also to parts of western England and Wales. An examination of the county bird reports for 1960, and, where available, for 1961, confirms this general picture, except that in Yorkshire the Kestrel seems to have decreased in only parts of the county. In addition, the 1960-61 reports show that the Kestrel has now declined in Kent and probably Leicestershire, but not apparently in Herefordshire; and that the Sparrowhawk has now decreased in Herefordshire, Nottinghamshire and the London area, but not in the Bristol area. They also suggest that the Sparrowhawk may now be virtually extinct in Lincolnshire, Huntingdonshire and Norfolk.

Some light on the timing and extent of this decline is provided by

*The scientific names of all birds mentioned in the text can be found in the appendix on page 139; otherwise they are given only in the tables.

an analysis of the Nest Record Cards for these two species, which has kindly been made by Henry Mayer-Gross, of the British Trust for Ornithology (fig. 1). The numbers of cards relating each year to nests of Kestrel and Sparrowhawk are very small and therefore liable to be influenced by chance fluctuations, but the general picture is clear and agrees closely with that drawn from the reports of observers. Whilst the total of Nest Record Cards for all species rose from about 5,000 in 1950 to between 8,000 and 11,000 in the years 1951 to 1960, with a sharp rise to over 14,000 in 1961, the number of Sparrowhawk nests reported under the scheme showed signs of a general decline from about 1955, most marked in eastern and southern England, but affecting the rest of Great Britain from 1957 onwards. The decline of the Kestrel is less marked on the Nest Record Cards, and so far appears to be largely confined to southern and eastern England, where it seems to have begun about 1956.

In the case of a much rarer species, the Peregrine, we have far more exact data to show a recent and almost catastrophic fall in numbers. At the request of the Nature Conservancy, a census of Peregrines was organised by the British Trust for Ornithology in 1961 and 1962. This followed representations by the pigeon racing enthusiasts, who feared that these falcons were a serious threat to their birds, but it now appears that the problem is not one of regulation of numbers of the Peregrine but rather the conservation of the remnants of a seriously threatened species.

In 1961, 431 of the 718 Peregrine territories known in Great Britain were visited. In southern England and Wales the majority of nesting places appeared to be quite deserted, and only eleven pairs in the 156 sites visited were known to have reared young. In northern England and southern Scotland, Peregrines were entirely absent from 45 of the 97 territories visited and only eleven pairs were known to have reared young. In the highlands and islands of Scotland the picture varied from district to district; some areas had a fairly normal nesting season, with most territories occupied and most pairs succeeding in hatching eggs, but in others (including some of the remotest) a much lower proportion of breeding pairs produced young, although the nesting populations were normal. Taking the country as a whole, of the 431 territories visited, Peregrines were absent from 173, one or both birds were present but not known to nest in 118, and of the remaining 140, where eggs were laid, only 82 pairs were known to have reared young. The general picture, with this trend of deterioration northwards, was similar in 1962, but there was evidence of a further decline, particularly in regions south of the Highlands, where breeding success was only half that of 1961. The 1962 results indicated that about half the pre-1939 population of Peregrines in Great Britain, about 650 breeding

TOXIC CHEMICALS AND BIRDS OF PREY

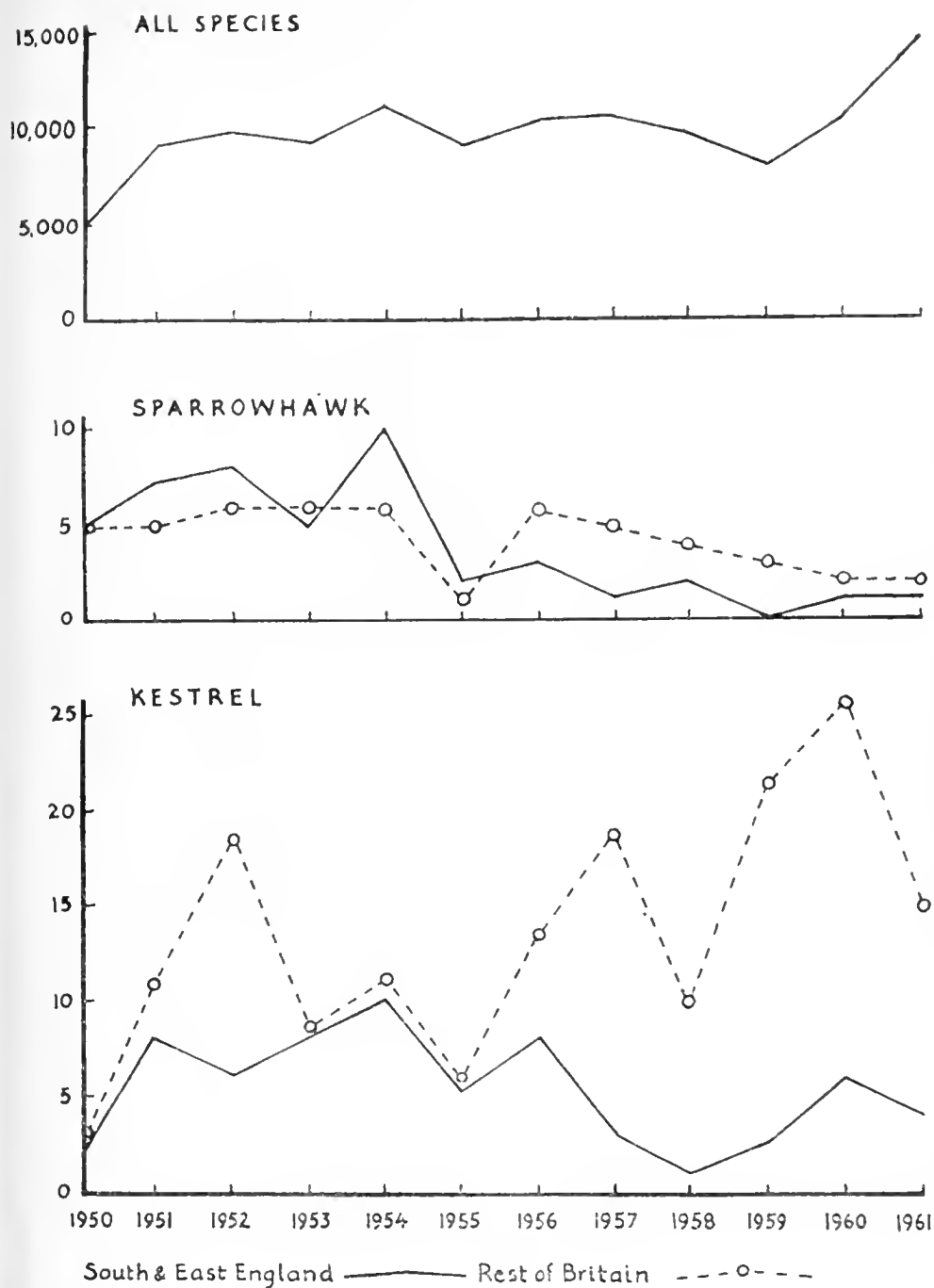


FIG. 1. Numbers of B.T.O. Nest Record Cards for the Sparrowhawk (*Accipiter nisus*) and Kestrel (*Falco tinnunculus*), 1950-61, to show differences in trends between south and east England and the rest of Britain. The grand totals for all species are also shown to demonstrate that, whereas numbers of Sparrowhawk and Kestrel cards are falling, at least in south-east England, an increasing amount of attention is actually being paid to this method of recording nest data

pairs, had gone, and that only just over a quarter of the remainder bred successfully (D. A. Ratcliffe *in litt.*).

There is no published information on recent changes in total numbers of other diurnal birds of prey in the British Isles, but observations made by Ash (1960) on a game preserve in Hampshire from 1952 to 1959 suggest that several other species may be affected. Ash's records of sightings of eight different species were made throughout the year and do not therefore refer only to the breeding populations. They show: Kestrel, a decrease from 1956; Buzzard, a decline after the advent of myxomatosis in 1954, then a revival, and then another decline; Sparrowhawk, a steady decline from 1953; Hen Harrier, a decrease by two-thirds from 1956; Merlin, a decrease by two-thirds between 1953 and 1957, then numbers remaining steady; Peregrine, almost a two-thirds decrease, the main decline starting in 1956; Hobby, fluctuating numbers, but generally a decrease of about two-thirds; and Montagu's Harrier, the only increase (in 1958 and 1959).

Moreover, the recent decline in numbers of birds of prey is not confined to the British Isles. Ratcliffe and Moore (1962) stated that they had received reports of serious decreases in Peregrines from the eastern United States, Germany, Finland and Sweden. At least in certain parts of its range in North America, the Bald Eagle has suffered severely. According to Carson (1962), in the years 1939-49 Charles Broley used annually to ring about 150 young Bald Eagles in about 125 nests on a stretch of the western coast of Florida. In 1947 the numbers of young began to decline; some nests contained no eggs and others had eggs which failed to hatch. Between 1952 and 1957 about 80% of the nests failed to produce young. In 1957 Broley found only 43 occupied nests, of which seven produced young, and in 1958 only ten nests and a single chick. At Hawk Mountain, in south-eastern Pennsylvania, the proportion of first-year eagles seen on autumn migration fell from 40% in 1935-39 to 20% in 1955-59.

In the case of the nocturnal birds of prey it is more difficult, and perhaps impossible, to make any accurate assessment of total populations. There is no firm evidence of recent changes in numbers, although, as described below, owls appear to be dying from toxic chemicals on a considerable scale.

EVIDENCE OF DEATHS OF BIRDS OF PREY FROM TOXIC CHEMICALS

Since 1960 the Joint Committee of the British Trust for Ornithology and the Royal Society for the Protection of Birds on Toxic Chemicals has, in co-operation with the Game Research Association, been collecting evidence of birds killed by toxic chemicals. Their first three reports (Cramp and Conder 1961; Cramp, Conder and Ash 1962 and

TOXIC CHEMICALS AND BIRDS OF PREY

1963) show that 72 deaths of diurnal and nocturnal birds of prey analysed during 1960-62 were apparently due to toxic chemicals. These are summarised in table 1.

Table 1. Reported deaths of birds of prey apparently due to toxic chemicals, British Isles, 1960-62

	1960	1961	1962
Buzzard (<i>Buteo buteo</i>)	2	2	2
Sparrowhawk (<i>Accipiter nisus</i>)	—	2	1
Kestrel (<i>Falco tinnunculus</i>)	1	7	8
Barn Owl (<i>Tyto alba</i>)	1	1	18
Little Owl (<i>Athene noctua</i>)	—	—	2
Tawny Owl (<i>Strix aluco</i>)	2	8	4
Long-eared Owl (<i>Asio otus</i>)	—	3	—
Unidentified owls	—	5	—
	6	28	35

The figures in table 1 cannot necessarily be taken as reflecting the actual scale of deaths in each year, as it is possible that increased publicity led to more observers being on the alert for casualties in 1961 and 1962. On the other hand, it is also likely that for some if not all of the species the total populations, and therefore the numbers at risk, were diminishing over the period.

In 1961 it was possible to obtain more definite evidence on the causes of death when a number of bodies of birds of prey were sent to a London firm of public analysts and consulting chemists for chemical examination. The results are given in table 2; it should be noted that at this time the methods of analysis allowed the amounts of organic chlorine to be determined, but not the identification of the specific chlorinated hydrocarbon involved.

Table 2. Quantities of toxic chemicals (parts per million) found in predators in analyses sponsored by the R.S.P.B. in 1961

	No. of bodies	Mercury			Organic chlorine		
		Max.	Min.	Average	Max.	Min.	Average
Sparrowhawk (<i>Accipiter nisus</i>)	1*	1.5					
Kestrel (<i>Falco tinnunculus</i>)	2*	2.5	2.0		7.5		
Tawny Owl (<i>Strix aluco</i>)	3*	1.8	0.5	0.8	7.3	0.2	
Long-eared Owl (<i>Asio otus</i>)	1	4.7			3.9		

*One specimen in each case not examined for organic chlorine

BRITISH BIRDS

In 1962, however, more refined and more expensive techniques made it possible for the specific chlorinated hydrocarbon concerned to be identified in most instances, and more bodies were analysed. I am grateful to P. J. Conder for generously supplying the details summarised in table 3.

Table 3. Quantities of toxic chemicals (parts per million) found in predators in analyses sponsored by the R.S.P.B. in 1962

	County	No. of bodies	Mercury	Organic chlorine	Aldrin	Dieldrin	BHC	Heptachlor epoxide
Buzzard (<i>Buteo buteo</i>)	Lincs	1		0.3				
Sparrowhawk (<i>Accipiter nisus</i>)	Dorset	1	1.5					
Kestrel (<i>Falco tinnunculus</i>)	Lancs	1	0.04		0.3			0.05
		1	1.1	4.5		present		
	Lincs	1		0.6				
		1		1.0		1.8		
	Wilts	1			0.1	0.6	0.02	
	Berwicks	1	0.4	0.1				
	Ireland	1			0.01			
Little Owl (<i>Athene noctua</i>)	Kent	1	0.9		0.5	6.5		
Barn Owl (<i>Tyto alba</i>)	Lincs	1				0.2		
	Notts	1	1.2	2.0				
	Northants	1	0.6			0.4		0.2
	Beds	1	1.1	0.8		present		
	Berks	2	1.3			0.6	1.0	
	Bucks	1		1.6				
	Cornwall	1				1.2		
	Essex	1	0.7			3.0		
	Kent	1	0.6			11.8	0.1	
Tawny Owl (<i>Strix aluco</i>)	Scotland	1	0.8	1.2		1.1		
	Norfolk	1	1.5			3.2	0.2	3.0
	London	1	0.3			3.0	0.01	0.1
	Kent	1				3.3	0.04	

Details have also been published (Ratcliffe and Moore 1962) of the results of analyses carried out by the Pest Infestation Division of the Ministry of Agriculture, Fisheries and Food. They concern some predators found dead in the spring of 1962 and details are given in table 4.

In the United States studies have been made to test whether there is any connection between the striking decline in the numbers of the Bald Eagle, described earlier, and the use of chlorinated hydrocarbons, such as DDT to control the salt marsh mosquito on the marshes and

coastal areas of Florida where the eagles forage for food. In an interim report DeWitt and Buckley (1962) stated that of 27 field specimens of eagles analysed (two Golden and 25 Bald) all but one, a Bald Eagle from Alaska, contained measurable amounts of DDT or its metabolites. The residues contained in tissues from these birds were: liver, 0.0 to 53.1 parts per million (average 7.4); kidneys, 0.0 to 58.6 (average 13.6); heart, less than 0.5 to 44.0 (average 9.3); brain 0.0 to 71.5 (average 14.4); breast muscle, 0.2 to 23.4 (average 6.0).

Table 4. Quantities of insecticides (parts per million) found in predators by the Ministry of Agriculture, Fisheries and Food in spring 1962

	Heptachlor epoxide		Dieldrin		Gamma	BHC
	Flesh	Liver	Flesh	Liver	Flesh	Liver
Kestrels (<i>Falco tinnunculus</i>) (a)	17.7	44.0	13.7	42.0	14.7	28.8
(b)	18.2	32.0	10.0	5.0	0.0	0.0
Unidentified owl	11.3	54.3	12.0	24.0	0.0	0.0

In Sweden, analyses have shown the following birds of prey to contain pesticide residues: a Merlin (aldrin or mercurial fungicides), one each of Golden Eagle and White-tailed Eagle (minor amounts of mercurial fungicides), and two Eagle Owls (aldrin or mercurial fungicides; thallium sulphate rodenticide) (K. Curry-Lindahl, *in litt.*). Finally, amongst the casualties in Holland in 1960 following the use of parathion (an organo-phosphorus pesticide) were Buzzard, Sparrowhawk, Goshawk, Marsh Harrier, Montagu's Harrier, Peregrine, Merlin, Kestrel, Barn Owl, Little Owl, Tawny Owl and Long-eared Owl (Mörzer Bruijns 1962).

There is abundant evidence, therefore, that many species of birds of prey in several different countries have been found dead in circumstances suggesting that toxic chemicals were the cause, and analyses here, in Sweden and the United States have shown varying amounts of poisons, mainly chlorinated hydrocarbons and mercury, in their tissues. They must have derived these poisons from their prey, as few birds of prey are likely to feed directly on dressed grain or sprayed crops. This underlines the fact that the chlorinated hydrocarbons, unlike the organo-phosphorus compounds, are highly persistent and pass readily from one organism in the food chain to another, often concentrating in the process. Perhaps the best known example is that of the Western Grebes of Clear Lake, California, which were killed by DDD applied to destroy a small, non-bloodsucking gnat. The DDD was used with extreme care, so as to cause the minimum harm to fish, and the greatest concentration applied at any one time

(there were three applications in all) was one-fiftieth part per million. Yet the poison built up, reaching about 5 parts per million in the plankton organisms, from 40 to 300 parts per million in plant-eating fishes, and 1,600 parts per million in the fatty tissues of the grebes.

In a similar way, hawks and owls obtain poison from their prey. This has been shown experimentally by Bernard (1962) in the United States. He fed House Sparrows with DDT, less than 200 gm. in all, and then fed parts of the sparrows to an American Sparrowhawk (the New World equivalent of the European Kestrel). The hawk died five days later in tremors, and residues of DDT were found in its organs—85 p.p.m. in the brain, 76 p.p.m. in the breast muscle, 97 p.p.m. in the heart and 212 p.p.m. in the liver.

So far as I am aware, the lethal dose of the various toxic chemicals for the different species of birds of prey in this country has not been determined. This dose varies considerably, not only among different species of animals, but among different individuals of the same species. As little as 3.3 p.p.m. of aldrin or 5.8 p.p.m. of dieldrin can be lethal to adult Bob-white Quail (DeWitt 1956), while, according to evidence quoted by Murton and Vizoso (in press), the LD 50 dose for feral pigeons is 67 p.p.m. for dieldrin, 55 p.p.m. for aldrin and 167 p.p.m. for heptachlor. DeWitt and Buckley (1962) fed captive Bald Eagles on diets containing 10 p.p.m. and upwards of DDT. One fed at 10 p.p.m. escaped but another died, whilst all those fed at higher levels of DDT (except for one sacrificed after being fed for 112 days on a 160 p.p.m. diet) died after developing severe tremors. Some of the birds of prey analysed in Britain (tables 2-4) may have been carrying less than lethal doses of poisons and may actually have died from other causes; others almost certainly died from the pesticides they had accumulated indirectly from their prey. Also, as tables 3 and 4 make clear, a number of specimens were found to contain more than one poison and there is some evidence that in certain cases one poison may increase the toxicity of another.

THE EFFECT OF SUB-LETHAL DOSES ON FERTILITY

Sub-lethal doses of poisons can also have disastrous effects. DeWitt (1955, 1956) and Rudd and Genelly (1956) showed, in the case of Bob-white Quail and Pheasants that chlorinated hydrocarbons in doses too small to kill the parent birds could seriously affect their fertility by reducing egg production, the percentage of fertile eggs and chick survival.

There seems to be little doubt that some birds of prey are being similarly affected. Thus, one of the striking features of the Peregrine survey was the large proportion of pairs occupying sites and not breeding, or else nesting unsuccessfully. This was also found by

Treleven (1961) in his study of Cornish eyries. The numbers of Peregrines in Cornwall recovered well after the campaign waged against them by the Air Ministry during the war, and by 1955 there were 17 pairs compared with about 20 in the 1930's. But by 1958 only seven eyries were occupied and only two produced young, and by 1960 only three sites were occupied by 1st June and only one produced young. In the United States, the decline in the fertility of the Bald Eagle has already been described; even more striking is the fate of a colony of 62 Osprey nests near the mouth of the Connecticut River, where only a single chick was reared in 1962, all the other pairs having had addled eggs (R. T. Peterson *per* G. Waterston).

Little is known of reduced fertility in other species of raptor. The Nest Record Cards for Kestrel and Sparrowhawk have been analysed by Henry Mayer-Gross to see whether they reveal any evidence of a recent decline (table 5). The numbers are too small for the Sparrowhawk for any significant conclusions to be drawn. In the case of the Kestrel, where a larger sample is available for recent years, the figures cannot be pressed too far, but they do not lend any support to a marked decline in fertility. More evidence is badly needed on this point.

Table 5. Hatching and fledging success (excluding losses from predation) of Sparrowhawk (*Accipiter nisus*) and Kestrel (*Falco tinnunculus*)

	South and east England					Rest of Great Britain						
	Eggs	Hatched	%	Young	Reared	%	Eggs	Hatched	%	Young	Reared	%
SPARROWHAWK												
1940-54	50	42	84%	21	21	100%	41	34	83%	13	12	92%
1955-61	4	3	(75%)	3	3	(100%)	35	26	74%	8	8	(100%)
KESTREL												
1951-54	83	67	81%	57	50	89%	53	49	92%	31	28	90%
1955-61	37	32	87%	17	17	100%	85	84	99%	43	39	91%

For the Peregrine, Bald Eagle and Osprey, however, there is clear evidence of a high level of infertility, in circumstances suggesting that toxic chemicals might be responsible. The next step is to establish if these chemicals are present in the addled eggs of these birds, and this has recently been done for all three species. Moore and Ratcliffe (1962) have described how an addled egg from a Perthshire eyrie was found to contain DDE (a metabolite of DDT), dieldrin, heptachlor epoxide (a metabolite of heptachlor) and smaller quantities of heptachlor and gamma-BHC, amounting to a total of between 4 and 5 p.p.m. of chlorinated hydrocarbon residue. DeWitt and Buckley (1962) analysed eggs of Bald Eagles from unsuccessful nests in New Jersey,

and found that they contained 24.3 p.p.m., 11.4 p.p.m. and 36.9 p.p.m. of DDT respectively, and three Osprey's eggs from the ill-fated Connecticut River colony were found to contain 316 to 411 micrograms of DDE and 79 to 134 micrograms of DDD (Peter L. Ames *per* Roland C. Clement).

Finally, an addled egg from a Montagu's Harrier nest in Wales in 1962 has been found to contain both DDE and dieldrin (N. W. Moore *in litt.*).

DISCUSSION

In Great Britain, therefore, there is definite evidence that the Peregrine population has declined in recent years and there are marked, though less precise, indications that the Kestrel and Sparrowhawk have also suffered. It is not known whether the total populations of other diurnal birds of prey or of owls have been affected, though there is a clear suggestion from field observations in Hampshire that other raptors began to diminish there in the mid-1950's. Three of our diurnal birds of prey and four of our owls have been found dead in circumstances suggesting toxic chemicals as a cause, and three species of each have been shown on analysis to contain pesticide residues. Eggs of two diurnal species have been found to contain residues, and the fertility of one of these is known to have declined. Similar evidence has also been obtained for other species abroad, especially in the United States.

The evidence for a link between the recent declines in some of our predators and the growing use of toxic chemicals is strong. However, Moore (1962) has stressed that there are a number of other factors which may have been acting on bird populations in recent years. They include increased motor traffic, hedgerow destruction, overhead wires, myxomatosis (in 1953), the post-war rise in game preservation, and the reduction in numbers (and to some extent variety) of weed-plants and their accompanying insect fauna. The precise effects of these, and possibly other factors, on the populations of different species is not known (see, however, Moore 1957 for the effect of myxomatosis on the numbers and ecology of the Buzzard), although it seems obvious that, for example, the widespread habitat changes in eastern England and the reduced supplies of weed-seed and insect food could affect certain birds considerably. Even deaths from poisoning on a sizeable scale do not necessarily reduce the population of a species permanently. Thus Murton and Vizoso (*in press*) show that after a kill of at least 8% of the Woodpigeons in one area of Cambridgeshire in 1961, the population had recovered by the 1962 breeding season, when deaths of Woodpigeons from seed-dressings had been virtually abolished there after the voluntary ban on the more toxic seed-dressings had come into operation from January 1962.

TOXIC CHEMICALS AND BIRDS OF PREY

Two considerations suggest, however, that the influence of toxic chemicals on our birds of prey has been considerable. The first is the geographical distribution of the decline. Fig. 2 shows the number of incidents of mortality due to toxic agricultural chemicals (seed-dressings and sprays) in each county in 1961. This is influenced to some extent by the distribution of observers, but the general picture is in striking agreement with that provided by the analysis of crops and the use of pesticides in Great Britain in 1961 made by Moore (1962). This may be summarised as follows (the letters S, M and E indicating that crops are grown extensively in the areas concerned):

Crop	% treated annually with pesticides	Principal areas where crops grown				
		North	West	South	Midlands	East
Cereals	80%	E. Scotland	—	Hants Berks	M	E
Fruit	90%	—	—	S	Worcs	E
Vegetables, sugar beet, stock foods	20-60%	Lancs	—	S	M	E

Moore also stated that other crops (grass, rough grazing and timber) were subject to only limited treatment by pesticides in 1961 (under 5%) and that, among these, the chlorinated hydrocarbons were used only on timber.

From both these sources (Moore and fig. 2), it appears that the heaviest use of pesticides was in southern and eastern England and the Midlands, with more limited use in northern and western England and east Scotland, and very little in the rest of Scotland or most of Wales. This agrees very closely with the pattern of decline described earlier for the Kestrel and the Sparrowhawk—most marked in eastern and southern England and to a lesser extent the Midlands, and spreading in the case of the Sparrowhawk to the west and north also. The Peregrine is absent as a breeding species from eastern England and the Midlands, but its decline is most marked in southern England, including the south-west, followed by those areas (Wales, north England and south Scotland) nearest to the areas of greatest pesticide use.

The second correlation is with the timing of the decline. The use of the new synthetic pesticides increased steadily throughout the 1950's, and the highly toxic mercury and chlorinated hydrocarbon seed-dressings were brought into use in the spring of 1956, not widely at first, but reaching a peak in 1959-61, after which the voluntary ban operated for some of them. The general decline of the Sparrowhawk appears to have begun about 1955 and that of the Kestrel about 1956.

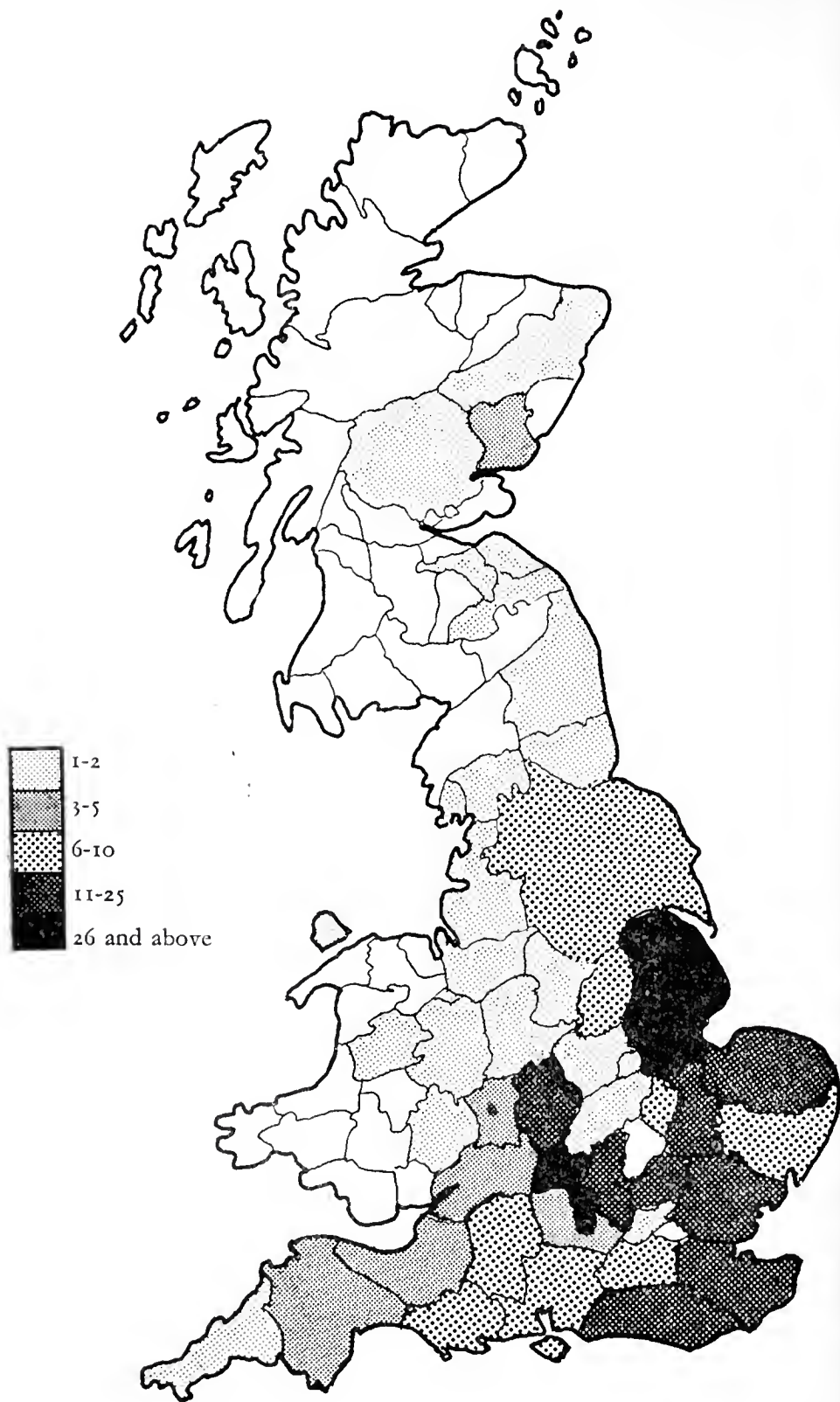


FIG. 2. The number of incidents reported of mortality due to toxic agricultural chemicals in each county in 1961 (reproduced from Cramp, Conder and Ash 1962, by permission of the R.S.P.B.)

The start of the Peregrine decline is less certain, but Ash noted it in Hampshire from 1956 and Treleven recorded it in his Cornish breeding population after 1955 but before 1958. Ash's observations in Hampshire also showed a drop in the numbers of Merlins from 1954, of Hen Harriers from 1956, and of Hobbies from 1956 or earlier.

The increasing infertility noted in the Peregrine in Great Britain and in the Bald Eagle and the Osprey in the U.S.A., since the growing use of chlorinated hydrocarbon pesticides, coupled with the fact that addled eggs of all three species have been found to contain pesticide residues, and the experimental proof that pesticides can reduce fertility in species such as Pheasants and Bob-white Quail, seems to establish a clear connection, and I am aware of no other possible explanation. Such a reduction in fertility may well be more effective in causing a population decline than the killing of adults, as witness the success of the campaign to eliminate the Screw-worm Fly (*Cochliomyia americana*) in Curaçao and Florida (Carson 1962).

CONCLUSION

After reviewing the evidence available, it is difficult to avoid the conclusion that the increased use of toxic chemicals, especially the persistent chlorinated hydrocarbons, has been the major factor in the recent decline of some of our diurnal birds of prey. If present trends continue, some species could be faced with extinction. The ban on the spring use of the three most toxic seed-dressings from January 1962 should result in some improvement, and deaths of birds of all species were much reduced in the spring of 1962. It should be noted, however, that less toxic chlorinated hydrocarbons, such as BHC, may still be used in seed-dressings, and the ban on aldrin, dieldrin and heptachlor does not extend to seed sown in the autumn in areas where attacks from the Wheat-bulb Fly are a danger, nor to their use in other pesticides, such as sprays. More important, perhaps, some of our birds of prey may have escaped the full brunt so far because their main breeding strongholds are in the north and west, where chlorinated hydrocarbons have so far been used on a much smaller scale. The danger exists, however, for BHC, DDT and dieldrin are used as sheep dips (Moore and Ratcliffe 1962) and Golden Eagles feeding on sheep carrion could be affected. And if the spraying of forests with chlorinated hydrocarbons, to combat either insect pests, as in the U.S.A., or voles, as in Germany, is begun on a large scale, this last refuge would be menaced.

ACKNOWLEDGEMENTS

My grateful thanks are due to Henry Mayer-Gross of the British Trust for Ornithology, R. S. R. Fitter of the Council for Nature, Roland C.

Clement of the National Audubon Society, Drs. N. W. Moore and D. A. Ratcliffe of the Nature Conservancy, and P. J. Conder of the Royal Society for the Protection of Birds, for allowing me to use unpublished material or for other help.

SUMMARY

(1) There is definite evidence of a sharp decline in the Peregrine in Great Britain in recent years, and strong indications of decreases also in the Kestrel and Sparrowhawk. Little information is available about the total populations of other diurnal species or of owls, but observations in southern England suggest that some of the former have also been affected. The Bald Eagle has decreased markedly in the U.S.A., and the Peregrine both there and elsewhere in Europe.

(2) Pesticide residues have been found on analysis in the bodies of the Kestrel, Sparrowhawk, Buzzard, Barn Owl, Little Owl, Long-eared Owl and Tawny Owl in Great Britain, in the Golden and Bald Eagle in the U.S.A., in the Merlin, White-tailed Eagle and Eagle Owl in Sweden, and in the Goshawk, Marsh Harrier and Montagu's Harrier in Holland.

(3) A decline in fertility has been shown in the Peregrine in Great Britain, and in the Bald Eagle and Osprey in the U.S.A., and eggs of all three species have been found to contain pesticide residues.

(4) These facts, together with the timing and geographical distribution of the decreases, suggest that the increased use of toxic chemicals, especially the persistent chlorinated hydrocarbons, which both kill directly and have sub-lethal effects on fertility, is the major factor in the recent decline of some of our birds of prey. The position of these and the remaining species could be made worse if the use of such chemicals is extended in forests and other habitats in the north and west of Britain.

REFERENCES

- ASH, J. S. (1960): 'Bird of prey numbers on a Hampshire game-preserve during 1952-1959'. *Brit. Birds*, 53: 285-300.
- BERNARD, R. F. (1962): 'Secondary DDT poisoning in a Sparrowhawk'. *Avuk*, 79: 276-277.
- CARSON, RACHEL (1962): *Silent Spring*. Boston.
- CRAMP, S., and CONDER, P. J. (1961): *The Deaths of Birds and Mammals connected with Toxic Chemicals in the first half of 1960*. Report No. 1 of the B.T.O.-R.S.P.B. Committee on Toxic Chemicals.
- and ASH, J. S. (1962): *Deaths of Birds and Mammals from Toxic Chemicals, January-June 1961*. The second report of the Joint Committee of the B.T.O. and R.S.P.B. on Toxic Chemicals, in collaboration with the Game Research Association.
- (1963): *Deaths of Birds and Mammals from Toxic Chemicals, September 1961-August 1962*. The third report of the Joint Committee of the B.T.O. and R.S.P.B. on Toxic Chemicals, in collaboration with the Game Research Association.

PLATE 22. Two specialists: the Short-toed Eagle (*C. gallicus*), declining where cultivation is reducing snakes (146); and Griffon Vultures (*Gyps fulvus*) (also Egyptian Vulture, Black Kite and Raven) which have to face modern hygiene and the poisoning of carcasses (pages 143-144) (photos: Eric P.





Pl. VII 23. Two bird- and insect-eaters: the Sparrowhawk (*Accipiter nisus*), much reduced by persecution and woodland clearance, and now disappearing wherever toxic chemicals are used (page 123), and the Hobby (*Falco subbuteo*), widespread in Europe but with only a tiny fringe population in England (page 147) (photos: Eric Hosking)





PLATE 24. Two eagles: the Golden Eagle (*Aquila chrysaetos*), reduced in most countries by shooting and poisoning (page 142); and the Lesser Spotted Eagle (*Aquila pomarina*), a small-billed specialist on voles, frogs and lizards, decreasing with the clearance of swampy meadows and old forests (page 145) (photos: Eric Hosking)





- DEWITT, J. B. (1955): 'Effects of chlorinated hydrocarbon insecticides on quail and pheasants'. *J. Agric. and Food Chem.*, 3: 672-676.
- (1956): 'Chronic toxicity to quail and pheasants of some chlorinated insecticides'. *J. Agric. and Food Chem.*, 4: 863-866.
- and BUCKLEY, J. L. (1962): *Studies on Pesticide-Eagle Relationships*. Interim report to the National Audubon Society Convention, Corpus Christi, Texas.
- MÖRZER BRUIJNS, M. F. (1962): 'De massasterfte van vogels in Nederland door vergiftiging met bestrijdingsmiddelen in het voorjaar van 1960'. *Landbouwkundig Tijdschrift*, 74-14: 578-588.
- MOORE, N. W. (1957): 'The past and present status of the Buzzard in the British Isles'. *Brit. Birds*, 50: 173-197.
- (1962): 'Toxic chemicals and birds: the ecological background to conservation problems'. *Brit. Birds*, 55: 429-435.
- MURTON, R. K., and VIZOSO, M. (in press): 'Dressed cereal seed as a hazard to Woodpigeons'. *Ann. Appl. Biol.*
- MOORE, N. W., and RATCLIFFE, D. A. (1962): 'Chlorinated hydrocarbon residues in the egg of a Peregrine Falcon from Perthshire'. *Bird Study*, 9: 242-244.
- RUDD, R. L., and GENELLY, R. E. (1956): 'Pesticides: their use and toxicity in relation to wildlife'. *Calif. Dept. of Fish and Game, Game Bulletin*, 7: 1-209.
- TRELEAVEN, R. B. (1961): 'Notes on the Peregrine in Cornwall'. *Brit. Birds*, 54: 136-142.

Appendix—Scientific names of species mentioned in the text

BIRDS OF PREY

Golden Eagle (<i>Aquila chrysaetos</i>)	Hobby (<i>Falco subbuteo</i>)
Buzzard (<i>Buteo buteo</i>)	Peregrine (<i>Falco peregrinus</i>)
Sparrowhawk (<i>Accipiter nisus</i>)	Merlin (<i>Falco columbarius</i>)
Goshawk (<i>Accipiter gentilis</i>)	Kestrel (<i>Falco tinnunculus</i>)
White-tailed Eagle (<i>Haliaeetus albicilla</i>)	American Sparrowhawk (<i>Falco sparverius</i>)
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Barn Owl (<i>Tyto alba</i>)
Marsh Harrier (<i>Circus aeruginosus</i>)	Eagle Owl (<i>Bubo bubo</i>)
Hen Harrier (<i>Circus cyaneus</i>)	Little Owl (<i>Athene noctua</i>)
Montagu's Harrier (<i>Circus pygargus</i>)	Tawny Owl (<i>Strix aluco</i>)
Osprey (<i>Pandion haliaetus</i>)	Long-eared Owl (<i>Asio otus</i>)

OTHER BIRDS

Western Grebe (<i>Aechmophorus occidentalis</i>)	Feral pigeon (<i>Columba livia</i>)
Bob-white Quail (<i>Colinus virginianus</i>)	Woodpigeon (<i>Columba palumbus</i>)
Pheasant (<i>Phasianus colchicus</i>)	House Sparrow (<i>Passer domesticus</i>)

25. Two harriers: the adaptable Hen Harrier (*Circus*), much persecuted but holding its own by nesting in many from moorland to reed-beds (page 145); and the much specialised Marsh Harrier (*Circus aeruginosus*), decreasing as marshes are drained (page 144) (photos: Eric Hosking)

Changes in the status of birds of prey in Europe

By I. J. Ferguson-Lees

(Plates 21-26)

INTRODUCTION

THIS PAPER SETS OUT to review, in the broadest terms, the present breeding status of diurnal birds of prey in Europe and the factors which have brought about increases or decreases during the last century; it excludes the owls because too little is known about many of them. It is based on an extensive survey of the literature and forms part of a wider study concerned with status changes in all groups of European birds. Many generalisations can be made only after consulting a considerable number of references and to cite the relevant ones in support of each point would make the whole unnecessarily tedious. For this reason, and because it is hoped eventually to publish the wider survey elsewhere with full references, sources of information have been omitted. They can, however, be supplied to those interested in particular aspects. The paper also includes information based on first-hand experience in Spain, France, Fenno-Scandia, Bulgaria and Rumania in recent years, as well as data gathered from correspondents in many parts of Europe.

This material is being published now as a background against which the effect of toxic chemicals on birds of prey may be assessed. The plates have been selected to bring out some of the points made in the discussion. The species illustrated are chiefly ones which have not been published in *British Birds* during the last ten years and the reader is reminded that a considerable number of photographs of other birds of prey have appeared in that time—including Lammergeier, Bonelli's Eagle, Goshawk, Kite, Black Kite, Honey Buzzard, Osprey, Eleonora's Falcon and Lesser Kestrel.* In addition, photographs of Buzzard and Hen Harrier are being reproduced in our next issue.

SUMMARY OF THE PRESENT SITUATION

Excluding owls, thirteen (or just possibly fourteen) species of birds of prey breed in the British Isles, five or six of them being extremely rare and confined to one or two localities; another ten species have occurred as vagrants. In Europe as a whole, 39 species of diurnal birds of

*The scientific names of the birds of prey can be found in the appendix on page 148; those of other species are given in the text.

prey breed, or 37 if one excludes Pallas's Sea Eagle and the Tawny Eagle whose ranges only just touch the extreme south-east corner of European Russia and about whose status there is, in any case, considerable doubt. Of these 37, two-thirds are resident and the remainder move south for the winter, chiefly to Africa. This total is made up of four vultures (*Neophron*, *Gyps*, *Aegyptius*, *Gypaëtus*), six eagles (*Aquila*, *Hieraëtus*), three buzzards (*Buteo*), three round-winged hawks (*Accipiter*), three kites (*Milvus*, *Elanus*), one sea-eagle (*Haliaëtus*), one honey buzzard (*Pernis*), four harriers (*Circus*), one harrier-eagle (*Circaëtus*), one osprey (*Pandion*) and ten falcons (*Falco*). Of the 37, 20 have decreased markedly this century, five more probably have, nine are just holding their own (or have offset decreases by increases elsewhere) and only three have really increased. The decreases include all the vultures, all the eagles except Booted, two of the kites, Marsh and Montagu's Harriers (except in the Baltic area and central Europe), the round-winged hawks and most of the large falcons. Holding their own are the buzzards, the Hen Harrier and the small falcons. Spreading are the Black Kite, the Pallid Harrier and the Red-footed Falcon.

Only the Buzzard, Sparrowhawk, Goshawk, Peregrine and Kestrel are really widespread in almost all parts of Europe where the habitat is suitable, though the Golden Eagle is generally distributed, often in very small numbers, in mountainous regions. Seven other species have a fairly wide distribution on the Continent, however, without extending into the more northern parts and in some cases being scarce or absent in the extreme south or south-east. These are the Kite (common also in the south but absent from the extreme east), Black Kite, Honey Buzzard (fairly widespread also in Fenno-Scandia), Marsh Harrier (common also in the south), Montagu's Harrier, Short-toed Eagle and Hobby (everywhere except much of Britain and Scandinavia and the Mediterranean islands). The Rough-legged Buzzard, Gyr Falcon, Merlin and Hen Harrier are primarily birds of the extreme north, though the last extends to many areas in the northern half of the main mass of the Continent, from northern Spain and northern France eastwards. The Egyptian and Griffon Vultures and the Lesser Kestrel are essentially southern species, while the Black Vulture, Lammergeier and Imperial, Bonelli's and Booted Eagles are confined to the south-west and south-east. In the south-east alone are the Levant Sparrowhawk, Long-legged Buzzard, Lanner and Saker, while the Spotted and Lesser Spotted Eagles, Pallid Harrier and Red-footed Falcon are primarily found in the eastern third of the Continent. The White-tailed Eagle is now missing from the western third, while the Osprey is confined to the north and east and the extreme south (with a great gap in between). The Black-winged Kite is found only in

western Iberia and Eleonora's Falcon only in the Mediterranean islands.

In general, birds of prey are more numerous in the south of Europe than in the north. Iberia and the Balkans have the greatest number of species and only in these areas, except at times of passage, are they still really numerous. This particularly applies to the comparatively undeveloped regions of southern Spain and Greece.

INCREASES AND DECREASES

The causes of the increases and decreases are very varied, but, with a few minor exceptions, are all brought about by man. Broadly speaking, they may be divided under shooting and trapping, poisoning, modern hygiene, habitat destruction, adaptability, climate and inter-specific competition, though very little is known about the effects of the last two of these.

Shooting and trapping

Guns and traps have long been used senselessly against any bird with a hooked bill, but certain groups have come in for more than their fair share and in the cases of some species this has been a major factor in their continued decline—especially the eagles, Red Kite, Marsh Harrier, Goshawk, Sparrowhawk, Osprey, Peregrine and Merlin. The Golden Eagle, for example, has been exterminated in many parts of Europe and is now successful only in the wilder mountains, especially parts of Spain and Greece and the Swiss and Austrian Alps. Locally within these areas it has increased, as it has done in Scotland this century: thus in Switzerland there are now 40-50 pairs where there were only 20-30 earlier in the century.

Similarly, the White-tailed Eagle has been harried out of many parts of its European range just as it was driven out of Scotland in 1908. It appears now to have been exterminated in Corsica and Sardinia (the westernmost 'black' areas on the *Field Guide* maps, apart from Iceland). There are less than 50 pairs left in Sweden and only about 25 pairs in Finland; in the latter part of the 19th century there used to be as many as 50 pairs in Denmark, but it was exterminated there by 1912 and only odd pairs have tried to breed since. Its strongholds in Europe are now the coasts of Norway (where there are something over 200 pairs), northern Russia (though it is declining in the more populated parts) and some regions in the Balkans (in Rumania, for instance, it is now protected as a 'National Monument'). It is still shot in many areas, however, and the general picture is one of steady decline.

Many other examples could be given. The Red Kite was formerly widespread throughout western Europe, but was gradually extermi-

nated in most of Britain and, more recently, in Norway and Denmark (where, however, there has been a single recolonisation); and man's campaign against it because of real or imaginary depredations on chickens has now made it a local and not very numerous bird over most of the rest of its range. Marsh Harriers are still frequently shot, often largely because they are one of the easier birds of prey to kill and because they hunt in the same areas as wildfowlers. The Goshawk formerly bred in Britain (and may now do so again in one or two localities), but this, like the Sparrowhawk, has always been a primary target of the game preserver and it is now a scarce bird nearly everywhere throughout its wide range. The discontinuous breeding range of the Osprey (which used, for example, to nest in Denmark) and the absence or scarceness of the Peregrine on many suitable cliffs are further tributes to man's prowess with the gun.

Poisoning

Poisoning can be divided under two separate headings—direct and indirect. Only the large, carrion-eating eagles have suffered much from direct poisoning and, inevitably, this has again particularly affected the Golden and White-tailed. Fortunately, however, the practice of putting out poisoned carcasses to kill eagles is not very widespread. What has had an indirect but much more serious effect in eastern Europe—especially Bulgaria, Rumania and possibly Russia—has been the custom of setting poisoned bait for Wolves (*Canis lupus*). All too often vultures or eagles find the bait first. This is considered to be the main reason for the extermination of the Lammergeier in the Carpathians in the mid-1930's (though it should be added that the Lammergeier is one of the first species of vulture to go when conditions are acting against the carrion feeders and it has now been driven out of the whole of Europe except for three areas of Spain, the southern Balkans and the larger Mediterranean islands). The other form of indirect poisoning—the accumulation of chlorinated hydrocarbons used as agricultural pesticides—is fully dealt with by Stanley Cramp in his paper on 'Toxic chemicals and birds of prey' elsewhere in this issue and, though it is now perhaps the greatest threat of all to many species, it need not be discussed here at any length. Fortunately, it does not yet seem to be a very large problem in those parts of southern Europe which are the main strongholds of birds of prey today. One aspect not touched upon by Cramp does have to be mentioned, however, although at the moment we have no information at all about it. This concerns those species which migrate to Africa during the winter. Most of Europe's birds of prey are residents, but about a dozen are summer visitors. Among these, three falcons—the Lesser Kestrel, Red-footed Falcon and Hobby—are insect-feeders which in

winter specialise on locusts, large grasshoppers and swarming white ants. The use of pesticides against these and other insects in Africa may thus in time prove another nail in their coffins.

Modern hygiene

At one time carrion and edible rubbish were more readily available than is now the case and modern sanitary requirements are bound to be affecting all the scavengers, especially the vultures and kites, but possibly also the harriers, buzzards and some of the eagles (notably the Golden and White-tailed yet again). Vultures in some areas appear to be on the decrease and this may well be because of a shortage of carcasses. In the Cevennes Mountains, for example, dead livestock used to be dumped into ravines, but here and elsewhere the tendency is now to bury or burn. Vultures are very long-lived and, as the first effect of such a food shortage would be only to inhibit their already irregular breeding, it may be some time yet before the real picture emerges. Similarly, kites and Egyptian Vultures feed on the litter of rubbish and excrement in the vicinity of poorer habitations in southern Europe; here again, present-day education and sanitation are acting against these birds.

Habitat destruction

Whereas most of the mountain-nesting eagles and vultures and those falcons which breed on cliffs and moors live in areas which tend to remain reasonably unchanged, two groups have suffered much from alterations to their habitats—those that breed in forests and those that are essentially connected with marshland, either for nesting or for feeding. Examples of the latter category are the Marsh Harrier (a marsh nester) and the Montagu's Harrier (a marsh feeder). Both have been seriously affected by drainage and cultivation in central and southern Europe, and it may be partly displacement of population in this way which caused their comparatively recent extension around the Baltic. In Denmark, for example, Montagu's Harrier first nested in 1901 and by 1946 was breeding in 97 places; similarly, in Sweden the population grew to 15 pairs within 30 years of colonisation in 1923. It may have been the same factors which produced the recolonisation of East Anglia by the Marsh Harrier in 1915. However, over Europe as a whole, there is a steady decline and only in and around the big deltas and similar areas are these birds in anything like their natural abundance, so that one can see as many as ten or twenty in the air at once.

Among species which have been reduced by the felling of forests and natural woodland are the Goshawk and Sparrowhawk and especially two eagles, the Spotted and Lesser Spotted. The Spotted Eagle is

doubly affected in this way because it is essentially associated with open swampy forest and it feeds largely on reptiles, amphibians and water-edge rodents; as a result, it has been almost exterminated in central Europe and is getting exceedingly scarce in southern Russia. The Lesser Spotted Eagle also requires large areas of marshy meadows and primeval forest, and both its breeding range and numbers have much decreased.

Only two species have been helped by the clearance of forest and the development of agricultural land. These, the Kestrel and the Pallid Harrier, are dealt with in the next section.

Adaptability

Some species are more adaptable than others to disturbance or changes in habitat, food or climate. Among the larger falcons, for example, the Gyr and the Saker are seldom found away from wild and uninhabited country and they retreat before the advance of urbanisation. The Peregrine, on the other hand, continues to occupy traditional cliffs even though they have become crowded with holidaymakers at the top and the foot, and there are also many records of its nesting on old buildings in various parts of Europe as well as on skyscrapers in North American cities. The most adaptable falcon of all is, of course, the Kestrel which may be found anywhere from bare moorland to the centre of cities, from mountains to flat cultivated land and from woodland to rocky coasts; it is primarily a small mammal feeder, but it readily takes to insects, birds, reptiles, amphibians and even carrion. It is perhaps most numerous in cultivated areas and it is not surprising that it has increased this century in Russia and other parts of eastern Europe as a result of the clearance of forests and the development of agricultural land.

Perhaps the best illustration of ecological adaptability is to be found in the harriers, however. It has already been mentioned that Marsh and Montagu's Harriers, both very much tied to marshland and moors, have generally decreased, except in the Baltic area. The Pallid Harrier, on the other hand, which is primarily a bird of dry steppe and cornfields, has extended considerably to the north-west in the last hundred years following increased cultivation in Russia. It now nests in the Baltic states and in 1952 even bred in Sweden and north Germany. Yet even more impressive in this respect is the Hen Harrier. This is a much persecuted bird, but it is holding its own because it is the least specialised of all the harriers. Its habitat varies from steppe country and moorland to reed-beds, while its food may be anything from mammals and birds to insects and frogs. Perhaps this is best realised from the fact that in America, where it is the only harrier, it fills the ecological niches of all four European species.

Another species which is very resistant to disturbance and ready to exploit any food source is the Black Kite. For instance, many nests are destroyed around the mouth of the Guadalquivir in southern Spain and the breeding-success there must be very low. Yet, 30-50 Black Kites can almost always be seen over that part of the river. This is because thousands of fresh-water fish are killed by the salt water every day when the tide rises. The Black Kite is one of the three generally increasing species of birds of prey and, though its spread in northern Europe may possibly be connected with the increase in mean summer temperatures, its readiness to breed in a wide variety of conditions, and to replace clutches destroyed, seems likely to be a major factor.

By contrast, there are other birds of prey whose range is very much limited (and which in several cases are actually decreasing) because they are rigid food specialists. A fish specialist like the Osprey does not come into this category because its prey is ubiquitous. The Short-toed Eagle, however, which is a specialist on snakes and large lizards, is becoming increasingly scarce where the reptile population is dwindling through the ploughing up of heathlands and bogs. Another food specialist, the Spotted Eagle, has already been mentioned under 'Habitat destruction' and also in this category come those species which are locally limited by food preferences. In this country the disappearance of the Rabbit (*Oryctolagus cuniculus*), following the arrival of myxomatosis in 1953, had a disastrous effect on the Buzzards in many districts because they were slow to adapt from this their favourite food. On many parts of the Continent, however, the Buzzard is a vole-eater and there it was quite unaffected by the disappearance of the Rabbit. It would be possible to give many other examples of this—the Golden Eagle in Sweden, for instance, is largely limited by the distribution of the Reindeer (*Rangifer tarandus*)—but this section must be concluded by a brief reference to the northern species (especially Rough-legged Buzzards, Gyr Falcons and various owls) which fluctuate according to the population of Lemmings (*Lemmus lemmus*) and other rodents. One year there may be a number of pairs, the next summer none.

Climate

Although the northward extension of the Black Kite in eastern Europe may be linked with the slight increase in mean summer temperatures, increases and decreases among birds of prey clearly have little connection with climatic changes. Climate must limit some species, however. The Lesser Kestrel is essentially a bird of warm open regions and so one would expect its northward limits to be fixed by humidity and temperature (it has been stated that it is showing signs of spreading north-west in eastern Europe, but in Bulgaria, for

example, it is now less numerous than formerly indicated). On the other hand, another colonial-nesting, insect-eating falcon—the Red-footed—might seem to be equally limited, yet it has extended markedly north-westwards during the last century. It has spread in north-west Russia until it now nests in east Finland, the Baltic states and east Prussia. In 1928 it bred in Sweden and it has become an increasingly regular visitor to Britain and Scandinavia in the last 25 years.

The only true insect-eater in north-western Europe, apart from the Honey Buzzard which largely confines its attention to wasps and bees, is the Hobby. Some birds which take many large insects—the White Stork (*Ciconia ciconia*), Roller (*Coracias garrulus*) and Hoopoe (*Upupa epops*), for example—have been steadily declining in north-western Europe and this decrease has generally been linked with the tendency towards a more maritime climate resulting in wetter summers which are presumed to affect the insect population. The Hobby has certainly decreased in Britain and may be declining or withdrawing in Scandinavia and Finland. However, apart from being purely an aerial feeder, the Hobby is different from the other species mentioned is that it switches to feeding on birds, especially young Hirundines and Swifts (*Apus apus*), when it has young in the nest.

Interspecific competition

Very little is known about interspecific competition so far as the diurnal birds of prey are concerned, but there is some evidence that it affects the harriers, the sparrowhawks and the larger falcons. The Marsh Harrier, for example, seems to have succeeded in ousting the Hen Harrier in one or two areas around the Baltic. Similarly, the Saker may compete with the Peregrine in open rocky country in central Europe and south Russia. Perhaps the best example, however, is the case of the two sparrowhawks. The Levant Sparrowhawk appears to be the more successful in south-east Europe, in that where it is present it alone occupies the open woodland and parkland, while the Sparrowhawk becomes confined to the mountain forests.

RELIC AND FRINGE POPULATIONS

Several of Europe's birds of prey are fringe populations of African or Asian species, or else relics of birds which once had far wider distributions. The Long-legged Buzzard and Levant Sparrowhawk, for example, are Asian and African species with fringes in the Balkans, the Lanner is primarily African and the Griffon Vulture is really an Asiatic bird with a remnant population in southern Europe. In such circumstances, a species is more than usually vulnerable to any factors working against it. This may be the reason why, for example, the Black Vulture, which is an east and central Asian species with a relic

population in Spain and south-east Europe, is declining more rapidly even than the Lammergeier. It may be part of the reason why the Hobby continues to decrease in south-east England, even though it is interfered with less now than it was thirty years ago.

In this category, too, come Europe's two most mysterious species—the Black-winged Kite and Eleonora's Falcon. The Black-winged Kite is a cosmopolitan bird with populations or closely related species in Africa, India and Australia and also locally in America. In Europe it is confined to one or two small areas in Portugal and Spain and it is not even known if it breeds regularly. It is dependent on warm, dry conditions, plenty of small rodents and large insects, and wood-edges or flat, open country with scattered trees. This habitat is common in parts of Spain, yet it does not succeed in spreading. Eleonora's Falcon, on the other hand, is now a well documented bird whose breeding areas are sufficiently known for the total population to be put within such precise limits as 1,500-2,000 pairs; two hundred years ago there were probably more. It breeds on island cliffs between the eastern Canaries and Cyprus, and nowhere else in the world; and it winters in Madagascar and the Mascarenes. Its patchy distribution, strange habits and peculiar breeding season make it almost unique. It arrives back in the Mediterranean in late April but does not nest before mid-July. Parties hunt together in the twilight, catching insects and, in autumn, migrant passerines to feed their young.

Appendix—List of birds of prey which breed in Europe

Egyptian Vulture (<i>Neophron percnopterus</i>)	White-tailed Eagle (<i>Haliaëtus albicilla</i>)
Griffon Vulture (<i>Gyps fulvus</i>)	Pallas's Sea-Eagle (<i>Haliaëtus leucoryphus</i>)
Black Vulture (<i>Aegyptius monachus</i>)	Honey Buzzard (<i>Pernis apivorus</i>)
Lammergeier (<i>Gypaëtus barbatus</i>)	Marsh Harrier (<i>Circus aeruginosus</i>)
Golden Eagle (<i>Aquila chrysaëtos</i>)	Hen Harrier (<i>Circus cyaneus</i>)
Imperial Eagle (<i>Aquila heliaca</i>)	Pallid Harrier (<i>Circus macrourus</i>)
Tawny Eagle (<i>Aquila rapax</i>)	Montagu's Harrier (<i>Circus pygargus</i>)
Spotted Eagle (<i>Aquila clanga</i>)	Short-toed Eagle (<i>Circaëtus gallicus</i>)
Lesser Spotted Eagle (<i>Aquila pomarina</i>)	Osprey (<i>Pandion haliaëtus</i>)
Bonelli's Eagle (<i>Hieraëtus fasciatus</i>)	Hobby (<i>Falco subbuteo</i>)
Booted Eagle (<i>Hieraëtus pennatus</i>)	Peregrine (<i>Falco peregrinus</i>)
Buzzard (<i>Buteo buteo</i>)	Lanner (<i>Falco biarmicus</i>)
Rough-legged Buzzard (<i>Buteo lagopus</i>)	Saker (<i>Falco cherrug</i>)
Long-legged Buzzard (<i>Buteo rufinus</i>)	Gyr Falcon (<i>Falco rusticolus</i>)
Sparrowhawk (<i>Accipiter nisus</i>)	Eleonora's Falcon (<i>Falco cleonora</i>)
Levant Sparrowhawk (<i>Accipiter brevipes</i>)	Merlin (<i>Falco columbarius</i>)
Goshawk (<i>Accipiter gentilis</i>)	Red-footed Falcon (<i>Falco tinnunculus</i>)
Kite (<i>Milvus milvus</i>)	Lesser Kestrel (<i>Falco naumanni</i>)
Black Kite (<i>Milvus migrans</i>)	Kestrel (<i>Falco tinnunculus</i>)
Black-winged Kite (<i>Elanus caeruleus</i>)	

Peregrines and homing pigeons

By *Thorvald Lindquist*

IN ALL COUNTRIES where there are still Peregrines (*Falco peregrinus*), and where pigeon-racing is widely practised by different sections of the community, there is generally a marked antagonism between those interested in birds of prey and their conservation and those interested in homing pigeons (*Columba*). Many of the latter give much time and money to their hobby and the extremists among them would be glad to see the Peregrine exterminated as it undoubtedly causes them heavy losses, but a country which does not try to preserve its present fauna for the benefit of future generations can hardly regard itself as civilised; and so a compromise is necessary. So far as is known, a full investigation of this problem has been made only in Sweden, and it is believed that a summary of the results may be of wider interest.

The Peregrine has long been protected by Swedish law. This protection has now been extended to all species of falcons all the year round. It is not permitted to shoot or catch the birds, nor to cause disturbance in the vicinity of their eyries during the whole of the breeding season.

In 1944, Svenska Brevduveförbundet (S.B.F.), the organisation representing the interests of the Swedish homing pigeon fanciers, came into conflict with Svenska Naturskyddsföreningen (S.N.F.), the body responsible for fauna conservation in Sweden, regarding the numbers of Peregrines in the country and the amount of damage they caused to homing pigeons. The two societies agreed to charge me with the task of investigating the matter. I had been concerned with pigeon-racing and homing pigeons for over 25 years, and for ten of those years I was in charge of tests with army pigeons and moveable military pigeon-lofts. I was also known as a promoter of protection for birds of prey, whose numbers are still being severely reduced every year by ill-considered shooting. In this connection I was a member of the British, French and German falconry organisations, which, as is well known, have the study and protection of birds of prey on their programmes.

The need for exact information made it necessary to extend the investigation over two years and thus it was not possible to publish the results until 1947, but this was then done by both S.N.F. and S.B.F.

Data on the number of Peregrines in Sweden and on the number of occupied eyries were obtained from questionnaires sent out to hundreds of interested ornithologists, persons concerned with the protection of

nature, homing pigeon enthusiasts and others, all over the country. After checking, it was established that in Sweden in 1945 there were at least 120 breeding pairs of Peregrines. The data collected were marked on a map, which then clearly indicated the presence of Peregrines in different parts of the country. In order to prevent the information being used for a campaign of extermination, the scale of the map and the method of indicating localities were so arranged that the risk caused by publication was insignificant. Thus only the approximate hunting area of a pair was indicated, and not the actual position of the eyrie. Nor did the map disclose whether there was just one pair in a particular area or, as was the case in some parts of the country (especially where numbers of sea-birds were concentrated), whether several pairs were involved. Each position on the map, therefore, indicated the approximate area of one or more pairs of Peregrines.

It was quite simple to establish the population of the Peregrine. It was more difficult to draw the right conclusions from the mass of information provided by the parties representing the homing pigeon interests. Of particular importance were cases where very big losses had stricken the pigeons. Here the wind and other weather conditions on racing days had to be checked, with special attention to thunder and heavy rain, as well as the positions of starting places in relation to recorded Peregrine eyries and hunting areas.

The losses of homing pigeons during the period of investigation amounted to about 5%. As many thousands of pigeons took part in the races, these losses represented large numbers. However, it was calculated that even if every Peregrine along a flying route took the opportunity of stooping on one pigeon each time (which must be considered highly unlikely) the percentage loss would not have exceeded 0.2%. The big losses thus appeared to be due to causes other than Peregrines, such as unsuitable weather conditions, bad physical state or homing ability of some pigeons, mischievous shooting, and so on.

On the other hand, the investigation did show up a form of 'indirect' damage by Peregrines which had previously been overlooked. It was found that a flock of homing pigeons exposed to the attacks of a Peregrine was often scattered. In such circumstances the pigeons seemed to lose control of themselves, breaking up into groups and flying off in different directions. Analysis of such occurrences showed that heavy losses always resulted, even if weather conditions during the flight were favourable. The heaviest losses were found to occur when a Peregrine attacked a flock shortly after it had started off. When it is released, a flock usually circles round the starting place for some while before finding the final direction, and it appears that a Peregrine attack at this critical time is particularly dangerous. The

resulting panic among the pigeons seems to make it very difficult for them subsequently to fix their home direction.

The investigation gave a number of valuable hints to S.B.F. In some cases flying routes had previously been used which caused the homebound pigeons to pass through the hunting areas of several pairs of Peregrines; these routes could now be changed in the light of the information available, and in several cases different starting places were chosen. The Society also recommended that, when pigeons had to be started in areas where Peregrines might be found, the start should take place with several flocks instead of only one.

The investigation was also of great value to S.N.F. It had to be recognised that the pigeon losses caused by Peregrines were considerable, even if the number of actual kills formed only a very small proportion of the total losses from all causes. In view of the rather small stock of Peregrines in the country there was no question of a general reduction being made in their number, but the investigation suggested that the nature protection organisations should in future co-operate with S.B.F. by keeping a careful watch on any fluctuations in the population, only definite figures being of interest in factual discussion.

Furthermore, I am of the opinion that where protectionists have persuaded pigeon fliers partly to adopt new racing routes simply to avoid Peregrines, they should be prepared to support the elimination of any eyries which remain unfavourably situated even for the new routes; this need not imply the killing of any Peregrines, as falconers would undoubtedly be glad of them. The clearance of certain routes for pigeons would promote peace and good understanding between the two parties and avoid the risk of racing pigeon fanciers taking the law into their own hands.

All who are interested in the birds of prey, whether it is because they admire their marvellous dexterity in flying or because they understand the important part they play in the order of nature, should unite to protect those which still remain. We must take good care of our heavily reduced stocks of these birds, but we must not do it in such a way that we ourselves contribute to a further reduction, nor must we allow them to increase under the protection of the law to such an extent that other interests are prejudiced. The Swedish investigation showed that it is possible to have both Peregrines and homing pigeons in the same country, but that this calls for understanding, good judgment and concessions from ornithologists and pigeon fanciers alike.

Notes

Ringed Plover breeding on cliff top.—In mid-June 1962 D. Carr, R. M. Lockley and I found a pair of Ringed Plovers (*Charadrius hiaticula*) breeding on top of St. Govan's Head, Pembrokeshire, within a hundred yards of the cliff edge. The site was a fairly large expanse of firm sand and rocky outcrops between which were small patches of short grass. The cliffs there are just over 130 feet high and there is no sandy beach at the foot, to which young Ringed Plovers could be taken.

The first indication that breeding was taking place was when, on 11th June, I saw a Ringed Plover furtively running away as I walked across the sandy area. Next day when D.C. and I returned, accompanied this time by R.M.L., I found a scrape lined with small stones on a shallow, sandy ridge and one egg lying just below it on short grass in a very restricted space between pieces of rock. The egg was warm and as it appeared to have been accidentally displaced by the breeding bird, it was 'replaced' in the scrape. On the following evening, however, there was still only the one egg and it was now cold. Two days later, on 15th June, I found two eggs on short grass between pieces of rock close to the original nest and a third egg was there next morning. Subsequently R.M.L. found a fourth egg had been laid but it is not known whether young were reared successfully. C. M. VEYSEY

Dippers fighting.—Though living in a suburban area of Blackburn, Lancashire, I am fortunate enough to have a pair of Dippers (*Cinclus cinclus*) nesting within a hundred yards of my garden. They inhabit a stream which runs along a steep-sided valley. The stream is quite a small one and, so far as I know, only the one pair is normally to be found on it. I say this because I have often followed them up and down their territory and they cover the whole available habitat. When moving upstream they will travel to a point where it is little more than a ditch and downstream they come to a road and railway embankment over which they fly and cannot be followed. This suggests that they have the stream to themselves, which is of some interest in view of the following observations.

At 1 p.m. on 23rd April 1961, hearing a Dipper singing, I scanned the stream below me and saw something flapping about amongst the stones and gravel. Fetching my binoculars, I was able to see that there were two Dippers engaged in a most ferocious battle. They seemed to be locked together by the grip of their feet while wildly beating their wings and pecking with their bills. In fact, their mode of fighting was reminiscent of that of Coots (*Fulica atra*). The struggle

continued for some minutes and then one of them attempted to break free. It was too exhausted to take wing, however, and so dived instead, but the moment it broke surface the other was upon it again and their former antics were resumed. I watched them for a further few minutes until they eventually disappeared behind a part of the bank. Several more minutes passed without any sign of them and so I decided to investigate. On approaching the spot, I could see nothing at first and so was just about to leave when I heard a Dipper sing loudly from almost beneath my feet. Looking down, I perceived the two birds lodged in a crevice between some tree roots, one of them singing and feebly pecking at the other. Thinking that the weaker bird must be in serious trouble, I stooped down and the aggressor immediately scuttled off upstream like a Mute Swan (*Cygnus olor*) leaving the water, having so exhausted itself as to be almost incapable of flight. I reached down and caught the second bird without difficulty. It proved to be quite undamaged and I was amazed at its strength: the grip of its toes and the struggling of its wings were remarkably strong. After a minute or two I opened my hand and it flew off quite vigorously, no doubt having regained its breath somewhat.

While it is well known that the Dipper is a highly territorial species, I was not aware that such vicious fights took place and, though these birds may be incapable of inflicting much physical damage, it is difficult to imagine how such a fight as this would have ended, neither bird seeming able to escape by taking flight. The cause of the fight and the sexes of the birds can only be conjectured, but as there is normally only the one pair on this stream I imagine that one of the birds was a casual intruder. There were two incomplete nests within a few yards of where the birds were fighting. These were about a yard apart and were presumably constructed by the same bird. If one of the birds was not an intruder, and I should perhaps add that I saw no sign of a third individual that day, then perhaps it is worth mentioning an experience I have had with ordinary domestic pigeons (*Columba*). Each pair claims for itself certain perches in the loft. If another bird attempts to throw the owners off one of their perches, there is usually a short fight in which the intruder is almost invariably evicted. After this it often happens that the mated pair, in their frenzy of rage and excitement, attack one another blindly.

D. S. BUNN

American sparrows crossing the Atlantic on board ship.—On 18th May 1962 my father-in-law, Mr. R. C. Callaghan, noted two small birds on the *Empress of England* at berth in Montreal, Canada. They remained on board when the ship sailed and, in fact, stayed throughout the voyage, being fed on scraps. They appeared to find bits of food

on the decks even after these had been scrubbed. They were still aboard when the ship docked at Greenock, Renfrewshire, on 24th May. My father-in-law did not see them afterwards, but they may well have stayed aboard. He described one as being greyish with white streaks on its head, and he noted that it ran and did not hop. He has since looked at books and believes the birds to have been White-crowned Sparrows (*Zonotrichia leucophrys*). CLEM LEWIS

[There is not enough description here to show exactly what species these birds were, but it certainly seems very probable that they were sparrows of the genus *Zonotrichia*. In any case, we consider that all observations of American land-birds crossing the Atlantic on ships should be published to provide a basis for analysis. In our next issue there will be an article by Mr. A. L. Durand on his memorable crossing in the *Mauretania*, which was briefly mentioned in the 'Recent reports and news' last December (*Brit. Birds*, 55: 595-596).—EDS.]

Review

The Popular Handbook of British Birds. By P. A. D. Hollom. 3rd (revised) edition. Witherby, London, 1962. xxiii+511 pages; 151 plates. 48s.

When *The Popular Handbook* first appeared in 1952, it made available to a far wider public a condensed and revised version of those sections of *The Handbook of British Birds* which would be of 'practical utility to the field-observer'. The rarer birds, with less than ten records in Britain, were omitted (these were dealt with, by 1960, in a companion volume, *The Popular Handbook of Rarer British Birds*). After extensive changes in the 2nd, and especially in this 3rd edition, the book is no longer a miniature version of its famous parent, but an important work of reference in its own right. As the publishers have recognised, P. A. D. Hollom is no longer the editor but the author.

The most striking innovation is the introduction into the text of over 120 line-drawings, most of them admirably designed to aid identification. Although some are duplicated in the plates, and others have their counterparts in the widely-owned *Field Guide*, many are highly original and helpful. I would particularly commend P. J. Hayman's sketches of raptors in flight, the most comprehensive series in any British work, and comparable to that given to the Scandinavians by K. Raitasuo in *Suomen Riista* as long ago as 1950. There are three new plates: one of immature warblers by R. A. Richardson (somewhat marred in my copy by a suppression of the yellow coloration, and also by the only misprint I have noticed); a painting of Arctic

Redpolls by C. Talbot Kelly which, like D. M. Reid-Henry's new plates for the companion volume, accentuates the quaintness and obscurity of some of the original *Handbook* plates; and D. I. M. Wallace's studies of marsh terns in flight.

It is difficult to fault the text, except in the most minor details. Some brief descriptions of the subspecies, for example those of the Continental populations of the Chaffinch, need revision. The accounts of status have not always kept up with the 1961 deadline: thus there is no word of the Peregrine's decrease, nor of the recolonisation of the northern isles by the Tree Sparrow. I was also disconcerted to learn that the Red-backed Shrike is only occasional at Fair Isle and the Blue-throat 'seldom observed in spring'. The description of a 'typical' dark-phase Arctic Skua is actually that of a typical intermediate; dark-phase birds have uniformly dark heads. Nor is the dark phase 'commoner in Britain'; it forms barely a quarter of the population. Under Storm Petrel, there is no reference to the only completely diagnostic character, the white mark on the underwing. But these are small faults, and scarcely detract from a grand achievement.

The nomenclature has been brought into line with current usage, except that the Redwing is still *T. musicus*. I, for one, am prepared to welcome the new name 'Lesser Golden Plover' (for *Charadrius dominicus*), as a mark of respect to a writer who still calls a Hedge Sparrow a Hedge Sparrow.

If I might make one plea with regard to this work, it would concern the arbitrary way in which the species qualify for inclusion. The decision as to what is or is not a rarity, when based on the total number of occurrences, can be made only once and will never be so clear-cut again. The situation obtaining only ten years ago lacks relevance today. The author admits this difficulty, and the Collared Dove has been allowed to leap-frog from the companion volume into this one, but such birds as the Melodious Warbler have not. The division already gives rise to some curious anomalies: the modern bird-watcher would be far more likely to encounter a Greenish or an Arctic Warbler, or many other birds which are not in this book, than a Spotted Eagle or a Pallas's Sandgrouse, which are. And many sibling species, liable to confusion, are quite divorced under the present arrangement. Although the work was originally destined for the observer's knapsack, it found its real niche in the bookshelf. I hope that one day this will be recognised, and the artificial division abandoned in favour of a united work with all the British species in their proper systematic order.

Lastly, the publishers should be praised for the high standard of production, and for keeping the cost so low; it is only three shillings more than in 1952, and extremely good value. PETER DAVIS

News and comment

Edited by Raymond Cordero

A new edition of the Field Guide.—Many bird-watchers find it difficult to remember the time when *A Field Guide to the Birds of Britain and Europe*, by Roger Tory Peterson, Guy Mountfort and P. A. D. Hollom, was not as essential a part of their equipment as binoculars. This deservedly famous book, now available in ten languages, has run to about 250,000 copies since it first appeared in 1954. It is probably hard to overestimate its impact; it has certainly played an important part in raising the general standard of field identification and in dispelling the insularity of many British bird-watchers. It is exciting to learn that an enlarged and fully revised edition has now been in active preparation for over a year and is nearing completion. This is a task for which the authors have enlisted the collaboration of I. J. Ferguson-Lees and D. I. M. Wallace. There has been virtual rewriting of much of the text, with a slight revision in the order of species in line with current practice; most of the distribution maps are being redrawn and a new section illustrating the eggs of Passerine species is being included. Several new plates are being added to cover 18 species which have been upgraded from 'Accidentals' to inclusion in the main body of the book. Among these are the Isabelline Wheatear, now known to breed in Turkey and Greece, the Palm Dove which now nests in Turkey-in-Europe, and several American birds seen here more frequently in recent years. Some existing colour and black-and-white plates, or parts of them, are being redrawn. The new Field Guide will be published in 1964.

New appointments.—Christopher Mylne, at present the films producer for the Royal Society for the Protection of Birds, has been appointed Principal Field Officer of the National Trust for Scotland as from September 1963.

For 1963 the new warden of Bardsey Bird and Field Observatory is Miss Carolyn Pratt, and the assistant warden is Richard Rolfe.

Wild Life Exhibition.—The first Wild Life Exhibition to be held in Britain will be opened by Lord Hailsham on 17th May. The exhibition, which is sponsored by *The Observer* for the Council for Nature, and which will be the focal point of National Nature Week, will be held in the Royal Horticultural Society Halls from 17th to 25th May, open every day from 10 a.m. until 9 p.m. (Sunday from 2 p.m. to 7 p.m.). Among the highlights will be a B.B.C. cinema showing their latest nature films; a Forestry Commission stand showing the efforts being made to encourage wild life in newly-forested country; and a National Trust stand showing conservation work on seals and sea-birds on the Farne Islands. There will also be commercial exhibits, including binoculars, cameras and books on natural history.

A new reserve in Hampshire.—Christchurch Borough Council has declared Stanpit Marsh a nature reserve. The area, which adjoins Christchurch harbour, is about 125 acres in extent, and consists of grazing land, saltings, scrub, reed beds, mud flats and shingle. The Hampshire Naturalists' Trust considers the area particularly interesting as a resting place and feeding ground for migrant and winter resident birds. We understand that it is unlikely that public access on foot will be restricted, except possibly to the small island known as Blackberry Point, and then only in the breeding season.



PLATE 26. Two raptors aided by forest clearance in Europe: the ubiquitous Kestrel (*Falco tinnunculus*), now ended by toxic chemicals (page 125); and the Pallid Harrier (*macrourus*) in Sweden in 1952, the most north-westerly to date (page 145) (photos: Eric Hosking and Gösta Ha)





1871
J. D.

Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions accepted are sent to authors before publication. After publication 25 separates of papers are sent free to authors (two or more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet only. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of any publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital initials for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are those used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the English name. Subspecific names should not be used except where they are relevant to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and no other, except in tables where they may be abbreviated to '1st Jan.', 'Jan. 1st', or even 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise cause much unnecessary work. These should take the following form:

TUCKER, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

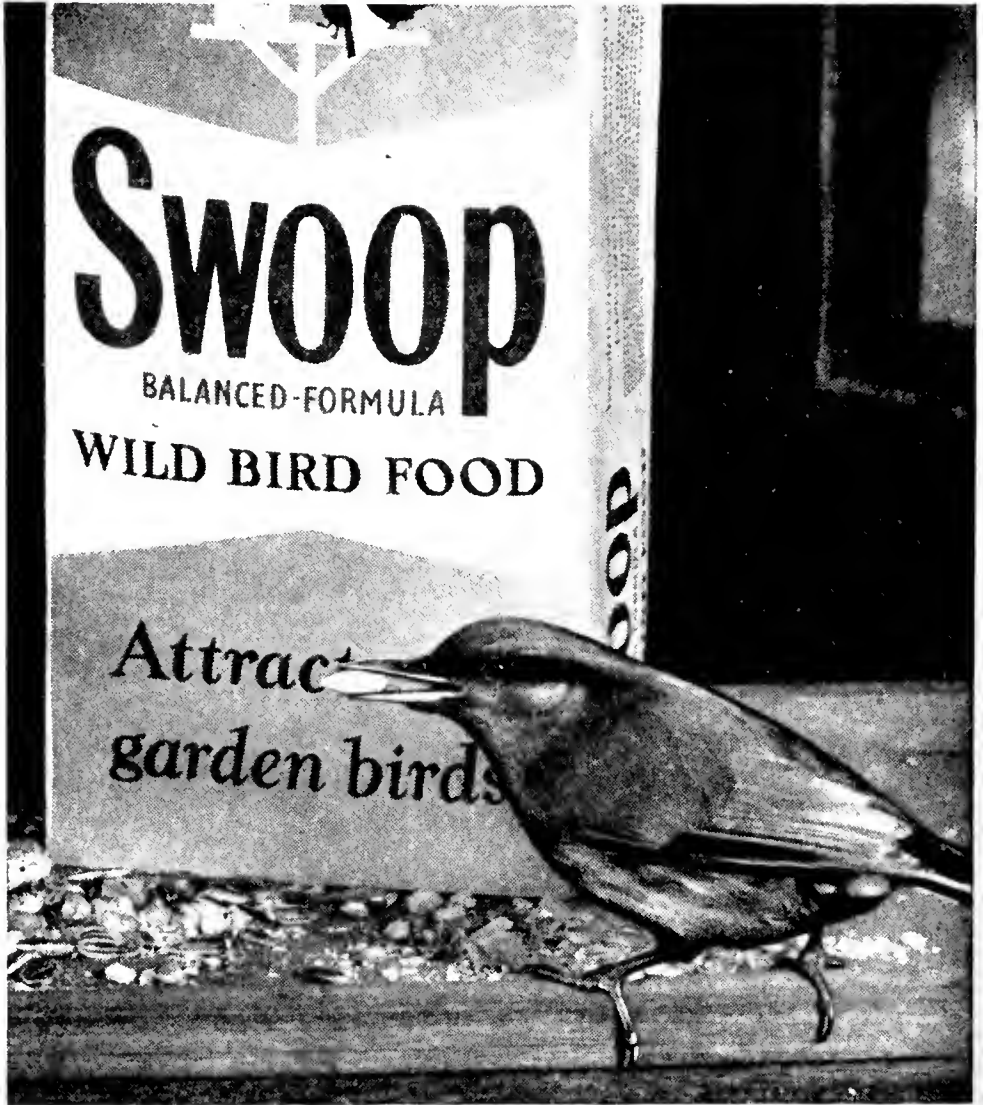
WITHERBY, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34.

Various other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in the style used in this issue. They must either fit into the width of a page, or be designed to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this must be light blue or very pale grey. It is always most important to consider how each drawing will fit into the page. The neat insertion of lettering, numbers, arrows, etc., is perhaps the most difficult part of indian ink drawing and, unless he has had considerable experience of this kind of work, an author should seek the aid of a skilled draughtsman.

A PROVED AID FOR ORNITHOLOGISTS



attracts all garden birds

Swoop wild bird food is an excellent aid to bird study. Its balanced formula of ten different foods—each carefully tested for acceptance by granivorous, insectivorous and omnivorous birds—has been shown to attract no fewer than 34 different species, including Redwing, Goldcrest, Snow Bunting, Crossbill, and even Woodcock! Apart from its obvious use on the bird table, Swoop will be found invaluable as

bait for bird photography. Recommended by the R.S.P.B., Swoop is available at all grocers and pet shops. Price 1/11 per pack.

Swoop
BALANCED-FORMULA
WILD BIRD FOOD



British Birds

Principal Contents

A remarkable fall of American land-birds on the 'Mauretania',
New York to Southampton, October 1962

Alan L. Durand



The behaviour of the Shag

Barbara K. Snow

(Part 2)

Purchased.

More examples of the best recent work by British
bird-photographers
(with eight plates)

Notes

Review

News and comment

Three
Shillings



May
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by

Stanley Cramp I. J. Ferguson-Lees
P. A. D. Hollom E. M. Nicholson

Photographic Editor: Eric Hosking

Hon. Editors: W. B. Alexander N. F. Ticehurst

Editorial Address: 30 St. Leonard's Avenue, Bedford

Contents of Volume 56, Number 5, May 1963

	<i>Page</i>
A remarkable fall of American land-birds on the 'Mauretania', New York to Southampton, October 1962. By Alan L. Durand	157
The behaviour of the Shag. By Mrs. David Snow. Part 2	164
More examples of the best recent work by British bird-photographers. Photographs by Mr. and Mrs. J. B. Bottomley, Dr. K. J. Carlson, Dr. R. G. Carlson, Harold Auger, H. Marcus Stone, A. N. H. Peach, John Markham, S. C. Porter, E. K. Thompson, Harold Platt, A. Winspear Cundall and William S. Paton (plates 27-34). Text by Eric Hosking ..	186
Notes:—	
Exceptional passage of Cory's Shearwaters off Co. Cork (H. M. Dobinson and J. T. R. Sharrock)	189
Somersaulting behaviour of Canada Geese (Miss Christina L. Batty and Lee Cave)	190
Blackbird breaking snails (Miss S. Vere Benson)	191
Grey-checked Thrush on Bardsey (F. R. Clifton)	192
Starling with differing wing lengths (J. R. Mather)	193
Review:—	
<i>The Migrations of Birds.</i> By Jean Dorst. Reviewed by Dr. I. C. T. Nisbet	194
News and comment. Edited by Raymond Cordero	195
Preliminary announcement: XIV International Ornithological Congress ..	196

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 5 Warwick Court, London, W.C.1

British Birds

Vol. 56 No. 5

MAY 1963



A remarkable fall of American land-birds on
the 'Mauretania',

New York to Southampton, October 1962

By *Alan L. Durand*

ON 2ND OCTOBER 1962, a tropical storm originating at about 22°N 63°W, to the north-east of St. Thomas, in the West Indies, developed into hurricane 'Daisy' and moved slowly north-west between the Bermudas and Cape Hatteras, continuing offshore up the eastern North American seaboard. Gradually spending its force, the hurricane turned to a north-east course, and by 7th October was clear of Cape Cod, brushing up past Nova Scotia to hit Newfoundland, where it subsequently caused considerable damage before swinging away north-east into the Atlantic, finally to blow itself out in the general direction of the Faeroe Islands a day or two later. The effect on the weather to the south of the hurricane's long, steady north-east track was to give consistent high winds from between west and north-west far out into the Atlantic, particularly over the main shipping lanes, a fact not without significance at a time of peak fall migration activity down the eastern American seaboard.

It was in this setting that I sailed in R.M.S. *Mauretania* from her berth in the Hudson River, New York City, at 15.00 hours on 7th October 1962. At the time of sailing, the hurricane was centred at 44°N 66°W, about 42 miles south-east of Eastport, Maine, and, as we cleared the Narrows and headed for the open sea, the wind freshened considerably from the west-north-west. Migrating Monarch Butterflies (*Danaus plexippus*) and Pipe-vine Swallowtails (*Papilio philenor*) accompanied us well out to sea in the following winds, and visibility was very clear that evening, the sun sinking in a fiery, apocalyptic sky. An American Robin (*Turdus migratorius*) was about the ship until dusk, and at about 17.30 hours I noticed a curious small bundle 'attached' to a wire hawser leading down from the aft funnel to the deck. On closer

examination, this proved to be a Yellow-shafted Flicker (*Colaptes auratus*), well fluffed up and apparently roosting in some discomfort. Shortly afterwards, at 18.00 hours, a large predator appeared, circling the ship for some time before settling on the very top of the mainmast for a few minutes. The very white under-parts, crooked wings pointed with black, and barred, wedge-shaped tail showed it to be an Osprey (*Pandion haliaëtus*). It had disappeared by the following day.

Monday, 8th October, will live long in my memory. Up early in the hope of possibly seeing a few migrants, I found the ship echoing with bird calls, and parts of the open deck space almost inundated at times with small passerines. The weather was curious. The sky was heavy and overcast, and a very big sea was running, but there was clear visibility and one could walk the open decks in nothing more than light airs, instead of a near gale. Such was the effect of having a strong following wind travelling only a little faster than the ship (which normally averages 22-23 knots). Conditions were, in fact, ideal for birds staying with the ship, and at noon we were already about 400 miles east of New York (table 1). The most remarkable sight on deck was of some ten woodpeckers dividing their time between the forward and after masts, sallying forth in little parties of three or four, occasionally to land on the ship's boats, on the open deck, or on the edge of a funnel. These were all Yellow-shafted Flickers, though later in the day they were joined by a Yellow-bellied Sapsucker (*Sphyrapicus varius*) and a Hairy Woodpecker (*Dendrocopos villosus*).

Hopping about inside the covered Promenade Deck were House Wrens (*Troglodytes aedon*) and Winter Wrens (*T. troglodytes*), several Golden-crowned Kinglets (*Regulus satrapa*) and one or two Ruby-crowned Kinglets (*R. calendula*), and several warblers, including Blackpoll Warblers (*Dendroica striata*), Yellowthroats (*Geothlypis trichas*), Magnolia Warblers (*D. magnolia*), and one fine male Mourning Warbler (*Oporornis philadelphia*) with the grey head and black gorget immaculate as if in fresh breeding plumage. The striking contrast with the yellow breast, and no eye-ring, made this species unmistakable, although its incidence was a little unlikely. Golden-crowned Kinglets, Blackpoll Warblers and Flickers were certainly three of the commonest birds on board, but they were easily outnumbered by White-throated Sparrows (*Zonotrichia albicollis*), which were about equally divided between adults and immatures. I conservatively estimated them at about 20+, though they seemed to be everywhere. At one time I was holding a Golden-crowned Kinglet in one hand and a Winter Wren in the other, and I was continually looking to see if any birds were ringed, but I was unlucky in this respect.

Many of these birds circulated over the open decks, of course, but

AMERICAN LAND-BIRDS ON THE MAURETANIA

the First-class Sundeck facing the after end of the ship, together with the Games Deck above and the open-air Swimming-pool below, provided something of a magnet, as food and water were being put out by stewards. In this area also were Myrtle Warblers (*D. coronata*), Slate-coloured Juncos (*Junco hyemalis*), and six or seven species of sparrows (see table 2). It was here, too, that I first noticed what was probably a Pine Warbler (*D. pinus*), a bird whose normal range is well west of the coast, but I could not be entirely certain that it was not just a poorly marked Blackpoll (though it stood out from two near-by). It appeared to have a distinctly yellower breast, contrasting with an almost unstreaked olive back, and darkish (but not black) legs; it had no eye-ring, and the white wing-bars were quite pronounced.

TABLE 1. Daily fluctuations in numbers of American land-birds (total 130+ individuals species) on board R.M.S. 'Mauretania' during eastward crossing of Atlantic in October 1962, with daily notes on ship's position, distance from New York, and weather. Numbers of individuals (but not species) on 8th, 9th, 10th and 11th October are approximate. Not included in the totals for 8th October are two marine species, Double-crested Cormorant (*Macrororax auritus*) and Common Tern (*Sterna hirundo*), though one of each of these also came on board that day.

Date	Noon position	Miles from New York	Birds present		Species present	
			Change	Total	Change	Total
7th	Dep. New York 15.00	—	+3	3	+3	3
8th	40° 36'N, 65° 17'W	394	-2 +123	124	-2 +28	29
9th	41° 40'N, 53° 59'W	912	-58 +1	67	-6 +1	24
10th	44° 47'N, 43° 30'W	1,422	-40 +2	29	-11 +2	15
11th	48° 19'N, 32° 03'W	1,941	-10	19	-4	11
12th	50° 37'N, 19° 09'W	2,463	-10	9	-5	6
13th	Arr. Cobh 07.00 Dep. Cobh 10.15	2,888	-3	6	-3	3
14th	Arr. Le Havre 04.30 Dep. Le Havre 09.00 Arr. Southampton 15.00 (+75 miles)	3,254 (via Cobh)	-2	4		3

WEATHER NOTES

8th	Strong breeze/near gale (WNW), rough sea, heavy swell, cloudy, visibility clear
9th	Near gale (W), rough sea, heavy westerly swell, overcast/cloudy, visibility clear
10th	Near gale (NW), rough sea, heavy NW swell, overcast, visibility clear
11th	Fresh breeze (W), moderate sea, moderately heavy swell, cloudy, visibility clear
12th	Moderate breeze (NW), moderate sea and swell, overcast, visibility clear

Table 2. Systematic list of American land-birds (total 130+ individuals of 34 species) on board R.M.S. 'Mauretania' during eastward crossing of North Atlantic in October 1962

Single specimens of the seven species marked on the left with an asterisk were picked up dead, kept in cold storage for the rest of the voyage and subsequently sent to Liverpool Museum, together with a Parula Warbler (*Parula americana*) which died at the end of the previous voyage (page 162). The three species in square brackets are open to a very slight doubt and, particularly as their occurrence in such circumstances is somewhat unexpected, it is considered safer to qualify them in this way

	Estimated maximum	First seen	Last seen
Osprey (<i>Pandion haliaëtus</i>)	1	7th	7th
Pigeon Hawk (American Merlin) (<i>Falco columbarius</i>)	1	9th	9th
Mourning Dove (<i>Zenaidura macroura</i>)	1	8th	8th
*Yellow-shafted Flicker (<i>Colaptes auratus</i>)	10+	7th	13th
Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>)	1	8th	8th
Hairy Woodpecker (<i>Dendrocopos villosus</i>)	1	8th	8th
Blue Jay (<i>Cyanocitta cristata</i>)	1	8th	8th
House Wren (<i>Troglodytes aedon</i>)	2	8th	8th
Winter Wren (<i>Troglodytes troglodytes</i>)	3	8th	9th
Catbird (<i>Dumetella carolinensis</i>)	2	8th	9th
American Robin (<i>Turdus migratorius</i>)	1	7th	7th
Hermit Thrush (<i>Hylocichla guttata</i>)	1	8th	9th
*Golden-crowned Kinglet (<i>Regulus satrapa</i>)	8+	8th	10th
Ruby-crowned Kinglet (<i>Regulus calendula</i>)	6	8th	9th
Cedar Waxwing (<i>Bombycilla cedrorum</i>)	5	8th	9th
Magnolia Warbler (<i>Dendroica magnolia</i>)	3	8th	9th
*Myrtle Warbler (<i>Dendroica coronata</i>)	2	8th	9th
*Blackpoll Warbler (<i>Dendroica striata</i>)	10+	8th	11th
[Pine Warbler (<i>Dendroica pinus</i>)]	1	8th	9th
Palm Warbler (<i>Dendroica palmarum</i>)	1	10th	11th
Mourning Warbler (<i>Oporornis philadelphia</i>)	1	8th	9th
*Yellowthroat (<i>Geothlypis trichas</i>)	4	8th	9th
Baltimore Oriole (<i>Icterus galbula</i>)	1	10th	12th
Rusty Blackbird (<i>Euphagus carolinus</i>)	1	8th	8th
Pine Siskin (<i>Spinus pinus</i>)	1	8th	11th
[Ipswich Sparrow (<i>Passerculus princeps</i>)]	1	8th	10th
Savannah Sparrow (<i>Passerculus sandwichensis</i>)	6	8th	10th
[Scaside Sparrow (<i>Ammospiza maritima</i>)]	2	8th	10th
Slate-coloured Junco (<i>Junco hyemalis</i>)	6+	8th	14th
Field Sparrow (<i>Spizella pusilla</i>)	5	8th	12th
White-crowned Sparrow (<i>Zonotrichia leucophrys</i>)	4	8th	11th
*White-throated Sparrow (<i>Zonotrichia albicollis</i>)	20+	8th	14th
*Swamp Sparrow (<i>Melospiza georgiana</i>)	7	8th	11th
Song Sparrow (<i>Melospiza melodia</i>)	9+	8th	12th

A charming sight later in the afternoon was presented by five Cedar Waxwings (*Bombycilla cedrorum*), which moved up between the railings round the Swimming-pool and the criss-cross wire fencing at the side

of the Games deck. Apart from scattered groups of small passerines, a number of larger birds were to be found round the Cabin-class Games deck, which is enclosed by ship's boats on raised davits, and at a lower level near the stern of the ship. These included at least two Catbirds (*Dumetella carolinensis*), one of which I photographed, a Hermit Thrush (*Hylocichla guttata*), which also liked the safety net over the First-class Swimming-pool, and a Blue Jay (*Cyanocitta cristata*). I saw one Rusty Blackbird (*Euphagus carolinus*), and then a Common Tern (*Sterna hirundo*), which had been circling the ship for an hour or so, settled on the flat deck at dusk, almost simultaneously with the arrival on the mainmast forward of an immature cormorant, which could only have been a Double-crested Cormorant (*Phalacrocorax auritus*). A little earlier, I observed a Mourning Dove (*Zenaidura macroura*) pop up out of one of the ship's boats, just aft of the rear funnel. At dusk on 8th October we were well over 500 miles out from New York, at about 40° 52'N, 62° 26'W.

The steady diminution in numbers over the next four days or so before the ship's arrival at Cobh, Co. Cork, did not seem due to bad weather. The winds were from the north-west or west for the whole crossing, and few birds were involuntarily blown clear, though some may have followed their instinct to fly on south. The Flickers, in particular, ranged quite far at times: I observed three or four drop at least three miles astern on several occasions and then, when it was possible to see them only through binoculars, they would suddenly fly strongly forward and with apparently little effort come in again on to one of the after boats, or fly to their favourite spot, the main rigging to the masts. It was amusing to watch them, and in particular the Hairy Woodpecker, pop in and out of rounded holes cut for various purposes in the metal of the masts; some of these were only a little bigger than their familiar nest holes. Seven birds (see table 2) were picked up dead on deck in good condition. These I was able to preserve in the deep-freeze and, on arrival in England, to send on to Liverpool Museum. Probably the biggest single cause of mortality was the hosing down of the decks at night. After midnight, sailors wash down all the open and promenade decks with powerful jets up to four feet above the deck floor, and many small birds roosting in stacked-up deck chairs, and other odd corners, were washed out and drowned. This was very unfortunate, and I was particularly sad to find the Mourning Warbler an early victim.

However, there were still fifty or sixty birds flying about at midday on 9th October, when we were approaching 1,000 miles out, and it was gratifying to see at least one Cedar Waxwing still with us then as I had missed them in the early morning. There was a suggestion of sun at about 13.00 hours when I suddenly saw a small, brownish

predator circling the ship, finally to settle on a cross-wire for some minutes. It was fairly easily identified, by its banded tail and lack of rufous, as a Pigeon Hawk or American Merlin (*Falco columbarius*), almost certainly an immature bird. Later it suddenly swept low and very fast by the after funnel, probably in pursuit of a passerine, but I did not see it catch anything. This arrival would, I thought, be another major factor in population decrease, but by late afternoon it had gone and was not seen again.

A number of curious occurrences were reported by stewards and fellow-passengers and those I could verify as sober fact mainly involved birds flying through open portholes into sundry cabins, the most spectacular being when one of the Flickers flew in some six decks down, to finish up in the Chief Steward's Annexe, hiding behind a sofa!

It was as late as 10th October, three days out from New York, that I first saw a Palm Warbler (*D. palmarum*), which was trapped in the Cabin-Class Smokeroom. It was finally caught and released outside and was almost the last warbler to be seen alive, for by the 11th it and the last of the fairly numerous Blackpolls had disappeared. This was earlier than I had hoped, for on the previous eastbound crossing a Parula Warbler (*Parula americana*) was still very much alive on arrival in Southampton and, although it eventually died, it was still in fair enough shape for me to get it on ice to join the later consignment to Liverpool Museum.

The last new bird, surprisingly, turned up as late as 17.00 hours on the 10th, when we were nearly 1,600 miles out at about 45° 50'N, 40° 38'W. This was a female or immature Baltimore Oriole (*Icterus galbula*), which joined the 'stewards' feast' regularly on the First-Class Sundeck (where the birds became noticeably plumper daily!) and revelled in the soft fruit provided, though on occasions it pecked away happily at toast like any sparrow.

The various sparrows provided the biggest identification headache, as many were immature, and I feel convinced that there was at least one Ipswich Sparrow (*Passerculus princeps*), although the occurrence of this species seems unlikely. This bird was definitely paler than at least the one Savannah Sparrow (*P. sandwichensis*) with which it was possible to compare it, and while I cannot rule out the possibility of a light colour-phase, it appeared larger in the sense of being more bulky, with a finely striated breast. The crown and eye-stripes were well marked, particularly the prominent buff band above the eye, and the lighter colourings generally seemed distinctly more buff than those of the Savannah. I feel equally certain about another rarity, the Seaside Sparrow (*Ammospiza maritima*), because the two individuals I saw were so very dark and indistinctly striated, tinged with chestnut

on the primaries, and both had the very noticeable divided 'half-circle' in front of the eye. I was unable to distinguish the lower half of this as being white, the whole appearing to be light buff, but the upper half caught one's eye rather as a 'stabbed' dash, or 'accent', thus rendering less likely the other main possibility, an immature Swamp Sparrow (*Melospiza georgiana*). It was on the 11th that one of the slighter 'sparrows', with a curious low wing-bar, and a very neat, striped appearance, which I had seen for about two days or so, suddenly showed me a shaft of greenish-yellow in the tail. It was a Pine Siskin (*Spinus pinus*).

At dusk on 12th October, a few hours before we passed the Fastnet Light at the approaches to the south Irish coast, there were at least nine birds still alive in a free-flying state on board, including the last Yellow-shafted Flicker, the Baltimore Oriole, one Slate-coloured Junco, three White-throated Sparrows, two Song Sparrows (*Melospiza melodia*) and a Field Sparrow (*Spizella pusilla*). At dawn the following morning we dropped anchor just inside Cobh Harbour, Co. Cork, and at 8.00 hours the Flicker, after circling the ship two or three times, flew strongly away on to the eastern headland at the entrance to the harbour, behind Roche Point. The Baltimore Oriole and Field Sparrow were also not seen again after Cobh. This left a merry company of six feasting royally at the 'stewards' table' on the after end, as we swung inside the Isles of Scilly, past Land's End. At dawn the following morning, alongside at Le Havre, a steward said he saw one Song Sparrow and one White-throated Sparrow fly ashore in France. This was confirmed by the fact that only one Slate-coloured Junco, one Song Sparrow and two White-throated Sparrows were still on board. These last four came up Southampton Water with us and were still very much at home on the after end some four hours after we had berthed opposite Ocean Terminal during the afternoon of 14th October. Although, after docking, the food and water supply was discontinued, the four birds left were still on board the following day, the 15th, but I later heard that on the 16th at least one of the White-throated Sparrows was seen about half a mile away, in a small park outside the dock gates.

It will be noted from table 2 that the seed-eaters—sparrows and juncos—managed to survive on the whole more successfully than the warblers, kinglets, wrens and other insect-eaters. While this is generally true, as one would expect, it must be emphasised that there are a number of records of warblers making successful crossings in ships—the Parula Warbler mentioned on page 162 being a case in point, surviving as it did at least two days in Southampton in the *Mauretania* after her previous eastbound crossing (a seven day crossing, too, as against five in one of the 'Queens'). A significant factor in

warbler survival on board would seem to be the provision of soft, fresh fruit, particularly grapes, in suitable spots. At least, a Blackpoll Warbler I photographed a year earlier on the open deck of R.M.S. *Queen Elizabeth* in Ocean Terminal, Southampton, had apparently fed ravenously on diced fresh grapes put out on the way over. Although I tried to encourage it to fly ashore—it was very lively—it never left the ship. It stayed on board for the next westbound voyage, but died about half way across.

In conclusion, while the voyage in October 1962 was undoubtedly an exceptional one, with all conditions near perfect, it is probable that invasions of this kind are by no means as rare as may commonly be supposed. To quote another recent example, I was travelling in the *Queen Elizabeth* in early September 1962 when I was told by an excited deck-steward that only the previous week, on 30th August, which was the second morning out from New York, 'hundreds' of land-birds 'of all sizes and colours' descended on the ship during a sudden, heavy, oppressive calm associated with a hurricane near-by. On this occasion, however, the birds apparently stayed only a few hours, their comparatively rapid departure being due, so far as I could gather, to the arrival of a cutting north-east wind in the afternoon. This, being a head wind, quickly blew the birds clear of the ship and many, so the steward said, were 'sucked into the sea'.

As I had official engagements morning and afternoon during most of the October voyage in the *Mauretania*, I was unable to keep continuous watch and so on the first day may have missed other species that passed on. However, those that came my way kept me very fully occupied and together made a really remarkable experience I shall never forget.

The behaviour of the Shag

By *Barbara K. Snow*

(Concluded from page 103)

NESTING BEHAVIOUR

Nest-site selection and return of young birds

As adult males return to their nest-site of the previous year (Snow 1960), the selection of new sites is largely done by young males. Very occasionally at the end of the season, breeding adults will hop round and into rock crevices and newly vacated sites near their nest. It was not discovered if these birds were males or females.

During 1955, 1956 and 1957 all nestlings were marked with a colour combination for their year, and the return of these birds to the island

in subsequent years was recorded. Only one bird was recorded returning the year after hatching but a number returned when two years old. The fullest records were possible in 1957 when the 1955 juveniles were returning. In this year the first two-year-old was seen on 17th April, and numbers then built up to a minimum of about 25 during late May, June and July. These birds left the island again during August and September, as do the other Shags. Two, whose ring numbers were seen, returned to the colony where they were reared.

The birds which return when two years old are mostly males. In July, either alone or in the company of a two- or three-year-old female, they prospect for nest-sites, by visiting newly vacated sites or nests with nearly fledged young where the parents are temporarily absent. The young are driven a few yards away while the young male prospects by sitting in the nest-site, nibbling at the nest-material and digging in the earth with his beak. An immature couple prospecting behave in a similar way and also make some mutual courtship movements. These visits by young males to established nest-sites may further the continuity of sites and possibly give the young birds experience of suitable sites.

Some nest-site prospecting by three-year-old males was seen in May. The prospecting bird would peer under rocks and into crevices and if the site was vacant would sometimes sit and peck at the earth there and pull at the surrounding vegetation. This prospecting took place at a colony or near some other Shag's nest.

Nest building

Most of the nest-material is collected by the male and built into the nest by the female. Some of the collecting near the nest is done by the female and she will occasionally go further afield. On Lundy the male collects most of the material from the cliffs, sometimes making as many as 14 flights to and from a neighbouring cliff in half an hour. He often plucks a quantity of vegetation and then discards it, flipping it out of the bill with a head-shake. Eventually material is selected which is taken back to the nest. When the pair is first formed the male often refuses to relinquish the material to his mate and builds it in himself.

There are two main building movements. One, identical to nest-quivering (page 90), is a lateral movement of head and beak with which material is inserted; the other is a cup-shaping movement, when a bird sitting on the nest puts its beak deep into the rim of the nest and then draws it inwards towards itself. The bird rotates while cup-haping. Both sexes do these building movements, but the female makes the greater share.

The bird on the nest, when receiving nest-material, usually stretches its neck out and immediately takes it from its partner, makes an upward nest-quivering movement with it and then inserts it into the nest. If the material is fine grass it is put in the cup of the nest, while coarser material is put into the rim. The lateral head movement is used when placing either sort of material but is more pronounced when inserting the coarse material.

The greatest nest-building activity usually follows mating or attempted mating, and appears to be directly stimulated by it. On these occasions it is always the male that collects the material. Two unusual occurrences later in the season showed the relationship especially clearly. Mating usually stops after the second egg is laid, but there was one instance of a pair attempting copulation when their young were nearly fledged. Immediately afterwards the male made five trips to collect nest-material, which the female received. On another occasion an adult male who attempted to mount his half-grown young followed this behaviour by collecting some nest-material.

Incubation and egg-retrieving

Eggs are laid at two-day intervals, either at night or very early in the morning (Snow 1960), and are incubated by both sexes. No all-day watch was done to determine the exact share taken by the sexes, but watches of four hours without a change-over indicated that periods were long. The collected data from watches at many nests indicate that the following is a typical routine: ♀ through night to 09.30 hours, ♂ 09.30-13.00, ♀ 13.00-16.30, ♂ 16.30 until dark, when ♀ returns and takes over. Before the clutch is complete the birds change-over more frequently, probably because at this stage mating usually occurs at the change-over.

The incubation routine may start up to eight days before the first egg is laid, with typical change-overs taking place, the relieving bird edging into the nest while the other backs out. It was not determined how much of the day was spent in this way, but it was observed for periods of up to two hours in the mornings.

When settling down to incubate, the bird slowly inserts its feet beneath the eggs, at the same time raising the body-feathers and making a slight lateral motion with the rear portion of its body. At nest relief the incubating bird moves backwards out of the cup of the nest while gently removing its feet from under the eggs. The relieving bird immediately covers them. Early in the incubation period the relieving partner often desires to incubate before its mate is willing to relinquish the eggs, in which case it may sit on the rim of the nest or half on its mate. Sometimes while on the rim it will try and push

its head beneath its mate and make the motion of rolling an egg towards it.

The egg-rolling movement is performed in a sitting or half sitting position. The closed beak is placed in a vertical position beyond the egg, and then the head is drawn towards and under the bird. This movement is used in retrieving an egg from the edge of a nest, in poking the eggs further underneath the body when settling to incubate, and periodically during incubation itself, when the bird appears to be rearranging the eggs for its greater comfort, though the behaviour may also be of value in serving to turn the eggs.

In the natural course of events an incubating bird can flip an egg out of the nest if it leaves the nest hurriedly without first removing its feet from beneath the egg. To test the Shag's egg-retrieving ability, two experiments were made. In the first an extra egg was put on the rim of a nest which contained a single half-incubated egg. The female incubated for the following four hours without rolling in the extra egg, although she touched it with her beak several times. In the second experiment an extra egg was placed on the rim of a nest that contained a day-old chick and two eggs. The female incubated for the first three and a quarter hours of the watch and failed to roll it in, although she put some nest-material from the cup of the nest near the egg and then drew some of the nest-material from near the egg towards her. Five minutes after the male took over from the female he rolled the egg into the nest with the typical egg-rolling movement.

There were several indications that the duration of incubation behaviour is not under strict internal control, but depends much more on the external stimulus situation. Infertile clutches were sometimes incubated for up to 75 days, which is 40 days longer than the normal incubation period. At the other extreme a pair who had only been incubating four days accepted an introduced chick (page 173). At one nest where there was one infertile egg and one that hatched, the pair continued to incubate the egg until the chick was 18 days old. At this age the chick did not require brooding in the day-time and sat beside the nest while both male and female took turns incubating the infertile egg, turning it and changing over in the normal manner. As incubation progresses Shags become increasingly tenacious in defending their nests against human approach. At one nest with an infertile clutch which was incubated for 28 days after the eggs should have hatched, the pair became bolder and bolder in defence of their nest at my visits.

Up until the time of hatching the position of the egg appears to be random, but once the egg is pipped, 24 hours or more before hatching, the hole is always kept facing upwards. At a nest under observation during the hatching of the first egg, for an hour and three-quarters

prior to hatching the incubating male frequently half stood and put his beak into the nest, touching or moving the eggs. At the end of this period he removed the large half and then the smaller half of the egg shell and placed them on the rim of the nest.

Brooding

Both parents brood the chicks and later undertake guard-duty at the nest. Up to about 16 days the brooding bird slowly shuffles its feet below the chicks and broods them on the webs of its feet. Through much of the middle of a fine day the parent half stands in the nest with its wings slightly open. If the nest is exposed to the sun, the parent will take up this position with its back to the sun to provide shade. The importance of providing adequate shade for the young chick was demonstrated during an inspection of a large colony, when a parent was kept off a two-day-old chick for approximately 35 minutes. The chick was afterwards found dead apparently due to sunstroke.

From observations at several nests, periods of duty at the nest were found to vary from one hour to four and three-quarter hours. The results of prolonged simultaneous watches at two nests are shown in table 3. At nest 34, both sexes did an average duty period of 1 hour 39 minutes, whereas at nest 161 the female's average period was 1 hour 47 minutes and the male's 2 hours 57 minutes. This female was known to be five years old and breeding for the second time.

An example of the adaptability of guard-duty behaviour was seen when, due to handling, three young left their nest eight to ten days prematurely. Two went down to the sea and the third lodged on a very small ledge 15 feet below the nest. During a 2½-hour watch on the following day the male did a continuous guard-duty beside this chick, who remained there for a further two days.

Feeding the young

The Shag feeds its chick by regurgitation, the chick inserting its head right into the throat of the parent. Both parents feed the chick from the first day: no evidence was found to support the statement in Witherby *et al.* (1940) that during the first 14 days feeding is undertaken by one parent only, but as mentioned later (page 175) the female may feed the young more than the male does for the first three days. Within half an hour of hatching, the chick is able to raise its head and feebly wave it from side to side, at the same time giving the food-begging call (page 181). The first feeds were recorded 17-32 minutes after hatching. Initially the lateral head-waving appears to be just due to muscular weakness, but it is continued throughout the period that the young are fed and becomes a stereotyped movement.

The newly hatched chick has a conspicuous white egg-tooth at the

TABLE 3. **Share of parental duties between male and female Shags (*Phalacrocorax aristotelis*), Lundy**
 Where the male and female both fed the same chick within five minutes, it is counted as half a feed by each

Time of watches	Age of chicks (days)	Female duty at nest			Male duty at nest			
		No. of periods at nest	Average length of periods (hr./min.)	% of watch spent at nest	No. of feeds	Average length of periods (hr./min.)	% of watch spent at nest	No. of feeds
NEST 34								
05.00 to 20.00	12, 14, 16	4	2.20	48	6½	2.00	52	4½
09.30 to 16.30	28, 30, 32	3	1.26	62	4	0.59	38	3
09.30 to 18.00	49, 51, 53	3	1.17	57	2	1.58	43	5
NEST 161								
05.00 to 20.00	0, 2	2	3.16	46	6	4.02	54	1
10.00 to 16.30	13, 15, 17	2	1.44	50	4	1.43	50	6
09.30 to 18.00	34, 36, 38	2	1.04	25	4	3.15	75	2

tip of the upper mandible, which disappears between the thirteenth and fifteenth day. As many Shags breed in dark places such as caves and under rocks, both the retention of the white egg-tooth and the head-waving may assist the parent in locating the head of the chick when feeding it. Until the chicks are six or seven days old the parent usually feeds them while brooding, often raising one wing and turning its head under itself and so further cutting out the light.

Parents experience some difficulty in feeding newly hatched chicks. Often many unsuccessful attempts are made before a feed is accomplished, while the adult slowly shifts its position in the nest. At the beginning of the feed, a parent usually grasps with its beak the waving head of the very young chick, and this stimulates it to more intensive food-begging. If the chick is not begging, the parent will take its recumbent head in the tips of its mandibles, which stimulates it to start begging. Normally soon after the parents have changed over the chicks are fed. In older chicks, not being brooded, the appearance of the newly returned parent appears to stimulate food-begging, but very young chicks are probably stimulated by increased light, or by cool air falling on them, as they will begin to beg when the brooding parent stands for other reasons, such as defaecation.

When the young are between ten and twenty days old, if a parent is brooding it shifts backwards to the rim of the nest in order to give a feed, or if a returning parent feeds them it stands beside the nest to do so. At these ages the chicks are stimulated to food-beg if the parent lowers its head near to them. Thus two chicks aged 13 and 15 days started to food-beg ten consecutive times when the female standing beside the nest lowered her head in order to pull at recently fitted rings.

To begin with, the chick is fed while recumbent, but between 17 and 20 days it becomes strong enough to stand. Then, when food-begging, it stretches its neck up to its full extent, holds its head at right angles to the neck, and moves it from side to side just below the gular pouch of the parent. Sometimes a chick shows low-intensity food-begging with its head still in the relaxed posture over its back, making the begging call and swaying the head slightly from side to side. When a parent shows signs of willingness to feed, this low-intensity food-begging changes to the upright position.

After leaving the nest the young flap their wings while food-begging and while being fed. But this was never seen at the nest, except by birds fifty days old or more, and ready to leave the nest. This absence of wing-flapping while feeding at the nest is possibly an adaptation preventing accidents on the precarious sites where Shags frequently breed. Nearly fledged chicks which have been begging unsuccessfully for some time, will occasionally hold a piece of nest-material while food-begging.

There was some evidence that in order to regurgitate a bird must have some fore-knowledge of this need. For instance, a second chick of a brood was fed within 17-32 minutes of hatching, but at another nest where the first egg of a clutch hatched while under observation, the chick was not fed during the following one and three-quarter hours of the watch. There was no change-over of parents during this time. A seven-day-old chick introduced into a nest with eggs that had been incubated for twenty days was not fed during the two and a half hours following introduction. The chick was food-begging much of the time and both birds made many swallowing movements which are usually the preliminary to regurgitation, but apparently were unable to feed it. Neither of the pair knew of the presence of the chick until they returned to the nest.

Sometimes, particularly when small chicks are being fed, some of the fish is dropped into the nest. It consists of either whole sand-eels (*Ammodytes* sp.) or lumps of the white flesh of larger fish, and is little altered. Parents will regurgitate at least two hours after returning to the nest. Some fish that was regurgitated one and a half hours after the parent returned was in an unaltered state, so the parent can apparently arrest digestion in order to be able to feed the young. It was probably because digestion had not been arrested that no feeding took place in the incidents cited above.

A parent about to feed a standing chick raises its bill upwards, so presenting the chick with a view of the gular pouch, makes some swallowing motions and then lowers its head, opening the beak at the same time. While feeding a fledged young the parent may have its body in a position nearly horizontal to the ground, the juvenile being in a rather similar position shovelling the food out of the parent's gullet. Where the position of the nest-site allows it, hungry young of 40 days or more may come to meet an incoming parent, the chick that gets there first being fed. At a nest of four young aged 46 to 52 days, the two parents regularly came in and fed the first chick that reached them, and then left again. At a nest on a ledge about six feet long and three feet wide, young aged 35 to 39 days were seen pursuing their mother round the ledge before being fed, in the same way that flown juveniles pursue their parents.

In spite of the specialised method of feeding, a chick with an abnormal beak managed to fledge. This chick, first examined when about 14 days old, had the upper mandible deflected laterally by approximately 60°. It was last seen when 50 days old, full-grown and as vigorous as its siblings. Unfortunately it was not possible to watch this nest so it is not known how it was fed, but the normal method appeared to be impossible.

Nest sanitation

Although the surrounds of a Shag's nest are heavily fouled, the nest itself is kept clean throughout incubation and fledging. Various behaviour patterns of both adults and nestlings contribute to this end. As much as five weeks before the first egg is laid, a male sitting on his selected nest-site will turn through 90° to defaecate outwards over the cliff-edge. The direction in which an incubating or brooding bird defaecates depends on the nest-site. Thus if a nest is sited on a narrow ledge with an unbroken rock-face behind, it is evident from the surrounding stains as well as from observations, that the bird defaecates anywhere in an arc of about 270° away from the cliff but not through the 90° directly abutting on the cliff. But if the nest has a cleft or space behind it, the incubating or brooding bird will defaecate into this space, shifting a few inches backwards to the rim of the nest to do so. Normally a bird sitting on the nest faces outwards with a view of any approaching danger, and it is presumably for this reason that if there is room behind the nest to defaecate this method is used. The adult Shag ejects its faeces three feet or more, making an area round the nest uninhabitable, which is probably a factor in the dispersal of nests.

Between ten and twelve days old the chicks are able to defaecate clear of the nest, turning their tails towards the rim of the nest to do so, and by 14 days they will rotate through 90° to defaecate outwards over the cliff-edge. Before this age, and occasionally later due to miscalculation, faeces are dropped in the nest. The parent picks up the pieces of contaminated nest-material and flips them away with a lateral head-shake.

During the feeding of chicks, especially when they are under ten days old, lumps of fish or whole sand-eels are occasionally dropped into the nest. These are usually swallowed again by the parent, but sometimes lumps are placed outside the rim of the nest. The smaller pieces of fish, plus the contaminated nest-material, are flipped away with the lateral head-shake. Sometimes the parent will then pluck some dried grass from outside the nest and place it inside the cup where the fish had dropped.

Another method of cleaning the nest, which begins a few days before the eggs are laid and continues throughout the fledging period, is a deep probing with the bill into the cup of the nest accompanied by a lateral shake. This is done periodically, but seldom directly after the removal of dirt with the head-shake. Its function may be to shake extraneous matter off the nest-material and then down through the nest; therefore it would be better done when the bits of fish or faeces are dry and not immediately after they have been deposited. It may also serve to shake the larval stages of ectoparasites out of the nest.

Some experiments were made to test the bird's reaction to objects of

different colour in the nest. Pieces of cotton wool coloured blue, green, yellow, red and white and approximately one inch in diameter, were implanted one inch down into the cup of the nest. When implanted they appeared to my eyes to be visible only due to their difference in colour from the brown matrix of the nest. The experiments were done both during incubation and when there were young in the nest. Frequently when the bird first returned it paused at the edge of the nest and pulled out the pieces, removing them from its beak with the lateral head-shake. Sometimes they were removed later by the same method while the bird was incubating or brooding. All five colours were spotted and removed. The experiments were insufficient to show conclusively whether one colour produced a more prompt reaction than another, but there was a tendency for the colours at the blue end of the spectrum to be removed before those at the red end. It seems probable that it was the soft, possibly fish-like feel of the cotton wool which elicited the head-shaking reaction, as hard objects of unusual colour, such as part of a red plastic toy and silvery wire or rings, have been found incorporated into the nest.

Chick exchange

Several times chicks were experimentally introduced into strange nests. A total of 29 hours was spent observing the results of such experiments from hides not more than two yards away from the nests.

At one late nest where the first egg was laid between 1st and 3rd June, chicks were introduced into the nest as follows: three-day-old chick on 6th June for $2\frac{1}{2}$ hours, five-day-old chick on 13th June for $3\frac{1}{2}$ hours, seven-day-old chick on 21st June for $3\frac{1}{2}$ hours. In the two longer watches there was no change-over of parents, in the shorter watch there was one change-over but the returning bird had no knowledge of the presence of the chick until it returned.

In all instances the introduced chick food-begged, but was not fed. The most probable reason for this was the lack of fore-knowledge by the parent of the presence of the chick, as discussed on page 171. In every other way both parents accepted the chick and adapted their behaviour to its presence, preening it, cleaning the nest after it had defaecated, and with the two older chicks, both watched through mid-day, providing shade with their wings tented and so ceasing to incubate their own eggs.

At another nest, with a single chick, a chick from a neighbouring nest, four days older than the resident one, was introduced for periods of $2\frac{1}{2}$ to $3\frac{1}{2}$ hours when aged 9, 17, 21, 29 and 37 days. At the first three introductions the chick was preened, brooded and generally accepted by both parents. It was fed at the first introduction, but only food-begged briefly during the second introduction, whereupon the

female attempted unsuccessfully to feed it through the legs of the brooding male. At the third introduction neither resident nor introduced chick was fed. When it was introduced at 29 days old, the male, who was in attendance for the first two and a half hours, accepted and preened it. No feeding took place. When the female returned the introduced chick begged and was fed, but immediately afterwards the female attacked the chick and continued to do so for the remainder of the watch.

At the final introduction the strange chick did not food-beg although the resident chick was fed by both parents. Again the male accepted it and the female attacked it. Four days before this final introduction a 15-day-old chick was added to the nest. The female made one slight pecking motion and then accepted it; the male completely accepted it.

At another nest with two chicks, one was exchanged with a chick of similar age when 25 days and 29 days old. During the eight hours spent watching this nest the introduced chick did not food-beg. The female was at the nest during seven of these hours and accepted and preened the chick. When the male was present the introduced chick had its head under the rock at the back of the nest, but once the male went to the far side of the rock and appeared to try and peck its face.

The following year chicks aged 27 and 26 days were exchanged and watched for a total of six hours. Both were accepted by the male and the female.

The experiments indicate that 29 days is the approximate age at which strange chicks elicit hostile behaviour. This is also the age when a chick is capable of introducing itself into a strange nest. For instance, at one colony in 1956 five different chicks were found in neighbouring nests between the ages of 28 and 33 days. Older chicks were often found in neighbouring nests.

Sex differences in weight also became apparent round the age of 30 days (Snow 1960). Unfortunately nestlings were not being weighed in 1956, when most of the experiments were made, so the sex of the introduced chicks was not definitely known; but in the two experiments involving 29-day-old chicks the difference in behaviour of the male and female parent may have been due to the sex of the introduced chick. The 29-day-old chick that the female attacked may well have been a female, since it was passive towards its temporary nest-mate, whereas the one that the female accepted frequently pecked its temporary nest-mate and so may have been a male.

Frequency of feeding and share taken by sexes

The Shag chick has few feeds per day, three or four being a normal number. A series of head-insertions made during a limited period are taken to constitute a single feed. Young chicks may make as

many as five head-insertions in a feed, usually within a period of less than ten minutes. As the chick grows older it becomes capable of taking a full feed in one or two head-insertions.

Tables 4 and 5 summarise the data on feeding frequency. Table 4 is the result of a simultaneous all-day watch at two nests. Table 5 is the summary of many shorter watches between two to eight hours at different nests. It represents all the data collected on feeding frequency from 1954 to 1957, with most records from 1955; it also includes the data from table 4. All watches from dawn to 10.00 hours have been excluded from table 5, as the feeding rate is very low in the early morning and the amount of time watching the different age groups at this time varied considerably. The average feeding rate per chick per hour before 10.00 hours was 0.05 for young still in the nest (34 chick/hours) and 0.08 for flown juveniles (25 juvenile/hours). In the all-day watch (table 4) only two out of the 18 feeds observed were before 12.00 hours. There was an indication that the feeding rate increases throughout the day to a maximum about two hours before sunset, but as there are so many variables to be considered such as the age of chicks, and state of tide and weather, my data proved insufficient to analyse under this heading.

Table 4. Frequency of feeds to young Shags (*Phalacrocorax aristotelis*) in two nests, Lundy, 22nd May 1957

The chicks in nest 34 were about a fortnight old (16, 14 and 12 days), while those in nest 161 were newly-hatched (two days and just a few hours, the latter having hatched between 12.38 and 13.53 that same day). Where the male and female both fed the same chick within five minutes, it is counted as half a feed by each

	Total feeds	Time of feeds	No. by ♀	No. by ♂
NEST 34 (fortnight old)				
Chick 1	3	13.15, 16.50, 19.45	2½	½
Chick 2	5	08.00, 11.45, 15.40, 17.01, 19.15	2	3
Chick 3	3	13.20, 15.35, 18.30	2	1
NEST 161 (newly-hatched)				
Chick 1 } Chick 2 }	7	{ 14.04-15 (2 chicks) 14.45-50 (2 chicks) 15.12, 16.55, 19.45 }	6	1

Chicks up to three days old may be fed more frequently by the female than the male. This was so at nest 161 (table 4), and besides this nest, of the five feeds to newly-hatched chicks under three days old observed at two other nests, four were given by the female and one by the male. The greater size of the adult male Shag, which averages 300 grams heavier than the female, may increase the difficulties, already considerable (page 170), in feeding newly-hatched chicks.

Table 5. Summary of observations on feeding frequencies of Shags
(*Phalacrocorax aristotelis*), Lundy, 1954-57

The data from Table 4 are included here, but all records between dawn and 10.00 hours have been omitted because the feeding rate is very low in the early morning

Age in days	No. of nests	Hours of watching	Feeds per chick per hour
0-10	4	42	0.62
11-20	6	76	0.35
21-30	4	59	0.38
31-40	3	37	0.27
41-50	3	40	0.17
Fledged		418	0.27

There was some evidence to suggest that during the second half of the fledging period the male and female may concentrate on feeding different individual chicks. This was indicated during two watches at the same nest; the first was for seven hours when the chicks were 28, 30 and 32 days old, and the second was for eight and a half hours when the chicks were aged 48, 50 and 52 days. During these hours of watching which covered the main feeding periods of the day, the female fed chick 1 five times but gave only one feed each to chicks 2 and 3. The male, on the other hand, fed chick 2 four times and chick 3 five times, but gave only one feed to chick 1.

Feeding juveniles

When the young leave the nest they congregate together on the sea-rocks near the breeding colony, where they wait for their parents to come and feed them. At Shutter Rock colony where most observations were made, there were frequently between 15 and 24 juveniles standing about in an area of approximately fifty square yards. At this colony in 1957 13 adults were colour-marked and all the young of these birds were also marked individually. Between 15th July and 21st August these marked adults were observed giving 21 feeds and all were to their own young. A similar situation prevailed in 1955 and 1956 although rather fewer birds were marked in those years. There was a single instance, on 18th August 1957, of a juvenile, aged 96 days, being fed by an unringed bird that was not its parent, both its parents being marked. Possibly the unringed bird's own young had already left, as by this date the number of juveniles had dropped to eleven from a maximum of 23 on 24th July.

The observations did not suggest any marked difference in the share taken by male and female in feeding. Of the 21 feeds given by marked birds in 1957, 15 were given by six marked males with a total of 13 young and six by four marked females with a total of twelve young.



PLATE 27. Jay (*Garrulus glandarius*), Lancashire, March 1962. *J. B. and N. Bates only* (see pages 186-188)



PLATE 28A. Dunlin (*Calidris alpina*), Denmark, June 1962 (K. J. Carlson)

PLATE 28B. Avocet (*Recurvirostra avosetta*), Denmark, June 1962 (R. G. Carlson)





PLATE 29A. Twite (*Carduelis flammiceps*), Sutherland, June 1952. Harold B. Pratt

PLATE 29B. Reed Bunting (*Emberiza schoeniclus*), Worcester, 1961. H. Martin Dixon





PLATE 30. Whinchat (*Vanola vanola*), Somerset, June 1962 (E. N. H. Peabody)

PLATE 31. Grasshopper Warbler (*Troglodytes naevius*), Anglesey, May 1962 (John Markham)





PLATE 32A. Pratincole (*Glarola pratincola*), southern France, June 1961 (V. C. Porter)

PLATE 32B. Black-headed Gull (*Larus ridibundus*), Cumberland, June 1961 (F. K. Thompson)





PLATE 33A. Buzzard (*Buteo buteo*), Montgomeryshire, June 1962. *Harpur & P. J.*

PLATE 33B. Hen Harrier (*Circus cyaneus*), Argyll, 1962. *J. Harpur & C. J. J.*





PLATE 34. Whooper Swan (*Cygnus cygnus*), Ayrshire, March 1962 (William S. Paton)

A new development in feeding behaviour occurs once the young have left the nest. Just before feeding its young, the parent turns the back of its head towards it, with a movement that appears similar to the submissive gesture used in other contexts (page 84).

When a parent returns with food, its own and other young come up and food-beg. The parent pecks the intruders and presents the back of its head to the rightful juvenile. If mobbing and food-begging by the intruders continues, the adult will hop as much as six to eight yards further away over the rocks or, if its own young are able to fly, will fly to a rock near-by. Usually only the rightful juveniles will follow, but occasionally the intruders will also do so. How far parent and young move before the feed takes place depends on the persistence of the intruding juveniles. Having found a place of comparative peace the parent will feed its own young.

A feed normally takes place and is accomplished most easily when parent and young are standing on a level piece of rock. An adult, which attempted unsuccessfully to give a feed on a pinnacle of rock, then hopped down to level rock and fed its juvenile. Often a returning parent lands on the sea near the sea-rocks where the juveniles are, and its offspring may fly on to the water to meet it. The parent then comes out on to the rocks to feed it, but on three occasions the feed was seen to take place on the sea.

If, as occasionally happens, some fish is dropped during a feed, it is picked up and eaten either by the juvenile being fed or sometimes by an intruding juvenile standing near-by. That it should be recognised as food is surprising in a bird with such specialised feeding habits.

A well-marked 'pirating' behaviour develops among juveniles. When pirating, an intruding juvenile may start food-begging, but it will then stop and stand quietly one or two feet behind the rightful juvenile as it is food-begging to its parent. At this stage the parent has the back of its head turned to its offspring. In order to give the feed, it turns its head and at the same time opens its beak; at this second the pirating juvenile lunges forward and tries to thrust its head down the throat of the adult ahead of the rightful juvenile. By standing quietly just prior to the feed the pirating juvenile allays the aggressive tendencies of both adult and rightful juvenile, who would attack it if it was food-begging. This behaviour seemed to be most usual in juveniles that had left the nest a week or more, so is probably learnt. It was never seen to succeed, but presumably does so sometimes.

The young birds appear to recognise adults that are carrying food from ones that are not. On days when there was much mobbing and food-begging from all parents coming in, one marked adult, which had not reared any young, could land in the midst of the juveniles and produce no reaction. Intruding juveniles appear to beg from strange

adults because they recognise them as carrying food, and not just as a reaction to the begging of the rightful juveniles, since it is sometimes the intruding juvenile that starts begging first.

Usually a parent will fly in, feed its young, and leave again at once. For 13 feeds where there was no interruption from intruders, the time taken from landing to leaving again varied between 15 and 40 seconds with a mean of 25 seconds. This timing was done when at least 70% of the young under observation had left the nest for a minimum of 14 days and parents and young were well practised in recognising each other. If a parent remains after a feed its offspring will often continue to food-beg. The parent's response is then to keep the back of its head turned to the juvenile, and if the begging does not stop, to fly away. Parents have a strong inhibition to aggressive behaviour towards their own offspring and no evidence was found to suggest that the feeding relationship between parent and young was terminated due to aggression on the part of the parent. The following encounter on 8th September 1955 took place at some outlying rocks a quarter of a mile from any nests. Eighteen adults and four juveniles had been present on the rocks for thirty minutes when one of the juveniles went up to an adult and started food-begging. The adult flew out in a wide circle over the sea and relanded. It was followed by the juvenile who started to beg again on landing. This was repeated three times before the adult fed it. It appeared from this behaviour that the adult was unable to repulse the juvenile by aggressive action but attempted to evade feeding it. The exact age of the juvenile was not known but it must have been between one to two months out of the nest.

In spite of this and other evidence of avoiding action taken by parents when the young had left the nest a month or more, the observed frequency of feeding at one rather isolated colony showed no decrease during a series of observations extending over two weeks (table 6). At this colony 71% of the young had left the nest by 2nd August and all had left by 20th August. The number of juveniles present decreased steadily, presumably as the older ones gradually moved away.

Table 6. Frequency of feeds to juvenile Shags (*Phalacrocorax aristotelis*) at an isolated colony, Lundy, August-September 1954

Data are all from watches of 1-2½ hours between 14.00 and 18.00 hours GMT

Date	No. juveniles	Feeds per hour
August 27th	13	0.26
August 29th	12	0.20
September 2nd	9	0.30
September 6th	6	0.33
September 9th	3	0.26

DEVELOPMENT AND BEHAVIOUR OF CHICK AND JUVENILE

The young Shag spends from 45 to 59 days in or near the nest. During a further period of 15 to 30 days or more, it is provided for by its parents and spends much time in play and learning. In the following sections, it is termed a chick while still attached to the nest, and after leaving the nest, a juvenile.

Preening

At seven days old the chick's down first appears and by 13 to 14 days it is well covered except for parts of the head, neck and wings. Self-preening of the back and upper breast, done while in a prone position, was first noted at 14 days. By 21 days the wings and underparts are also being preened, and some of the preening is done in an upright position. From 30 days old chicks will briefly preen each other or a parent. This continues after they have left the nest, when they may also preen juveniles from other nests. Attempts at using the preen gland were seen around 33 days, but effective distribution of the oil was not seen until 43 days old.

Stance and locomotion

Most chicks up to 20 days old spend the day sprawled in the nest and only attempt to stand when food-begging or if frightened into doing the threat-gape. To begin with, the chick balances itself on the tarsi when standing. Between the ages of 20 and 30 days the amount of time spent standing increases rapidly. Three chicks, watched for seven hours when aged 28, 30 and 32 days, spent 33% of the time standing, and when watched for five and a half hours aged 48, 50 and 52 days, spent 61% of the time standing.

Although chicks do not move about voluntarily before 22 days at the earliest, they are capable of getting back into the nest if put outside. This ability was tested in a brood of three chicks which were being handled daily. From ten days old onwards they were put on the rim of the nest and outside it. By 13 days old they were able to move from the rim into the cup, a downhill movement, and by 15 to 16 days they were able to climb from outside over the rim and into the nest. To do this the chick scrabbles with feet and outspread wings, at the same time pressing the beak downwards and contracting the neck muscles (fig. 4a). A chick of six days old, inadvertently knocked out of its nest by a parent, orientated itself to face up the slope of rock on which it found itself and attempted by this means to climb up, but failed to do so.

For many weeks the chicks do wing-flapping exercises. Between 13 and 20 days they are done occasionally while in a prone position. From 20 days onwards they are usually done in a standing position.

By 28 days, bouts of wing-flapping lasting one to two minutes are done approximately every one and a half hours, usually following preening. From 40 days, the wing-flapping is a powerful movement and frequently done facing the cliff, presumably for safety. A chick of 50 days after a bout of wing-flapping twitched its wings for several seconds in the same way as an adult does after landing from flight. At 25 to 27 days old the chick can do the two typical adult stretching movements (fig. 3; plate 20), both of which require balancing ability. The stretching of one wing and one leg on the same side is sometimes done by a chick in a prone position.

Between 25 and 30 days chicks will frequently move several yards from the nest when alarmed to take cover under a neighbouring rock. In this way the old nest-site may be abandoned and the parents adopt a new site at the chick's hiding place. A fair quantity of nest-material may accumulate there, brought by returning parents and also carried there by the chicks. Eleven feet was the greatest distance a nest was moved in this way. Most of the moves were in a colony where chicks were being handled frequently and therefore had cause for alarm, but there was one nest, where the chicks were only handled once for ringing, which was moved four feet to a more shaded position. One year the hide was appropriated as a hiding place by the nearest nest of chicks when aged 31 and 33 days.



FIG. 4. Nestling Shags (*Phalacrocorax aristotelis*)

(a) Young chick's method of locomotion (page 179) (b) Chick's gape with complaint squeak (page 181)

Development of the voice

The chick has three different calls, a squeaking call, a food-begging call and a call made with the threat-gape.

The squeaking call, a *wee-ik* lasting approximately half a second, is first made by the chick inside the pipped egg. In young chicks it is basically a complaint call. Chicks under ten days old, which have no appreciable covering of down, squeak repeatedly when they are not being brooded. This squeaking stops if you put the chick underneath your jersey where it is both warm and dark. When the chick has a coat of down it does not squeak when left uncovered, but will squeak

each time one touches it. It also squeaks in complaint at its parents preening it, at parents or siblings trying to remove a ring from its leg, or any other disturbance from its nest-mates who frequently step on each other and pull at each other's limbs or beaks. The bill is not noticeably opened to make the complaint squeak. At the age of 18 to 20 days the chick starts to use a squeaking call as a greeting. It sounds the same as the complaint squeak, but is uttered with the beak open (fig. 4b).

The chick is capable of making the food-begging call within half an hour of hatching. The call then is a *weeen, weeen*, lasting three-quarters of a second with a quarter-second interval between calls. When calling the bill is slightly opened, the hyoid is lowered, and the gular pouch is distended with each call. As the chick gets older the call becomes louder and each note longer, and approximates to a *wee-ee-ee, wee-ee-ee*. A juvenile food-begging can be heard from 50 yards away.

The call with the throat-gape is a husky *wee-aa* with the emphasis on the second syllable. It lasts approximately one second and is repeated many times. In the female around the age of 30 to 35 days the call becomes huskier and more like the hiss of the adult female, but in the male it becomes louder. Boyd (1949), handling the same chicks daily, first noted the call on the 22nd day. Many chicks that I handled at four- or five-day intervals started this behaviour between the 13th and 15th days; but eight chicks from three nests which were handled daily started later, at an average age of 19 days. One fourth chick of a brood which was generally retarded in weight and development failed to give a throat-gape when 23 days old.

Social behaviour

Aggressive behaviour starts at an early age. The development of the throat-gape has just been described. Nest-quivering as an aggressive response was first noted at 13 days. In this instance the single chick poked its head out from under the brooding parent and nest-quivered at the same time as the parent was doing it in aggressive response to a pair of neighbouring Herring Gulls. This chick was in many respects precocious and interest in nest-material and nest-quivering more usually appears around 20 days. Between 20 and 30 days the piece of nest-material brought in by the partner at nest-relief is frequently taken by one or more of the chicks, and may then pass from one chick to another with nest-quivering upwards.

Between the ages of 20 and 30 days the squeaking call begins to be accompanied by a type of upward gaping which is used as a greeting, especially when a parent first returns to the nest or starts to preen the chick. It is done while the chick is sitting and appears to be the forerunner of the sitting-gape, although the head is forward rather than

upward, the beak is not opened so widely, and no lateral head-motion was detected (fig. 4b).

The other display movements were not recorded until later. There were a few instances of flown juveniles doing a landing-gape that was almost the same as the adult's, except that the head and neck were more forward and the body less stretched upwards. One instance was seen of a juvenile doing a sitting-gape and bow, while a third- or fourth-year bird was standing beside it and preening it. The movement appeared to be similar to the adult's except that in the bow the beak was not tucked so far into the breast.

The evidence from chick weights coupled with change in voice between 33 and 50 days (Snow 1960) indicates that sexual differentiation is developing then, and this is probably the cause of increased aggressiveness at this age. The following is an example of this change: a chick introduced into a strange nest at 29 days remained entirely submissive to the owning female's attacks but the same chick, put into the same nest eight days later, occasionally pecked back at the attacking female. Between 40 and 50 days the chicks play an increasing part in defending the nest against intruders, and may chase off neighbouring chicks which approach the nest and are ignored by the adults. The following incident illustrated the territorial aggressiveness of a chick and the additional boldness derived from being near the nest. A chick aged 49 days (chick A) had wandered 20 yards from its nest where it assumed a submissive posture at the approach of a sub-adult who pecked at it. A few minutes later the sub-adult attacked a chick just outside chick A's nest, at which the latter returned and drove off the sub-adult.

Single chicks sometimes show signs of jealous behaviour towards a parent which is probably sexual in origin. The most striking example was when the parents of a 28-day-old chick mated on the nest. The chick, who had been resting two feet from the nest, came over and pulled the female's tail and rested its beak in the feathers of her back. The chick then made a threat-gape at the male, who was attempting to preen it, and tried to push itself under the female and on to the nest. This chick was believed to be a male and during the latter half of the fledgling period showed further signs of attachment to the female, quite frequently preening her and pulling her tail. It was not seen to behave in this way towards the male.

Possibly siblings of opposite sexes form attachments while still in the nest, as some that have left the nest by 52 days old are showing such behaviour. In the following encounter, which was typical of several that were seen, the sexes of the juveniles involved had been assessed from their weights. Two males, A and B, and one female, the sibling of male B, were involved. A was 56 days, B 52 days, and

the female 53 days old. The three birds were in a group with the two males fighting each other. Male B retired from the fight, the female sat on the rocks, and male A stood beside her and preened her. This situation continued for 15 minutes when male B returned and pulled at the tail, foot and wing of male A who moved off. Male B then sat down beside the female, and both remained sitting together for ten minutes. Often both members of these temporary pairs sitting together are aggressive towards other juveniles approaching. It is possible that these temporary pairs may continue to keep contact during part of the winter, as two from the same nest were shot on 19th December 1954, both on the same rock near Falmouth, south Cornwall (*Lundy Field Soc. Rep.*, 1955: 28). And in October 1957 two juveniles from different nests were caught in fishing nets within twelve days of each other at the same locality off Cape Finistere.

Curiosity and play

Between the ages of approximately 40 and 60 days, the young Shag shows great curiosity and spends a considerable time playing. Any unusual object in or near the nest is nibbled at or picked up and passed from one chick to another. The hide was an object of great curiosity, and chicks that were nearly fledged came from nests as much as 15 yards away to examine it. They would pull and nibble at any part they could grip with their beaks and seize any object that I pushed out through a hole for their inspection. They were particularly interested in the objects if they were moved. Naturally moving objects were also of interest and in 1955, when Cabbage White butterflies (*Pieris brassicae* and *P. rapae*) sometimes flew near the nests, the chicks would intently watch them, turning their heads to do so. A group of three young, aged 49, 51 and 53 days and still in the nest, were seen pushing debris and earth over the cliff-edge and watching it fall to the beach below. A juvenile of 56 days on the sea-rocks caught and twice recaptured a sea-slug (*Ligia oceanica*). At the third recapture it was dead and caused no further interest.

For the first seven days or more after leaving the nest the juveniles often play together in the sea, particularly when it is calm. Two or three of them will dive and chase each other under water, sometimes pulling each other's tails or feet. Sometimes one will get hold of a piece of seaweed and they will grab it one from another often while under water. A general curiosity in anything moving probably continues when they are first in the water, as a juvenile swimming below the surface was observed grabbing hold of a Herring Gull's foot. This interest in moving objects, general curiosity and play, have been noted in many bird species which chase and catch living prey (Tinbergen 1958).

Leaving the nest and learning to dive and fly

The age at which the young leave the nest, and the manner of leaving, vary with the nest-site and also in relation to the departure of the other young.

The young from nests which are divided from the sea by a slope of rock which it is possible to hop down, often leave between 47 and 50 days. Young which have to fly to the sea because their nests are separated from it by a cliff of sixty feet or more, tend to stay several days longer, usually leaving at 55 to 58 days.

Although, as already mentioned, young may wander about a colony from the age of 40 days, their absences from the nest are temporary; but this is not so at the end of the season. In the three years 1955-1957 the departure of the young was closely observed at a large colony of twenty to thirty nests. Each year the last seven to ten young left their own nests when 40 to 45 days old, and congregated together. The group remained in the colony, the individuals leaving it and going down to the sea at the normal age. During this time parents were observed to come in and feed their own young, but an observation in 1957 suggested that the normal close relationship between them may be weakened, as in this year three siblings from the group were refused food by their parents after they had gone down to the sea, and subsequently starved (Snow 1960).

All departures from the nest or colony that were observed were leisurely and appeared to be instigated by curiosity and not by hunger. There was one exception, when a chick flew after its father from whom it had just previously been food-begging. This chick was one of the young mentioned above, which subsequently starved.

Before finally leaving the nest, a chick will often hop as far down the cliff as it can, as much as thirty feet, stand and peer at the sea for several minutes and then return to its nest. One chick, that had just left the nest and reached the sea-rocks, spent 15 minutes going to the edge of the rocks and peering at the sea three or four feet below, and then moving away again. Eventually it moved away and did not go into the sea that day.

On first reaching the sea the juvenile usually bathes, using bathing movements indistinguishable from the adult's.

A juvenile's first attempts at diving consist of putting its head under water and paddling rapidly with its feet. At times, particularly if the sea is flat calm, the feet thrash the top of the water and the bird remains on the surface. Sometimes it manages to get just below the surface with its back awash, or it may manage to dive to a foot below the surface and swim a short way at this level.

Repeated dives that were probably attempts at fishing were occasionally made by juveniles that were as little as six days out of the nest.

Until they are 100 days old or more, they are unable to dive with the leap out and forward which is characteristic of the adult. They start by diving just forward and down, and slowly increase the upward part of the motion. The period of submergence for 16 dives averaged 31 seconds for three juveniles which had left the nest between six and 30 days, considerably less than the average of 53 seconds for adults (Witherby *et al.* 1940).

Although some of the young have to fly to get down to the sea, many do not attempt to fly again for ten days or more. Most learn to fly when 60 to 70 days old. They practise taking off from the water by flapping hard over the surface. Some fail to get air-borne, while others fly ten yards or more and then alight on the sea again. Before a juvenile has learnt to take off from the water it may make use of flight by climbing up a rock and then taking off: one juvenile was seen to use this method in order to reach its parent that had landed on a steep piece of cliff up which it could not climb. Between 70 and 80 days old, juveniles are able to fly well but frequently make bad landings on the rocks. More often at this age they land on the sea and then hop out on to the rocks.

ACKNOWLEDGEMENTS

I should like to thank the Lundy Field Society who employed me as warden on Lundy for the four years of this study. I should also like to thank E. J. M. Buxton for his helpful advice on the presentation of the material and Dr. J. M. Cullen for his assistance with ethological terms and interpretations. Lastly, I should like to acknowledge the immense amount of help my husband has given me in writing this paper. Without him it would probably never have been completed.

SUMMARY

- (1) An account is given of the behaviour of the Shag (*Phalacrocorax aristotelis*), based on four years' study of the breeding population on Lundy, Bristol Channel.
- (2) Adult males normally re-use their nest-sites of the previous year. Females may either return to their previous nest-sites or move to others. Thus some pairs persist in successive years, and some change. Previously mated pairs engage in the same courtship behaviour as newly formed pairs.
- (3) The social and courtship displays are described and figured, and are analysed with reference to their aggressive and submissive elements. The main aggressive element consists of pointing the head and beak at the opponent; this is avoided in submissive postures and the advertising displays. Postures and movements are of particular importance as the Shag's vocal repertoire is extremely limited.
- (4) The males perform advertising displays which attract unpaired females. An unpaired female will visit a number of males before visiting one more frequently and forming a pair with him. Displaying males recognise the sex of other Shags from their postures. Pairs usually mate only on the nest or nest-site; this has probably evolved because it is necessary for the eggs to be kept covered and protected from predators.

(5) Some observations indicated that Shags recognise one another primarily by the face, and it is suggested that the appeasement gesture, which involves turning the back of the head towards the aggressor, is linked with this.

(6) Most nest-building is done after pair-formation, the material being largely collected by the male and built in by the female. There is a strong association between nest-building activity and copulation.

(7) Both sexes incubate the eggs. The incubation routine, with typical change-overs, may start several days before eggs are laid. The ending of incubation behaviour seems not to be internally determined, but depends on the external stimulus situation, and so may be hastened or retarded by manipulating the nest contents, e.g. introducing a chick soon after incubation has begun. After hatching, both parents brood the chicks and undertake guard duty.

(8) Both parents feed the young. The female probably gives more feeds than the male in the first few days, a difference perhaps correlated with the larger size of the male. When the young are larger, male and female may concentrate on feeding different individuals. Each chick typically receives only three or four feeds per day. Nest sanitation is efficient, involving several different behaviour patterns.

(9) Experiments in which chicks were exchanged between nests indicated that strange chicks are accepted up to the age of about 29 days, and that after this age (at which sex differences begin to become apparent) strange chicks are more likely to be accepted by an adult of opposite sex.

(10) After leaving the nest, the juveniles congregate on the sea-rocks, where each is fed by its own parents, though they often try unsuccessfully to snatch food from other adults.

(11) An account is given of the development of the young Shag's behaviour, including its departure from the nest and the development of its locomotory ability, voice, social behaviour and displays.

REFERENCES

- BOYD, H. (1949): 'The growth of nestling Shags.' *Lundy Field Soc. Rep.*, 1949: 27-29.
- SELOUS, E. (1901): *Bird Watching*. London.
- (1905): *The Bird Watcher in the Shetlands*. London.
- (1927): *Realities of Bird Life*. London.
- SNOW, B. K. (1960): 'The breeding biology of the Shag (*Phalacrocorax aristotelis*) on the island of Lundy, Bristol Channel'. *Ibis*, 102: 554-575.
- TINBERGEN, N. (1953): *The Herring Gull's World*. London.
- (1958): *Curious Naturalists*. London.
- WITHERBY, H. F., *et al.* (1940): *The Handbook of British Birds*. London. Vol. 4.

More examples of the best recent work by British bird-photographers

(Plates 27-34)

WE NOW PRESENT our fourth annual selection of the best contemporary work by British bird-photographers (cf. *Brit. Birds*, 53: plates 25-32; 54: plates 27-34; and 55: plates 32-40), the main object of this series being to keep a permanent record of the finest bird photographs in one journal as a yardstick for the future, as well as to enable readers

to see some of the best of the pictures which normally fall outside the scope of *British Birds*. In it we aim to show the results of as many photographers as possible. We want to encourage newcomers and those whose photographs are seldom seen, as well as to illustrate the latest work of the acknowledged experts. Some species are photographed more often than others and, as we do not want to publish plates of the same ones over and over again, the selection is somewhat biased towards birds which have received less attention.

We cannot make this series completely representative unless we are able to choose from all sources. As there was no Autumn Nature Exhibition of the Royal Photographic Society last year, the main selection this time has been made from photographs circulating in the folios of the Zoological Photographic Club and the Nature Photographic Society, and in this and other ways we do see a good cross-section, but once again we appeal to all photographers to send us any photographs which they think have a chance of inclusion and which are not likely to come to our attention otherwise. Prints should be about eight inches by six inches in size and preferably have a glossy finish; the address of the photographer should be clearly written on the back of each, with the name of the bird, the date on which it was taken and the county (or, if abroad, the country).

It may be of interest to say why these particular photographs have been selected. Sheer technical excellence alone is enough to justify the inclusion of E. K. Thompson's Black-headed Gull (plate 32b) and Mr. and Mrs. J. B. Bottomley's Jay (plate 27). In the case of the latter, too, the whole setting is unusually attractive, especially the way in which the subject stands out against a subdued background that is sufficiently out of focus to draw one's eye to the bird itself. A. N. H. Peach's Whinchat (plate 30) is likewise technically superb and its appeal is enhanced by its simplicity: there is no fussy background because that has been thrown right out of focus and, in conjunction with the plainness of the perch, this emphasises the way in which Whinchats sit up on high, exposed twigs.

Several of the other photographs similarly gain from illustrating not only the bird, but also something of its character. Harold Auger's Twite (plate 29a), for example, shows sufficient of the surroundings to give a good impression of the typical breeding habitat; this is also a species which is not often photographed. The Reed Bunting, on the other hand, is a common bird and one that is frequently portrayed, yet H. Marcus Stone's picture (plate 29b) both illustrates the habitat and uses the vegetation to frame the central subject in a particularly attractive way. A. Winspear Cundall's Hen Harrier (plate 33b) is an excellent example of the way in which 'gardening' should be done with care and restraint, so that the habitat is left as natural as possible;

this photograph also demonstrates the variation in the ages of the young (as well as an egg) and to get so many essentials so clearly in focus is quite an achievement. Similarly, S. C. Porter's Pratincole (plate 32a) gives a remarkably clear impression of bird, habitat, nest-site, eggs and young, including the cryptic coloration of the last; again the depth of clear focus is excellent.

The two other waders illustrated do not happen to have such photogenic nest-sites, but they are nevertheless both very striking photographs. R. G. Carlson's Avocet (plate 28b) especially impresses by the gradation of tones in the whites of the bird's plumage, while his brother K. J. Carlson's Dunlin (plate 28a) is an alert and arresting study of a bird which often tends to look rather characterless at the nest. Comparatively few photographs have been taken of Whooper Swans in the British Isles, and the majority have been of captive birds or else at long range: William S. Paton's study of this species (plate 34) is also unusual in that most photographs of this and other swans are normally taken on the water, so that the feet cannot be seen. Harold Platt's Buzzard (plate 33a) is one of the finest yet taken of the bird; at the same time the setting is good and extra appeal is added by the way in which the nestling is looking up at the prey in the adult's bill.

We have purposely left to the last what is probably the most remarkable picture of them all—John Markham's Grasshopper Warbler (plate 31). The feather detail in this is perfect, but what makes it particularly outstanding is the fact that it was taken in the dark: John Markham stalked the bird while it was singing at night and in the circumstances it is astonishing that he managed to focus so sharply. This must also be one of the very few photographs ever taken of a Grasshopper Warbler away from the nest.

In fact, while making this selection of photographs, we have particularly looked for pictures of birds away from the nest, of aggressive or nuptial displays, of fighting or feeding or flocking, of nest-building or of birds in flight, but very few British photographers seem to be attempting such work. Many Continental and American photographers, on the other hand, are now producing interesting action photographs and shots of display and behaviour, and it seems a pity that we are not entering this field more. This may be because most bird-photographers in this country are perfectionists and in order to obtain the perfect 'portrait' use quarter-plate and other large cameras. Overseas photographers, however, have turned almost entirely to 35 mm. cameras which make up for their slight loss in quality and definition by being much quicker and easier to use. Perhaps the time has come for us to turn more to action pictures instead of portraits. It is remarkable how little of the display of even common birds has ever been photographed. ERIC HOSKING

Notes

Exceptional passage of Cory's Shearwaters off Co. Cork.—During the late afternoon of 10th August 1962 a routine sea-watch from a hundred feet above sea level at Pointanbullig, one of the southern points of Cape Clear Island, Co. Cork, revealed an unusual passage of shearwaters and petrels, including large numbers of Cory's Shearwaters (*Procellaria diomedea*). Daily sea-watches are a regular feature of the observatory work at Cape Clear Island and on this occasion the watchers were Miss M. P. Corkhill, Miss F. Walton and H.M.D. During the 140 minutes from 16.30 to 18.50 GMT, no less than 157 Cory's Shearwaters and twelve Great Shearwaters (*P. gravis*) were recorded; Manx Shearwaters (*P. puffinus*) were counted for only 63 minutes, but during that time 3,250 passed the point, and the small petrels were counted for only about three-quarters of the time, during which some 287 were seen; there were also approximately 250 Fulmars (*Fulmarus glacialis*) and large numbers of Gannets (*Sula bassana*). All without exception were travelling south-west. The passage was still continuing at 18.50, but the light was then failing.

The weather at the time was foggy, with occasional drizzle, visibility half a mile, and wind west, force 5. The birds were passing steadily in a narrow stream just inside the fog line. Previous experience at Cape Clear has shown that the heaviest sea passage often occurs when the visibility is poor, the birds presumably coming closer inshore in order to maintain contact with the coastline. The sea passage at Cape Clear in both spring and autumn is always predominantly south-west or west; easterly movements are usually very small. Apart from the Cory's and Great Shearwaters and the petrels, the Manx Shearwater numbers were higher than usual for early August, but those of other species were in no way abnormal.

Dr. W. R. P. Bourne (*in litt.* and verbal communication) has pointed out that at this time of year both Cory's Shearwaters and Wilson's Petrels (*Oceanites oceanicus*) are to be found in numbers in the Bay of Biscay as far north as 45°N. None of the petrels on the sea-watch could be specifically identified, but they were thought not to be Leach's Petrels (*Oceanodroma leucorhoa*). Dr. Bourne suggests that there are almost as likely to have been Wilson's as Storm Petrels (*Hydrobates pelagicus*). The complete absence of Sooty Shearwaters (*P. grisea*) and Great Skuas (*Catharacta skua*)—species that are usually regular off Cape Clear at this time of year—as well as the high proportion of Cory's in relation to Great Shearwaters, suggests a southern rather than western or northern origin for this movement.

At 12.00 GMT on 8th August an extensive but weak anticyclone covered most of the Atlantic south of 35°N and east of 50°W . A small depression was centred 700 miles west of Ireland with a warm front and rain extending south to 30°N . This warm front moved east and by 06.00 on 9th August the whole of the area between south-west Ireland and Cape Finisterre was enclosed in the sector ahead of it. Twenty-four hours later this front had virtually cleared from Biscay and was entirely clear of the Irish Sea and the St. George's and English Channels. Light westerly winds extended throughout the area, with another, weaker, warm front about 500 miles west of Ireland. At the time of the passage at Cape Clear, this front had moved in to less than 100 miles to the west and winds were a little fresher. There had been no disturbance in the Biscay region since the passing of the front early on 9th August.

It seems likely, therefore, that these birds were displaced a considerable distance north and east of their feeding areas in the Bay of Biscay, ahead of the fronts, and that the passage seen at Cape Clear, after a considerable time-lag, was the return movement to Biscay. The effect of the fronts may be for precipitation to disrupt feeding by disturbing the water-surface, but the route that the birds followed was probably also affected by ocean currents and the fact that Cape Clear is only 50 miles from the edge of the Continental Shelf. There had been several other sea-watches, totalling 120 minutes during the morning of 10th August, but no Cory's Shearwaters were seen then and the numbers of other species were not abnormal for the time of year.

Although such large numbers of Cory's Shearwaters as occurred on 10th August are quite exceptional, several others were recorded later in the season: one on 1st September (B. A. E. Marr, D. G. Bell and R. F. Porter), one on 9th September (B.A.E.M., M. C. McKeown R.F.P., C. R. S. Tordoff and W. A. Venables), two on 11th September (one M. C. McK., the other B.A.E.M., R.F.P., M.C. McK., C.R.S.T., W.A.V. and R. Washbourne), one on 21st September (M. P. L. Fogden, M. J. McVail and R. E. Goodsell) and one on 4th October (M.P.L.F.). It seems probable that small numbers of Cory's Shearwaters may prove to be of annual occurrence off Cape Clear Island. The detailed descriptions of these birds and of those on 10th August were examined by Dr. W. R. P. Bourne, Major R. F. Rutledge and Kenneth Williamson.

H. M. DOBINSON and J. T. R. SHARROCK

Somersaulting behaviour of Canada Geese.—At about 2.30 p.m. on 12th April 1962, at Holywell near Stamford in Lincolnshire, we saw two Canada Geese (*Branta canadensis*) behaving in an unusual manner. The birds seemed to be a pair, showing strong attachment to each

other and possessiveness to an area of the lake and adjacent bank. After both had been head-dipping and displacement-preening for several minutes, one began a series of forward somersaults in the water. At the point where the bird was lying on its back in the water, each somersault was interrupted by vigorous foot-paddling in the air and wing flapping underwater; the bird then righted itself either by completing the forward somersault or by a sideways roll. It shook its plumage and swam quietly close to the other for a few minutes, occasionally head-dipping, before repeating the somersaulting.

At the intrusion of other Canada Geese into this area of the lake, somersaulting was abandoned and both birds assumed the typical threatening posture with heads outstretched along the water; snaking movements of head and neck accompanied by loud honking followed the departure of the intruding geese. Somersaulting was again resumed, both now taking part. The interval between the somersaults shortened until finally both somersaulted simultaneously and sank below the water. The bird which had initiated this behaviour remained underwater for about twenty seconds and resurfaced about 35 feet away, while the other was submerged for only about half this time and travelled only about ten feet before resurfacing. Apart from an occasional somersault in the few minutes following resurfacing, the two birds returned to normal feeding and no further somersaulting was seen.

On 1st May the same birds (this was assumed because of their possessiveness to the same area of the lake) repeated this somersaulting display and it again ended with their simultaneous submergence. This time one travelled about twenty feet and the other about fifteen feet before resurfacing. On this occasion L.C. observed the behaviour alone.

Although several other pairs of geese have territories on this same water, they have not been observed to behave in this manner.

CHRISTINA L. BATTY and LEE CAVE

Blackbird breaking snails.—During the last few years, I have cared for two or three injured Blackbirds (*Turdus merula*) at different times in Bude, Cornwall. On one occasion the victim was a first-winter male to which I gave the liberty of the conservatory porch with grass turfs and a variety of food to choose from. I supplied worms, grubs, snails, soaked bread and other food-scrap and a few berries, including holly.

The Blackbird took most of what I gave it, but, to my surprise (and contrary to most relevant literature), showed a special liking for the big garden snails (*Helix aspersa*) which make a large part of the diet of the Song Thrush (*T. philomelos*). The smaller snails up to the

size of a pea or a little larger were swallowed whole, but the big ones were beaten on the floor and the bodies extracted from the broken shells in the manner of Song Thrushes. If there was any difference at all in the method, I would suggest that it was that the Blackbird lacked the fast 'rat-at-at-at' of the battering method of some thrushes, and made less play with whip-lash movements of the head. It did, however, knock the snails very hard and deliberately on the ground.

S. VERE BENSON

Gray-cheeked Thrush on Bardsey.—At 10.30 a.m. GMT on 10th October 1961 a Gray-cheeked Thrush (*Catharus minimus*) was caught in the Lane Heligoland trap on Bardsey Island, Caernarvonshire, by D. L. Clugston. It was not seen clearly in the field before capture; in the hand the immediate impression was of a diminutive and very dark-backed Song Thrush (*Turdus philomelos*). The laboratory examination was carried out by D. L. Clugston, my wife and myself, and the following notes and measurements were taken:

Upper-parts: forehead, crown, nape, mantle, rump and upper tail-coverts dark brown with olive tint, this being most noticeable on rump and upper tail-coverts. *Sides of head:* cheeks olive-brown, slightly mottled; loreal region greyish-brown, some feathers giving a mottled effect, through having white centres; small white patch on eye-rim above and behind eye. *Under-parts:* chin white with dark brown streaks running from base of lower mandible on either side; throat and breast white with brown or grey-brown spots, those on throat being triangular and those on lower breast semi-circular; slight buff suffusion on breast; belly white merging into brown on flanks; vent and under tail-coverts pure white. *Wings:* primaries and secondaries dark brown (outer webs of primaries somewhat paler); primary, median and lesser coverts dark olive-brown as mantle; greater coverts similar but with paler tips and each of the innermost ones having a thin white or pale buff streak in the centre of the tip; under wing-coverts silver-grey; underside of primaries and secondaries dark grey but with striking creamy-white bar running length of wing up to second primary. *Soft parts:* bill, upper mandible and tip of lower mandible dark brown; remainder of lower mandible horn; inside of mouth yellow; tarsus pale brown; iris dark chocolate brown. *Measurements:* wing 100 mm., bill (from skull) 16 mm., tarsus 31 mm., tail 67 mm.; weight when trapped 22.4 gm. *Wing-formula:* 3rd primary longest, 4th 1.5 mm. shorter, 2nd 4 mm. shorter, 5th 9 mm. shorter, 6th 15 mm. shorter; 1st primary 3 mm. shorter than longest covert; 3rd and 4th primaries clearly emarginated on outer webs, 5th primary very slightly so.

To confirm our identification we were able to refer to the descriptions of the two previous British records, both from Fair Isle (*Brit. Birds*, 47: 266-267; 52: 316), the photographs by Allan D. Cruikshank (*Brit. Birds*, 47: plates 45-46) and Roger Tory Peterson's *A Field Guide to the Birds*. Our bird resembled the two Fair Isle ones in every respect, even to the buff suffusion on the breast (said by Peterson to be absent

in this species), but it should be noted that the weight, at 22.4 gm., was well below theirs (24.92 gm. and 27.8 gm. respectively at the time of capture). The presence of the streaks on the inner greater-coverts was taken as an indication that it was in its first winter. Before release it was seen by Susan Cowdy and P. G. Deans, C. Smith, R. C. Pratt, J. H. Robinson and A. H. Morley.

When released it flew away quite strongly to the cover of some willows. Early the next morning, however, it was found dead on a pathway running through this same cover. As there seemed no prospect of a crossing to the mainland in the foreseeable future, I asked my wife to preserve the skin. On dissection it was found to be a male. It had made no attempt to feed and the complete absence of any body-fats, together with the inflamed state of the lungs, convinced us that it was in fact 'burnt out', having passed beyond the point at which an exhausted migrant can survive and begin the replenishment of its body-fat 'fuel'.

The skin was later sent to Dr. Charles Vaurie at the American Museum of Natural History. I am most grateful to him for allowing me to quote from his report as follows:

'I compared it at once to our material and find it is a specimen of *Catharus minimus bicknelli*. It is perhaps a little strange that your specimen should turn out to be *bicknelli* instead of nominate *minimus* because the latter breeds in north-eastern Siberia and in America occupies a more northern range. However, there seems little doubt that your specimen is *bicknelli* because it matches the measurements of this race and also has the same bill and coloration. To make certain of my identification, I had it checked by two men here at the museum who are very familiar with the species.'

The weather during the forty-eight hours preceding this occurrence was predominantly stormy. Winds from the south-west began to freshen during the night of 7th/8th October and were of gale force throughout the 8th and 9th. At dawn on the 10th the wind was noted as south-west, force 6, but by mid-morning it had fallen to a virtual calm as the centre of a depression passed through the area. It is noteworthy that a Lesser Yellowlegs (*Tringa flavipes*) was identified on Crookholm Island, Pembrokeshire, towards the evening of the 9th and that an American Redstart (*Setophaga ruticilla*) was found on Ile d'Ouessant, Brittany, France, on the 10th (*Oiseau*, 32: 74-79).

F. R. CLAFTON

Warbling with differing wing lengths.—On 7th January 1962 I was trapping Starlings (*Sturnus vulgaris*) at Knaresborough sewage farm, Yorkshire, when I came across an adult male whose wing measurements were 119 mm. (right) and 131 mm. (left), the latter being the more normal figure. On examining the right wing, I found that the

9th primary was entirely absent, there being no pit from which a feather could have been pulled or be grown; this left a gap in the open wing. The 8th primary was somewhat narrower than normal near the tip, and all the primaries were on the short side, but otherwise the wing was perfectly formed. The bird did not appear to be inconvenienced in flight.

J. R. MATHER

Review

The Migrations of Birds. By Jean Dorst. Translated from the French by Constance D. Sherman. Heinemann, London, 1962. xiv+476 pages; 131 figures in the text. 50s.

The amateur migration enthusiast often longs for a comprehensive, readable book in English, which will make sense of the bewildering mass of migration literature, list all the important books and papers which he needs to read, and present a unified picture of the established facts and accepted theories about migration. This book, newly translated from the French, is comprehensive and readable, and it reviews the entire field of migration studies, but it makes little attempt at unification. Indeed, as its title implies, it places special emphasis on the variability of migratory behaviour. By quoting a large number of examples, the author gives an impressive documentation of the astonishing diversity in the migrations of birds, and demonstrates the dangers of hasty generalisations based on studies of individual species or of limited geographical areas.

Almost half the book, in fact, is devoted to a survey, region by region, of the migrations of birds throughout the world. The chapters on Europe and North America are the most thorough, covering many of the best-studied species, but there are also chapters on migrations in the southern hemisphere and the tropics, and a long chapter on the migrations of sea-birds. This part of the book is packed with interesting (and largely unfamiliar) information, and it provides an unrivalled introduction to the migrations of the birds of the world. Unfortunately, however, the author not only describes the general flight directions of the species he discusses, but he also attempts to describe details of their migration routes, and he even goes so far as to publish maps of the principal 'routes' and 'flyways' in Europe, northern Asia and North America. Although he repeatedly emphasises that he does not use the word 'route' in the precise and rigid sense of older authors, the concept itself is inconsistent with the evidence he quotes in his discussions of orientation and of migratory behaviour. This contradiction is one of the central problems of current research on migration, yet it is not discussed, or even recog-

aised, here. Hence much of the discussion in this part of the book is entirely speculative, and too much is quoted uncritically from earlier books.

The remaining chapters discuss general topics, such as history, methods of study, effects of weather and topography, behaviour of migrants, invasions, hibernation, physiological controls, orientation and evolution. Although some topics (such as the timing of migration and the influence of weather) are treated only superficially, these essays are generally thorough and well-documented, and they provide a sound guide to the vast literature of bird migration. The book has been extensively revised since the original edition appeared in 1956, and it quotes papers published as late as 1960, but parts of it have been overtaken by the exciting developments of the last five years. Indeed, it pays special attention to the history of migration research, and a good deal of space is devoted to outdated field-work and discredited theories.

A more serious defect of the book is that the author has failed to evaluate the studies he quotes in relation to modern ideas; in the search for 'objectivity', he has quoted many controversial observations and theories uncritically. Hence the book is of limited value to the specialist who wishes to learn about current theories and the critical observations which support or oppose them. But for anyone with an interest in one or two limited aspects of migration, and a wish to see how they fit into the broad background of knowledge, this is an excellent review of the history of research into migration, and of the more important observations and experiments on which our knowledge is based.

I. C. T. NISBET

News and comment

Edited by Raymond Cordero

Prize-winning films.—The B.B.C. and the Council for Nature recently announced the results of their jointly sponsored natural history film competition for amateurs. The joint winners of the £700 prize in the main class for a film suitable for television was divided between C. E. Palmar, of Glasgow, for his 'Highland Heronry', and Mr. F. R. Philps, of Eastbourne, for his film 'The Wood'. The winner of the class for short film sequences was Christopher J. Norton with his 'Waders on Passage'. The films will be shown in London during National Nature Week.

Revised edition of ringers' guide.—The British Trust for Ornithology has published a revised and considerably enlarged edition by Kenneth Williamson of the original version of *The Bird in the Hand* by R. K. Cornwallis and A. E. Smith. The main change to this invaluable field guide for ringers and observatory workers is in the section on ageing and sexing, which now describes some 80 species. The other three sections deal with handling, ringing, and with identification and examina-

tion. Copies of the book, into which so much observatory and ringing experience has been distilled, are available from the Trust at 6s. each, post free.

Cambridge ornithologist's Malayan post.—Dr. I. C. T. Nisbet, whose papers have included a study of American wader migration and its relation to transatlantic crossings and whose activities have included the development of moon-watching techniques as a means of assessing night migration, is shortly to take up the post of Lecturer in Physics at the University of Kuala Lumpur, Malaya. He has been closely connected with *British Birds* since his return from America in October 1959, both as a member of the Rarities Committee and as one of the small panel of specialists set up in 1959 to advise the editors on the selection of short notes for publication, and he will be greatly missed. We wish him, and his wife and baby son, success and happiness in their new life.

London bird book to be reissued.—The successful book, *The Birds of the London Area since 1900*, written by a committee of the London Natural History Society under the chairmanship of R. C. Homes and published in 1957, is to be reissued by Rupert Hart-Davis early next winter. There will be a supplementary chapter to bring the book up to date and a new set of plates, one in colour and twenty-four in black-and-white.

Tailpiece.—A White Wagtail, which had failed to migrate last autumn, flew into a house in south-eastern Norway in an exhausted condition on a day when the temperature was -20° C. Although the bird was apparently happy roaming freely about the house, the Scandinavian Airlines System flew it to Egypt where it was presumed its fellows had gone under their own power. However, as exactly the same thing happened in the previous winter, the S.A.S. are wondering whether the bird might be making a habit of it.

XIV INTERNATIONAL ORNITHOLOGICAL CONGRESS

Preliminary Announcement

It was decided at the close of the XIII International Ornithological Congress at Ithaca, New York, that the next Congress would be held in Great Britain in 1966, with Dr. David Laek as President. At a meeting of the British members of the International Ornithological Committee, Dr. N. Tinbergen was elected as Secretary-General and, after full consideration of various possibilities, it was decided to hold the Congress in Oxford. A British Executive Committee was formed.

In view of the decision of the full International Ornithological Committee that there was no need to hold the Congress in the breeding season (the intention being that, if practicable, it should be held outside the breeding season), the British Committee decided that the meeting should take place in late July. It is not possible to meet in Oxford during August.

In view of the further decision of the full International Committee that the 1966 Congress need not be preceded nor followed by excursions, the British Executive Committee decided that, if it proved practicable, only one excursion would be organised—a week's cruise of Scottish sea-bird islands in a ship of sufficient size to accommodate most members of the Congress. The provisional dates are: 16th-23rd July 1966 for the cruise, and 24th-30th July for the meeting in Oxford.

The British Executive Committee gratefully acknowledges a cheque for \$200 already received from the American Ornithologists' Union towards the cost of the next Congress. If other countries wish to contribute, cheques should be sent to the Treasurer for the XIV International Ornithological Congress (Mr. A. G. S. Bryson), 7 Forres Street, Edinburgh 3.



Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions accepted are sent to authors before publication. After publication, 25 separates of papers are sent free to authors (two more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet only. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of any publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital initials for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are those used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the English name. Subspecific names should not be used except where they are relevant to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and no other, except in tables where they may be abbreviated to '1st Jan.', 'Jan. 1st', or 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise cause much unnecessary work. These should take the following form:

PACKER, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

ATHERBY, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34. Various other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in the style used in this issue. They must either fit into the width of a page, or be designed to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this must be light blue or very pale grey. It is always most important to consider how a drawing will fit into the page. The neat insertion of lettering, numbers, arrows, etc., is perhaps the most difficult part of indian ink drawing and, unless he has had considerable experience of this kind of work, an author should seek the aid of a skilled draughtsman.

A WONDERFUL NEW BINOCULAR for the bird watcher

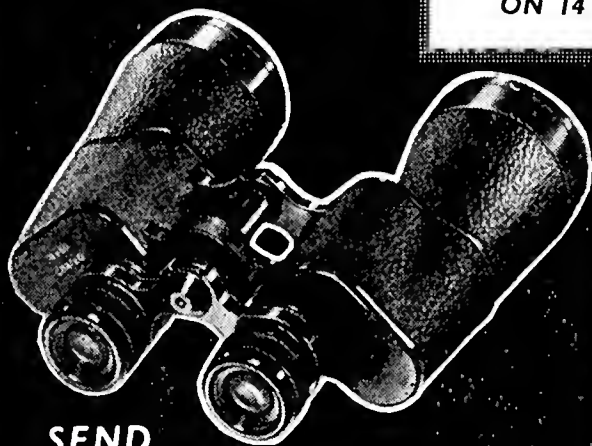
Designed with the bird watcher in mind, the new 10 x 40 ROSS SOLAROSS embodies all the new features which the bird watcher requires:

- Adequate magnification (10x)
- 40 mm. object glass and fully coated optics to ensure maximum brightness
- Brilliant performance
- Centre focusing for speedier adjustment
- Streamlined design
- Compact with sensibly designed camera-type leather case
- Lightweight—only 28 oz.

BRITISH MADE BY WORLD
FAMOUS ROSS OF LONDON **19 Gns.**



THE PICK OF THE WORLD'S
GREAT INSTRUMENTS
ON 14 DAYS' FREE TRIAL



SEND
FOR NEW
ILLUSTRATED CATALOGUE
CHARLES FRANK LTD.
67-75 Saltmarket Glasgow G1.
Phone. BELL 2106/7 Est. 1907

Britain's greatest stocks of New, Used and Ex-Govt.
Binoculars, Telescopes and Navigational Equipment.

The CHARLES FRANK 22 x 51
Prismatic Telescope Definition is
unsurpassed—compare it without ob-
ligation with your present telescope.
Supplied with tripod. Can be comfort-
ably hand-held. **£22 . 10 . 0**

From the current Japanese quota, we
can offer a high quality 10 x 50 glass
at £16 10s. and an excellent 8 x 30 at
£12 10s. Both models are centre focus
ing and complete with case and straps.
Approval facilities.

6 x 30 ARMY BINOCULARS
An excellent general purpose binocular
of good performance, which will stand
up to a great deal of rough usage. Cost
approximately £20. **£7 . 15 . 0**

The wildfowler who requires maxi-
mum brightness in all conditions will
do well to consider the Canadian
Naval 7 x 50 day and night glass, com-
plete in waterproof rubber case, an
amazing glass which will stand up to
an inordinate amount of rough usage.
£24. Incidentally, current value of
glass of this quality would be about £60.

CHARLES FRANK Large Tripod
Mounted TELESCOPE 3" aperture
£57 . 10 . 0

British Birds



Principal Contents

10 JUN 1963

PURCHASED.

The distribution of the Sooty Shearwater around the British Isles

J. H. Phillips

American passerines in western Europe, 1951-62

I. C. T. Nisbet

Studies of less familiar birds: 122—Spoonbill

Guy B. Farrar, Eric Hosking and I. J. Ferguson-Lees

(with four plates)

Notes

Reviews

Letters

News and comment

Recent reports



Three
Shillings

June
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

<i>Photographic Editor</i>	<i>'News and Comment'</i>	<i>Rarities Committee</i>
Eric Hosking	Raymond Cordero	D. D. Harber
20 Crouch Hall Road	Rohan Lodge, Wadhurst Park	1 Gorrington Road
London, N.8	Wadhurst, Sussex	Eastbourne, Sussex

Contents of Volume 56, Number 6, June 1963

	Page
The distribution of the Sooty Shearwater around the British Isles. By J. H. Phillips	197
American passerines in western Europe, 1951-62. By Dr. I. C. T. Nisbet	204
Studies of less familiar birds: 122—Spoonbill. Photographs by the late Guy B. Farrar and Eric Hosking (plates 35-38). Text by I. J. Ferguson-Lees	217
Notes:—	
Alternative leg positions of birds in cold weather (L. P. Alder)	219
Red-footed Falcon in Lancashire in winter (Dr. J. A. and M. E. Harrison)	220
Jay taking fish from river (J. T. R. Sharrock)	221
Jay learning to feed from nut-holder (Mrs. Denise Salfeld)	221
Blue Tit with acarine mange (J. W. Macdonald)	221
Blackbird feeding in association with Grey Squirrels (J. T. R. Sharrock)	222
Pied Wagtails feeding on dragonflies (F. Fincher)	222
Reviews:—	
<i>Silent Spring</i> . By Rachel Carson. Reviewed by Dr. D. A. Ratcliffe	222
<i>Development of Behaviour in Precocial Birds</i> . By Margaret Morse Nice. Reviewed by Derek Goodwin	224
<i>The Birds of the Lake Counties</i> . By Ralph Stokoe. Reviewed by Dr. Stuart Smith	225
Letters:—	
Uses of photography and sound-recording to reinforce sight records of unusual birds (Myles E. W. North)	226
Woodpeckers finding ants under snow (F. Fincher)	227
Proposed check-list of Shropshire birds (F. C. Gribble, E. M. Rutter and T. W. Pemberton)	228
Requests for information:—	
Effects of the severe winter of 1962-63 (H. M. Dobinson and A. J. Richards)	228
Food of the Herring Gull (M. P. Harris)	229
Birds of the Small Isles (Miss W. U. Flower and Dr. P. R. Evans)	229
Colour-ringed Lesser Black-backed Gulls (E. D. Ponting)	229
News and comment. Edited by Raymond Cordero	229
Recent reports. By I. J. Ferguson-Lees	231

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 5 Warwick Court, London, W.C.1

British Birds



Vol. 56 No. 6

JUNE 1963



The distribution of the Sooty Shearwater around the British Isles

By J. H. Phillips

RECENT RECORDS of the Sooty Shearwater (*Procellaria grisea*) from under-watched parts of the British coast can now lead us to an important reassessment of the status of this species. Its classification as a 'rather scarce visitor' in *The Handbook* (Witherby *et al.* 1940) and as an 'irregular visitor' in the B.O.U. *Check-list* (1952) was adequate according to the records existing at those dates, but is by no means consistent with our present knowledge. This paper gives the main records of the species that have been made in the north-east Atlantic: the relation of its records and movements to oceanographic and meteorological conditions is being discussed elsewhere (Phillips 1963).

The Sooty Shearwater is widely distributed over the Pacific and Atlantic oceans. Birds spending the non-breeding season (May to September) in the Atlantic, probably numbering only some tens of thousands, are derived from large colonies off Cape Horn, and from the Falkland Islands. Kuroda (1957) has discussed the concept of a circular migration of the Tubinares around the world oceans, and it seems likely that Sooty Shearwaters reach the British Isles after moving to the east coast of North America and crossing the Atlantic between 30° and 60°N. It is possible that this crossing is made only by those birds not breeding in the succeeding season.

MONTHLY DISTRIBUTION OF RECORDS

Fig. 1 shows the known distribution of the Sooty Shearwater around the British Isles. There are few records in the north-east Atlantic outside the late summer and autumn. Stragglers have, however, been recorded off Britain in April (Sharrock 1962) and November (Temperley 1951) and at least three times in May (Boyd 1958, Kennedy *et al.* 1954, Rankin and Duffey 1948). The validity of Hügel's (1869) record of a bird off Devon in February is uncertain.

June

June is the earliest month in which any concentration of Sooty Shearwaters has been observed over feeding grounds in the north-east Atlantic. Lockley and Marchant (1951) found a small concentration on the Rockall Bank towards the end of the month, with individual birds scattered towards the mainland. None was found there by Harvie-Brown and Barrington (1897) when they visited the area in the first half of the month.

July

Allison *et al.* (1952) saw small numbers at three stations between two and four hundred miles south of Iceland, including some near Rockall, in this month. There are several other scattered records, including several from the Hebrides (MacRae 1936) and from the coast of Brittany (Mayaud 1949).

August

The main dispersal of Sooty Shearwaters across the Atlantic occurs in August, and it is then that the species is first recorded regularly, and in fair numbers, in British waters. In the north-east Atlantic records extend from 75°N (Duffey 1951) to as far south as 37°N (Owen 1958). The principal records of concentrations of feeding birds, however, come from the Faeroes (J. J. Hatch *in litt.**) and from the west coast of Ireland. Kennedy *et al.* (1954) reported that 'a large number' was seen off the Mullet peninsula, Co. Mayo, on 17th August 1911, and saw fair numbers there associating with Manx Shearwaters (*Puffinus*) in the latter half of August 1960 and 1961. Sharrock (1960,

* *These records are unpublished. Mr. Hatch observed Sooty Shearwaters around a trawler in Faeroese waters on several days in August 1960, the most being to the south-west of the Faeroes on 23rd August, when there were always about twenty-five around the ship.

Fig. 1 is based on data from Clarke (1912), Evans (1903), Gibbs *et al.* (1954), Kennedy *et al.* (1954), Lockley and Marchant (1951), MacRae (1936), Nelson (1907), Rankin and Duffey (1948), Temperley (1951), and Ussher (1901, 1905); from other published sources not included in the detailed list of references, namely Baxter and Rintoul, *Birds of Scotland* (1953), Bolam, *Birds of Northumberland* (1932), Boswall, *Brit. Birds*, 33: 212-215 (1960), Bourlière, *L'Oiseau*, 16: 42-60 (1946), Campbell, *Brit. Birds*, 30: 178 (1937), Chislett, *Yorkshire Birds* (1953), Fitter, *Brit. Birds*, 32: 399-400 (1939), Garber, *Brit. Birds*, 44: 315 (1951), Hartley, *Brit. Birds*, 31: 89 (1937), Lockley, *North-western Nat.*, 298-301 (1932), MacFarlane and MacRae, *Brit. Birds*, 30: 324 (1937), Mayaud, *Alauda*, 10: 188-198 (1938), Nisbet, *Brit. Birds*, 47: 169-170 (1954), Richardson, *Brit. Birds*, 41: 314 (1948), Rivière, *History of the Birds of Norfolk* (1930), and White, *Brit. Birds*, 31: 230-232 (1937); from the journal *Bird Migration* and the *Annual Reports of the Cornwall Bird-Watching and Preservation Society*; from unpublished records of the Royal Naval Bird-Watching Society; and from unpublished personal observations.

1962) reported similar numbers off Cape Clear, Co. Cork, at the same time. In addition, there are many records of single birds and small parties, especially from the Hebrides, the Firth of Forth and the Northumberland coast, and off south-west Cornwall.

September

British records are most numerous in September. Their general distribution is similar to that in August, but in this month occasional birds are liable to be found all round the British coast. The main records again come from the west coast of Ireland and the north-east coast of England and Scotland.

On the west coast Gibbs *et al.* (1954) counted 137 off Malin Head, Co. Donegal, on 9th September 1953. Further south, I saw Sooty Shearwaters on almost every day of watching from Erris Head, Co. Mayo, in the first half of September 1960 and 1961, with up to two hundred in a day. Off the south-west of Ireland Becher noted flocks of Sooty Shearwaters in September 1900 and 1901 (Ussher 1901, 1905), and the presence of concentrations there at that time has since been amply confirmed by observations from Cape Clear, Co. Cork, where flocks of up to 350 have been reported (Sharrock 1960, 1962).

In the North Sea a flock of 500 Sooty Shearwaters, associating with 500 Manx Shearwaters, was seen off the Isle of May in the Firth of Forth on 25th September 1959 (Eggeling 1959). This is the largest concentration ever found in the north-east Atlantic. Evans (1903) also recorded large numbers in the Forth in September. Smaller numbers are found scattered down the east coast; Nelson (1907) summarised a quantity of records from Yorkshire, and Cudworth (1959) has provided some recent observations of fair numbers off Spurn Point: the peak of 43 on 16th September 1959 corresponded with a peak in Manx Shearwater numbers.

October

By October most Sooty Shearwaters are departing from the North Atlantic. The majority of records still come from the British Isles, but these refer only to odd birds and, as in September, are from many parts of the coast. The only records of even small concentrations in the North Atlantic at this time come from Spain and Portugal.

DISCUSSION

The Sooty Shearwater is principally an off-shore species (using the notation of Wynne-Edwards 1930). That is, it is a bird of the continental shelf, feeding on the rich fishing grounds found where the depth is, in general, less than 100 fathoms. This has been clearly demonstrated for Sooty Shearwaters off the western North American

coast (Yocom 1947), off Peru (Murphy 1936) and off South Africa (Stanford 1953), and by the fact that it is recorded rather infrequently on Atlantic transects. The species is a long-distance migrant and its ocean crossings are probably made rapidly; at other times it lingers on the feeding grounds off the continental land-masses.

After crossing the Atlantic (mostly in August or early September) flocks congregate on the principal feeding grounds over the continental shelf in the north-east Atlantic. The species rarely reaches as far north as Iceland, but concentrations are found on the fishing grounds off the Faeroes and off north-west Britain. It is probably safe to say that these feeding birds are regular in some numbers in the Hebrides and off western Ireland each year: the lack of regular observation in these areas presumably accounts for the rather scattered nature of the records. They consume offal when this is available (Clarke 1912, Blockley and Marchant 1951), but probably feed mainly on fry, young herrings (*Clupea harengus*) and possibly Pilchards (*Sardina pilchardus*). They have been observed feeding with flocks of Manx Shearwaters off Erris Head and off Cape Clear, and the unusually large numbers in the North Sea in September 1959 were also associated with this species. Sooty Shearwaters are regularly recorded on the north-east coast of Britain, where the observer density is much higher than in the west. However, records are comparatively rare from the south North Sea and English Channel. Thus Mayaud (1953) noted that the Sooty Shearwater, though regular in small numbers in Atlantic waters off the French coast from August to November, is rare in the Channel. There are also very few Irish Sea records, and it appears that the species tends to keep to the outer, Atlantic coasts of north-west Europe. Stragglers are always liable to appear in unexpected places, however. Thus there are four Danish records (Groth 1961), but all these are from the east coast, in November, December and January; a single bird has also been reported from Lübeck Bay in November (Brennecke 1959).

Some interesting observations have been made on the direction of flight of Sooty Shearwaters. Nicholson (1952) postulated a migration route south through the North Sea and west through the English Channel, his evidence for this presumably being the records of Alexander (1912, 1914, 1916) from Dungeness, Kent. However, it now seems very likely that these records in fact referred to Balearic Shearwaters (*P. puffinus mauretanicus*) and they should be discounted (H. G. Alexander *in litt.*). The observations of northerly movement quoted by Cudworth (1959) from Spurn Point, Yorkshire, and those of westerly movement past Cley, Norfolk, made by R. J. Johns (*in litt.*) and quoted by Richardson (1960), taken with the absence of records in the Channel, suggest that Sooty Shearwaters which enter the North Sea

generally leave it by moving north again and rounding the top of Scotland.

Gibbs *et al.* (1954), Pettitt (1960) and I have all found a south-westerly passage past north-west Ireland. Observations at Cape Clear, Co. Cork, however, indicate that considerable numbers pass this island, also heading south-west. Thus of 117 Sooty Shearwaters seen there in 1960, only two were moving east (Sharrock 1960), and of the very large number seen there in late August and early September 1961, the great majority were either moving south-west or were congregating in flocks in the area (Sharrock 1962). The species is, however, only rarely recorded off Great Saltee, Co. Wexford, and there is no southerly passage through the Irish Sea. It seems possible that there may be a build-up of Sooty Shearwaters around south-west Ireland before they head south for Biscay or Spain. Some birds heading south past western Ireland may, on 'overshooting' the limit of high off-shore plankton density, perhaps at about the 50-fathom contour, follow this to the east, spending some time off southern Ireland, where they have been recorded feeding in association with flocks of Manx Shearwaters in August, before heading south out to sea when meteorological conditions are suitable. Such a build-up of sea-birds would be analogous to that found, on a much larger scale, off California in autumn.

CONCLUSION

The Sooty Shearwater is a regular autumn visitor to the British Isles, principally to Atlantic coasts, making a southerly movement past these during August and September. It is also frequently recorded off north-east Britain, but generally in smaller numbers except in unusual meteorological conditions.

REFERENCES

- ALEXANDER, H. G. (1912): 'Sooty Shearwater off Kent'. *Brit. Birds*, 6: 159.
 ——— (1914): 'Unusual birds at Dungeness'. *Brit. Birds*, 7: 227.
 ——— (1916): 'Birds at Dungeness in 1915'. *Brit. Birds*, 9: 272-273.
 ALLISON, F. R., DARLINGTON, A., BARRAS-SMITH, M. A., and ROMER, M. L. R. (1952): 'Bird observations on ocean weather ships in 1950'. *Marine Obs.*, 22: 27-32.
 BOYD, J. M. (1958): 'The birds of Tiree and Coll'. *Brit. Birds*, 51: 41-56, 103-118.
 BRENNECKE, H. E. (1959): 'Beobachtung eines Dunkles Sturmtauchers (*Puffinus griseus*) in der Lübecker Bucht'. *Orn. Mitt.*, 11: 26-28.
 CLARKE, W. E. (1912): *Studies in Bird Migration*. London.
 CUDWORTH, J. (1959): 'Reports from bird observatories, autumn migration, 1959: 4. Spurn Point, Yorkshire'. *Bird Migration*, 1: 104-106.
 DUFFEY, E. (1951): 'Sooty Shearwater in the Barents Sea'. *Brit. Birds*, 44: 179.
 EGGELING, W. J. (1959): 'Reports from bird observatories, autumn migration, 1959: 2. Isle of May, Fife'. *Bird Migration*, 1: 100-103.

- EVANS, W. (1903): 'The Sooty Shearwater in the Firth of Forth'. *Ann. Scot. Nat. Hist.*, 12: 26-28.
- GIBBS, A., NISBET, I. C. T., and REDMAN, P. S. (1954): 'Birds of north Donegal in autumn, 1953'. *Brit. Birds*, 47: 217-228.
- GROTH, J. K. (1961): 'Sodfarvet Skråpe (*Puffinus griseus* Gm.) i sydlige Lillebælt'. *Dansk Orn. Foren. Tidsskr.*, 54: 199.
- HARVIE-BROWN, J. A., and BARRINGTON, R. M. (1897): 'Rockall'. *Trans. Roy. Irish Acad.*, 31: 66-75.
- HÜGEL, A. DE (1869): 'Ornithological notes from south Devon'. *Zoologist*, (2) 4: 1720.
- KENNEDY, P. G., RUTTLEDGE, R. F., and SCROOPE, C. F. (1954): *The Birds of Ireland*. Edinburgh and London.
- KURODA, N. (1957): 'A brief note on the pelagic migration of the Tubinares'. *Misc. Rep. Yamashina's Inst. Orn. Zool.*, 11: 436-449.
- MOCKLEY, R. M., and MARCHANT, S. (1951): 'A midsummer visit to Rockall'. *Brit. Birds*, 44: 373-383.
- MACRAE, A. (1936): 'Sooty Shearwaters and a Great Shearwater off the Hebrides'. *Brit. Birds*, 30: 174-175.
- MAYAUD, N. (1949): 'Commentaires sur l'ornithologie française'. *Alauda*, 17: 79-94.
- (1953): 'Liste des oiseaux de France'. *Alauda*, 21: 1-63.
- MURPHY, R. C. (1936): *Oceanic Birds of South America*. New York.
- NELSON, T. H. (1907): *The Birds of Yorkshire*. Vol. 2. London.
- NICHOLSON, E. M. (1952): 'Shearwaters in the English Channel'. *Brit. Birds*, 45: 41-55.
- OWEN, J. (1958): 'Autumn migration in southwest Portugal, 1957'. *Ibis*, 100: 515-534.
- PETTITT, R. G. (1960): *Tory Island 1960: Second Report of the Tory Island Bird Observers*.
- PHILLIPS, J. H. (1963): 'The pelagic distribution of the Sooty Shearwater *Procellaria grisea*'. *Ibis*, 105: in press.
- RANKIN, M., and DUFFEY, E. A. G. (1948): 'A study of bird life of the North Atlantic'. *Brit. Birds*, 41: spec. suppl., 42 pp.
- RICHARDSON, R. A. (1960): 'Reports from bird observatories, autumn migration, 1960: 5. Cley and Blakeney, Norfolk'. *Bird Migration*, 1: 256-257.
- SHARROCK, J. T. R. (1960): *Cape Clear Bird Observatory Report No. 2*.
- (1962): *Cape Clear Bird Observatory Report No. 3*.
- SANFORD, W. P. (1953): 'Some sea birds in winter off the southwest Cape'. *Ostrich*, 24: 17-26.
- SEMPERLEY, G. W. (1951): *A History of the Birds of Durham*. Durham.
- SSHER, R. J. (1901): 'Great and Sooty Shearwaters on the south coast'. *Irish Nat.*, 10: 42.
- (1905): 'Great and Sooty Shearwaters in 1901'. *Irish Nat.*, 14: 43.
- WITHERBY, H. F., JOURDAIN, F. C. R., TICEHURST, N. F., and TUCKER, B. W. (1940): *The Handbook of British Birds*. Vol. IV. London.
- WYNNE-EDWARDS, V. C. (1930): 'Birds of the North Atlantic'. *Discovery*, 11: 359-362.
- YOCOM, C. F. (1947): 'Observations on bird life in the Pacific ocean off the North American shores'. *Condor*, 49: 204-208.

American passerines in western Europe,

1951-62

By I. C. T. Nisbet

IN AN EARLIER PAPER (Nisbet 1959) I discussed the records of American waders in Great Britain in relation to their migrations in North America. In this paper I am discussing the records of American passerines in Europe in the same way. The migration of passerines in eastern North America has been studied in more detail than that of waders (for review see Drury and Keith 1962), so the conclusions in this paper are more detailed, but so few passerines have reached Europe that some of the conclusions are more tentative. However, at the present rate it will take at least ten years to accumulate enough records for a more statistically reliable analysis.

Records of American land-birds in Europe have been summarised by Alexander and Fitter (1955), but their list includes a number of records which are dubious or officially rejected. For safety, this paper is primarily concerned with records since 1951, although the validity of the older records is discussed at the end. I have also restricted my attention chiefly to records from the Atlantic seaboard (Great Britain, Ireland and France), since birds noted farther east are more likely to have spent weeks or months in Europe before they were first seen. Records from Iceland and the Azores are omitted altogether, since they are not necessarily comparable with those from Europe proper, and in any case I could not obtain complete lists.

The first half of the paper is concerned with the records in autumn and winter, listed in table 1. Spring records, listed in table 3, are discussed separately, and the older records are summarised in table 4.

AUTUMN AND WINTER RECORDS: AREA OF ORIGIN

All the species involved are common migrants along the Atlantic coast of North America, so it will be assumed that all the birds started their migration somewhere close to the east coast of Canada or the U.S.A.

In my earlier paper (Nisbet 1959) I suggested that the most likely area of origin for transatlantic crossings by waders was the Gulf of St. Lawrence and Labrador. Among the thirteen passerine species listed in table 1, however, six—Red-eyed Vireo, Blackburnian Warbler, Bobolink, Baltimore Oriole, Summer Tanager and Rose-breasted Grosbeak—do not occur as far north as this, but reach their northern limits in Nova Scotia or New Brunswick, or (in the case of the Summer Tanager) much farther south. In addition, the first American Robin

AMERICAN PASSERINES IN WESTERN EUROPE

Table 1. American passerines on the Atlantic coast of Europe in autumn and winter, 1951-62

All the records either have been published in *British Birds* or will be published in the course of this year, with the exception of the Horned Lark (B.O.U. 1958), the 1954 American Robin (Hollom 1960), the 1955 Northern Waterthrush (Mayaud 1956) and the American Redstart (Vielliard 1962). The unidentified warbler was probably the Blackburnian Warbler (*Dendroica fusca*) but it was not definitely established as such

Horned Lark (<i>Eremophila a. alpestris</i>)	29 Sept 1953	South Uist, Outer Hebrides	Scotland
American Robin (<i>Turdus migratorius</i>)	25 Oct-8 Nov 1952	Lundy, Devon	England
	mid-Dec 1954	Camolin, Co. Wexford	Ireland
	11-13 Jan 1955	Tralee, Co. Kerry	Ireland
	7 Nov 1962	Lundy, Devon	England
Gray-cheeked Thrush (<i>Cathartes minimus</i>)	5 Oct 1953	Fair Isle, Shetland	Scotland
	29 Oct 1958	Fair Isle, Shetland	Scotland
	10 Oct 1961	Bardsey, Caernarvonshire	Wales
Red-eyed Vireo (<i>Vireo olivaceus</i>)	4 Oct 1951	Tuskar Rock, Co. Wexford	Ireland
	4-17 Oct 1962 (2 birds)	St. Agnes, Isles of Scilly	England
Myrtle Warbler (<i>Dendroica coronata</i>)	4 Jan-10 Feb 1955	Near Exeter, Devon	England
	5-14 Nov 1960	Lundy, Devon	England
Unidentified warbler (<i>Dendroica</i> sp.)	5 Oct 1961	Skomer Island, Pembrokeshire	Wales
Northern Waterthrush (<i>Seiurus boreboracensis</i>)	17 Sept 1955	Ile d'Ouessant, Bretagne	France
	30 Sept-12 Oct 1958	St. Agnes, Isles of Scilly	England
Yellowthroat (<i>Geothlypis trichas</i>)	4-5 Nov 1954	Lundy, Devon	England
American Redstart (<i>Setophaga ruticilla</i>)	10 Oct 1961	Ile d'Ouessant, Bretagne	France
Bobolink (<i>Dolichonyx oryzivorus</i>)	19-20 Sept 1962	St. Agnes, Isles of Scilly	England
Baltimore Oriole (<i>Icterus galbula</i>)	2-10 Oct 1958	Lundy, Devon	England
	5-6 Oct 1962	Beachy Head, Sussex	England
Summer Tanager (<i>Piranga rubra</i>)	11-25 Sept 1957	Bardsey, Caernarvonshire	Wales
Rose-breasted Grosbeak (<i>Pheucticus ludovicianus</i>)	24 Nov 1957	Shane's Castle, Co. Antrim	Ireland
	7-8 Oct 1962	Cape Clear, Co. Cork	Ireland

was referred by Davis (1953) to the southern race *T. m. migratorius*, the third Gray-cheeked Thrush was identified by C. Vaurie as belonging to the southern race *C. m. bicknelli* (Swaine 1962), and both the other Gray-cheeked Thrushes had the measurements of this race (Williamson 1954, Davis 1959). Thus more than half of the birds listed in table 1 come from breeding populations which do not extend north-east of the Gulf of St. Lawrence.

Table 2 compares the dates on which the birds were first seen in Europe with the dates of their migration through New England

(about 42° N) and Maryland (about 39° N). With the exception of the Horned Lark, and perhaps the earliest American Robin and Gray-cheeked Thrush, all the European records came in the last few days, or after the end, of the main period of migration of the species through New England. Although some of the birds (e.g. those seen in winter) had doubtless reached Europe some time before they were first seen, it is likely that many were recorded very soon after they arrived. Hence it is likely that most left the American coast south of New England.

Table 2. Migration dates of transatlantic vagrant passerines

The species are the same as in table 1 and the scientific names are given there. The date in the second column is that on which each bird was first seen in Europe. The third and fourth columns give the main migration period in Massachusetts (Griscom and Snyder 1955, with amendments by J. Baird) and in Maryland (Stewart and Robbins 1958)

Species	Date seen in Europe	Main migration period	
		Massachusetts	Maryland
Horned Lark	29 Sept	17 Oct-winter	30 Sept-15 Dec
American Robin	25 Oct	Oct-early Nov	15 Sept-15 Nov
	7 Nov mid-Dec		
Gray-checked Thrush	11 Jan	12 Sept-12 Oct	15 Sept-15 Oct
	5 Oct		
	10 Oct		
Red-eyed Vireo	29 Oct	1 Sept-1 Oct	15 Aug-10 Oct
	4 Oct		
	4 Oct		
Myrtle Warbler	5 Oct	28 Sept-20 Oct	25 Sept-25 Nov
	5 Nov		
Yellowthroat	4 Jan	mid-Aug-30 Sept	20 Aug-20 Oct
Northern Waterthrush	4 Nov	10 Aug-22 Sept	5 Aug-5 Oct
	17 Sept		
American Redstart	30 Sept	15 Aug-5 Oct	5 Aug-5 Oct
Bobolink	10 Oct	Aug-15 Sept	25 Aug-15 Sept
Baltimore Oriole	19 Sept	20 Aug-20 Sept	5 Aug-25 Sept
	2 Oct		
Summer Tanager	5 Oct	rare vagrant	20 Aug-20 Sept
	11 Sept		
Rose-breasted Grosbeak	7 Oct	10 Sept-5 Oct	10 Sept-5 Oct
	24 Nov		

I conclude that the main area of origin of transatlantic passerines is the east coast of the U.S.A., north at most to 45° N, and south at least as far as 39° N (the northern limit of the Summer Tanager). It is a major problem for any theory of transatlantic migration to explain why more birds seem to have started the crossing in this area, whereas the coast to the north of 45° N is closer to Europe, is subject to stronger offshore winds, and is nearly as well served by transatlantic shipping.

Long-distance migration

With the exception of the Horned Lark, every one of the thirteen species mentioned in table 1 is known to perform a long-distance migration, either across the Gulf of Mexico (Stevenson 1957) or across part of the western North Atlantic (Drury and Keith 1962). Odum *et al.* (1961) have shown that at least some of the Gulf migrants carry enough fat at the start of their sea-crossings to permit a non-stop flight of 30-50 hours, often much more. Drury and Keith showed that the Atlantic migrants are often as fat as Odum's fattest specimens.

Westerly winds in the Atlantic

Williamson (1954) and Williamson and Ferguson-Lees (1960) showed that many arrivals of American birds in the British Isles coincide with strong westerly winds on the south side of large Atlantic lows. This suggests that such winds, at least in the eastern half of the Atlantic, are an important factor leading to transatlantic crossings. Williamson and Ferguson-Lees went further than this, and suggested that the birds must have oriented down-wind in order to fly fast enough to cross the ocean before they exhausted their fuel-reserves. There are two reasons for doubting the latter suggestion:

(1) Down-wind flight may not in fact lead to the fastest possible crossing. Harris *et al.* (1960) published a map showing the computed trajectory of a particle moving with the velocity of the surface winds and arriving at Scilly at the same time as the 1958 Northern Water-rush. The trajectory included a large loop in mid-Atlantic, circling the centre of one of the lows which produced the westerly winds. J. L. Parslow has shown me a similar trajectory computed for a bird flying down-wind at 25 knots: this included two loops in mid-ocean, because the hypothetical bird would have been flying much faster than the movement of the low-pressure centre. In general, if a bird is to cross the Atlantic much faster than the low-pressure system which affects it, it must avoid this looping; this probably requires it to head east (or north-east or south-east) when it reaches the south-eastern quadrant of the low where the winds veer to the south. This suggestion (due to Parslow) needs quantitative investigation.

(2) Downwind flight would (as recognised by Williamson and Ferguson-Lees) require the birds they discussed to have left North America in the area of Newfoundland and the Davis Strait. Indeed, this must apply to all transatlantic vagrants, since the zone of strong westerly winds in the Atlantic lies mainly north of latitude 45° N (anon. 1945). This is well to the north of the area suggested in this paper as the most probable area of departure (indeed, it is well to the north of the breeding-range of half the forms involved). Hence any

theory which attributes importance to strong westerly winds in the Atlantic must also explain how the birds come to wander far enough north to encounter them.

Drift

Except during hurricanes (to be discussed later), eastward drift of migrants over the Atlantic usually takes place with more or less north-westerly winds, which occur behind cold fronts associated with lows following the main storm track over the Gulf of St. Lawrence. Radar studies (Drury and Keith 1962, Drury and Nisbet in preparation) have shown that in these circumstances passerines head between south and west, so that they continue to move more or less southwards (sometimes south-east or ESE), away from the low pressure centres and the main zone of westerlies. Hence this type of drift is unlikely to lead to transatlantic migration. Indeed, most of the species in table 1 migrate south-west whatever the direction of the wind, and it is hard to see how they could cross the Atlantic without a drastic change in their heading.

Reversed migration

Drury and Keith (1962) have observed small but regular north-eastward movements over eastern New England in autumn, usually in warm weather with south-west winds ahead of an advancing cold front. The birds often set out over the sea, on a track that, if continued, would take them closer to the centre of the low, and hence into the zone of strong westerlies.

Baird *et al.* (1959), studying records of grounded migrants, found that the same weather conditions coincided with lulls in the migration of northern species, and with arrivals of Yellow-breasted Chats (*Icteria virens*) and other south-western rarities (including Summer Tanagers) in New England. Subsequent study (Baird unpublished) has shown that the common species which occur most regularly with these waves of Yellow-breasted Chats are the Baltimore Oriole, Catbird (*Dumetella carolinensis*), Red-eyed Vireo, Northern Waterthrush, Ovenbird (*Seiurus aureocapillus*), Yellowthroat and Rose-breasted Grosbeak. This suggests that these species, and probably other passerines, are the species which take part in the north-eastward movements seen on radar. It is easy to see that if the birds continue to head north-east or ENE, and if they continue to encounter strong west or south-west winds, they might eventually make a landfall in Europe (see the section *Westerly winds in the Atlantic* above).

There is a little direct evidence linking arrivals in Europe with reversed movements off the east coast of the U.S.A. two or three days earlier. In a letter quoted by Williamson and Ferguson-Lees (1960)

It showed that the arrival of the 1958 Baltimore Oriole followed a north-east movement on the evening of 30th September; this movement brought a few late Baltimore Orioles to the islands off New England on the morning of 1st October (J. Baird *in litt.*). In 1962 the radar station on Cape Cod tracked small north-eastward movements on the nights of 1st/2nd and 2nd/3rd October, and moderate north-east movements on the nights of 3rd/4th and 4th/5th October; these coincided with the arrival of late Red-eyed Vireos and Baltimore Orioles at netting-stations on the New Jersey coast and on the New England islands from 2nd to 5th October (J. Baird *in litt.*), and may well have been associated with the occurrences of these species in the British Isles from 4th to 7th October.

'Spring straggling'

The above hypothesis, that movements oriented to the north-east may be greatly prolonged in following winds, is very similar to a hypothesis put forward by Bagg (1955) for spring migration, and now well established (Bagg 1956, 1958, 1961; Drury and Keith 1962). Especially in early April, migrants which fly across the Gulf of Mexico from Central America sometimes fail to stop when they reach Florida, but continue north-east over the Atlantic, and, if favoured by strong following winds, reach a landfall in New England or in Nova Scotia. These long flights (over 2,000 miles) probably take some 40-50 hours—little less than the time required for a transatlantic crossing with strong tail-winds.

1 Evidence for the significance of this analogy is that, among the half-dozen species which occur most frequently in Bagg's lists of spring stragglers, three (Baltimore Oriole, Summer Tanager and Rose-breasted Grosbeak) have already occurred in Europe in autumn, and a fourth (the Indigo Bunting *Passerina cyanea*) has recently occurred in Iceland (F. Gudmundsson *in litt.*).

Area of origin

If this association between reversed movements and transatlantic migrancy is accepted, it might explain the puzzling southern origin of the birds which reach Europe. Most of the records have been in the period around the autumn equinox and in the following three weeks, perhaps because westerly winds in the Atlantic are then more persistent and stronger than earlier in the autumn. Reversed migration is a phenomenon associated with moist tropical air flowing north-east from the Gulf of Mexico, and after mid-September these flows of tropical air do not normally penetrate far into eastern Canada. Hence the period in the autumn most favourable for transatlantic crossings, reversed migration is probably primarily a phenomenon which occurs south of 45°N.

Hurricanes

Another way in which birds might be carried northwards into the zone of strong westerlies is by the action of tropical hurricanes, which sometimes brush the coast of New England or Nova Scotia as they move into the temperate North Atlantic. In this region a hurricane is typically 300-400 miles in diameter and moves north-east at 20-30 knots, so that a bird caught in its western periphery could be carried 600 miles to the north-east in less than ten hours, whatever its heading. This might be the start of a transatlantic crossing if the bird continued to meet strong south-westerly winds. Hurricanes may also assist transatlantic crossings at a later stage in their development, because they often expand into deep, extensive depressions between Newfoundland and Iceland, with strong westerly winds on their southern margins.

In fact, at least four of the records in table 1 are directly associated with hurricanes. The 1958 Northern Waterthrush and Baltimore Oriole occurred in Great Britain within $3\frac{1}{2}$ days of the passage of hurricane 'Helene' off Nova Scotia on 28th-29th September (for discussion see Williamson and Ferguson-Lees 1960). The 1961 Gray-cheeked Thrush and American Redstart were found in Europe some 40-50 hours after hurricane 'Frances' brushed the coast of Nova Scotia on 8th-9th October. Hurricanes are known to transport small passerines north of their migration routes (Drury and Keith 1962), and the spectacular observation of passerines and other land-birds in mid-Atlantic during 7th-14th October 1962 (Durand 1963) was associated with the passage of hurricane 'Daisy' along the coasts of Maine and Nova Scotia on the 7th. However, many of the records in table 1 cannot be associated with earlier hurricanes. Hence hurricanes cannot be the major cause of transatlantic vagrancy, but they may explain records of some species not known to perform reversed migrations.

CROSSINGS ON SHIPS

So far I have not discussed whether some, or most, of the birds could have made some, or most, of the crossing on ships. The fact that I have been able to relate the European records to known migratory phenomena in North America is not in itself evidence for unassisted crossings: it might merely indicate that the birds have to be blown far offshore before they seek the ships on which they complete the journey. Nor does the fact that some birds have been seen to cross on ships necessarily indicate that such birds comprise a significant proportion of those which are actually seen at coastal observatories.

There are now enough records from ships for a statistical type of analysis, and this reveals two major differences from the records of birds seen at large in Europe.

(1) Nearly all the birds in table 1 are long-distance migrants, whereas short-distance migrants (e.g. the American 'sparrows', which are really buntings, Emberizidae) are better adapted to maintain themselves on ships for long enough to complete the crossing. For example, buntings comprised only a little over half (60 out of 114) of the passerines seen by Durand (1963) on R.M.S. *Mauretania* during 7th-14th October 1962, yet they included seven of the eight passerines which remained alive until the ship arrived in Europe. I have not made a comprehensive search for other published records of birds crossing the Atlantic on ships, but among those which have recently appeared in *British Birds or Sea-Swallow* (MacArthur and Klopfer 1958, Margeson 1959, Tousey 1959, Hamond 1959, Anon. 1961, Parish 1961, Durand 1961, Dennis 1963 and Lewis 1963), as well as one sent to me by J. L. F. Parslow (*in litt.*), there are eleven records of buntings, four of omnivorous birds (Myrtle Warbler and American Robin) and only two of insectivorous birds (Parula Warbler *Parula americana* and Blackpoll Warbler *Dendroica striata*). Yet the twenty-four records in table 1 include nine insectivorous birds and no buntings at all! The difference is much too great to have arisen by chance (probability less than one in 100) if the birds in table 1 were merely a sample of those which cross on ships.

(2) The breeding-ranges and dates of occurrence of the birds in table 1 suggest that most of them came from the American coast in or north of New England (see above), but most of the birds seen on ships join them off the Canadian coast, sometimes even in the Gulf of St. Lawrence (Tousey 1959, Margeson 1959, Hamond 1959, Anon. 1961). The 1962 records provide a good example. Among the 114 passerines seen by Durand (1963) in mid-Atlantic between 7th and 14th October, 11 but two (Baltimore Oriole and Mourning Warbler *Oporornis philadelphia*) were of species which are common migrants in New England at that time—and, indeed, I myself saw all these species in eastern Massachusetts between 8th and 15th October 1962. Yet the three species (Red-eyed Vireo, Baltimore Oriole and Rose-breasted Grosbeak) which occurred in the British Isles between 4th and 7th October had completely deserted New England by that period, except for a few stragglers on the outer islands mentioned above.

I therefore conclude that the great majority of the birds listed in table 1 had crossed the Atlantic unaided. Of course, a few of them may have travelled on ships, and it is impossible to be sure that any individual one did not do so, but the statistical evidence is overwhelming that the birds which cross on ships are of the wrong species, and occur at the wrong times, to account for those seen at west-coast observatories.

SPRING RECORDS

Table 3 lists the five recent spring records. There are also three other relevant records, a White-throated Sparrow in the Outer Hebrides in May 1909, and Slate-colored Juncos (*Junco hyemalis*) in Co. Clare in May 1905 and in Kent in May 1960; the second Junco record is not officially accepted because the species is sometimes kept in captivity. Thus buntings comprise six of the eight spring records, but none of the twenty-four autumn and winter records. This discrepancy is much too large to have arisen by chance (probability less than one in 10,000).

Table 3. American passerines on the Atlantic coast of Europe in spring, 1951-62

All the records have been published in *British Birds*

Olive-backed Thrush (<i>Catharus ustulatus</i>)	26 May 1956	Blackrock Lighthouse, Co. Mayo	Ireland
American Robin (<i>Turdus migratorius</i>)	27 May 1961	Grimsetter airfield, Orkney	Scotland
White-throated Sparrow (<i>Zonotrichia albicollis</i>)	19 May 1961	Needs Oar Point, Hampshire	England
Song Sparrow (<i>Melospiza melodia</i>)	27 April-10 May	Fair Isle, Shetland	Scotland
Fox Sparrow (<i>Passerella iliaca</i>)	3-4 June 1961	Copeland Island, Co. Down	Ireland

Another feature of the six bunting records is that three of them were made on the mainland of Great Britain and Ireland; in this they resemble the four winter records of American passerines, whereas 19 of the 20 autumn records were made on small islands. This might indicate that the buntings crossed the Atlantic on ships (as Durand 1961 showed was likely for the 1961 White-throated Sparrow), or that they crossed in the autumn and spent the winter in Europe. In either case it is hard to explain why there are no autumn records, since buntings have also been seen to cross on ships in the autumn. None of these buntings is listed as a long-distance migrant by Stevenson (1957).

A third noteworthy feature of the bunting records is that they were all made one to six weeks after the end of the migrations of the species through New England.

OLD RECORDS FROM EUROPE

Alexander and Fitter (1955) listed 84 records of American passerines in Europe from the period 1800-1940. Most of these records have been excluded from official check-lists, but the reasons for their rejection have been largely irrational. Can anything be learnt by comparing them with the records of the last twelve years? In particular, do they fall into any of the patterns I have found in the recent records?

Table 4. Comparison of old records of American passerines in Europe with those from recent years

The records used in this table are summarised in this paper and by Alexander and Fitter (1955). The species are divided into five groups, as explained in the text. The 'Atlantic seaboard' comprises Great Britain, Ireland and France; the 'Continent' comprises the rest of Europe, excluding Iceland and the Azores. 'Spring/summer' is the period from 10th March to 10th August. The records of birds crossing on ships are confined to recent reports quoted in the text

Area	Season	Thrushes	Warblers and Vireos	Miscel- laneous long- distance	Miscel- laneous short- distance	Buntings
Continent before 1940	Autumn/winter	15	1	0	5	1
	Spring/summer	0	0	0	3	0
	No date	3	0	2	1	0
Atlantic seaboard before 1940	Autumn/winter	5	1	1	10	1
	Spring/summer	2	3	0	20	3
	No date	0	0	4	3	0
Atlantic seaboard 1951-62	Autumn/winter	7	10	6	1	0
	Spring/summer	2	0	0	0	4
Crossings on ships 1955-62		1	5	1	0	18

In table 4 the old records from the Atlantic seaboard of Europe are compared with the recent records from the same area and with the old records from farther east. The species are grouped into five categories—thrushes; warblers and vireos; miscellaneous long-distance migrants (orioles, tanagers and fringillids which winter mainly in the tropics); miscellaneous short-distance migrants (larks, kinglets, blackbirds, and fringillids which winter mainly in North America); and buntings.

Table 4 reveals some marked similarities between the old and the recent records. Thrushes comprise about 30% of the autumn and winter records in both lists, and in each period the records of wood thrushes were confined to October and the records of American Robins were spread between late autumn and May. Warblers and other long-distance migrants are relatively more numerous in the recent list, but they resemble the earlier records in being largely in the late autumn, towards the end of the migrations of the species concerned on the American coast, and in being largely confined (unlike the thrush records) to the Atlantic seaboard. The similarities also include gaps in both lists—especially the paucity of autumn records of buntings in both periods, and the complete absence of records of American flycatchers (Tyrannidae), a family of long-distance migrants, many of which are common on the Atlantic coast.

The overwhelming difference between the two sets of records is the large number of old records of miscellaneous short-distance migrants, largely blackbirds (*Icteridae*) which have not been recorded at all in recent years. If these birds crossed the Atlantic unaided, it is hard to think of any reason why they should have stopped doing so, while records of long-distance migrants have, if anything, increased in frequency. Nor is it plausible that many of them crossed on ships, since the birds which now cross on ships are mainly buntings. Hence it is unlikely that many of these are genuine records of wild birds: they might be either escaped cage-birds, or frauds, or both. The only reason to suspect frauds is that some of the species involved (e.g. the two kinglets) are hard to keep in captivity, but there are too few of these records to draw any conclusions. If many records were fraudulent, it is hard to explain why they were so selective—consisting mainly of blackbirds and finches, with few, if any insectivorous birds. Most of the species involved were common cage-birds at the time, and the cessation of the records about 1910 coincided with the banning of the trade in American birds.

A recent increase?

I therefore conclude that most of the records of American blackbirds and other short-distance migrants in Europe were of escaped cage-birds, but that most of the records of warblers, thrushes and other long-distance migrants have been genuine records of wild birds which had flown across the Atlantic. Table 4 shows that the number of records of these latter species has almost doubled in the last twelve years. Does this betoken a genuine increase in the frequency of transatlantic crossings, or should it be attributed merely to increased observation?

Table 4 shows that the pattern of records has also changed: the old records were spread over much of Europe, while the recent records have mostly been from the Atlantic seaboard and contain a much smaller proportion of thrushes. This change, however, should probably be attributed to the decline of thrush-trapping on the Continent, and to the establishment of bird observatories on the Atlantic coast. In order to obtain definite evidence for a change in the frequency of records, we must consider evidence from the Atlantic seaboard only:

(1) Before 1940 there were 21 records of American cuckoos on the Atlantic seaboard (Alexander and Fitter 1955), but only eight records of thrushes and only nine records of other long-distance migrants. Since 1951 there have been only about eight records of cuckoos, but nine of thrushes and sixteen of other long-distance migrants.

(2) In the Isles of Scilly, two American cuckoos and one American



PLATE 35. Spoonbill (*Platalea leucorhoa*), Netherlands, spring 1902, showing the apex of the yellow-tipped black bill. The plumage is all white but for yellowish in the crest and the base of the neck; the legs are black, but the bare skin of the foot and round the red eye is deep yellow. pages 217-218. (Plate 35, G. B. Farrar)



PLATE 38. Spoonbills (*Platalea leucorodia*) in the very different habitat of pure reed, Hungary, June 1961. This is the typical nesting site in Europe, though in Asia trees are normally used; colonies vary in size from just a few to hundreds. Note the raised crest above; this is four to five inches long (*photos: Eric Hosking*)



nightjar, but no passerines, were recorded before 1940; since 1950 there have been two nightjars and four passerines, but no cuckoos.

(3) Although Lundy has a long ornithological history (Davis 1954), there were no records of American passerines there until 1952; since then there have been five.

(4) Although many fewer dead birds are collected from Irish lighthouses now than in the days of Barrington (1900), there have been two recent records of American passerines, as against only one old record.

(5) Although Eagle Clarke (1912) and his successors found about as many eastern rarities at Fair Isle as present-day observers, the three records of American passerines there have all been since 1953.

Among these comparisons, (1), (2) and (3) should be treated with caution, since most of the early rarity-hunters, lacking good binoculars, concentrated on large and medium-sized birds. Indeed, the pre-1940 lists of Old World rarities from Scilly (Parslow *in litt.*) and Lundy (Davis 1954) are notably deficient in small passerines. But the American Robin, for example, is not small, and many American warblers are more colourful and obtrusive than American cuckoos. In any case this objection does not apply to comparisons (4) and (5), since both Barrington and Clarke examined a large sample of small birds. Although the evidence is not quite conclusive, it thus seems very probable that the frequency of transatlantic crossings by long-distance migrant passerines has increased considerably—probably by a factor of about ten—whereas there is no evidence for a change in the numbers of American cuckoos or buntings which visit Europe.

Transatlantic crossings are very rare, and probably depend on the combination of a number of favourable weather factors. Hence any small change in weather patterns in the Atlantic could alter the frequency of transatlantic crossings. However, it is a suggestive coincidence that since about 1950 there has also been a marked increase in the number of south-western rarities, and late autumn stragglers of common species, in coastal New England. Hence it seems possible that the change in the frequency of records of American passerines in Europe is due to a change in the factors which induce reversed migration in eastern North America.

ACKNOWLEDGEMENTS

I am greatly indebted to J. L. F. Parslow and J. Baird for critical discussion of early drafts of this paper, to A. L. Durand and I. J. Ferguson-Lees for supplying unpublished records, to P. Davis for comments on the Fair Isle and Lundy records, and to A. C. Pike for information on hurricanes. Completion of this paper was supported by a grant from the National Science Foundation of the United States and the Hatheway School of the Massachusetts Audubon Society.

SUMMARY

(1) Twenty-four records of American passerines in western Europe in autumn and winter are discussed.

(2) On the basis of the breeding-ranges and migration-periods of the species involved, it is suggested that most of the birds left the North American coast south of latitude 45°N.

(3) Twelve of the thirteen species are known to be adapted to make long sea-crossings during their normal migration.

(4) Arrivals often coincided with westerly winds in the Atlantic. It is suggested that birds must orient more or less eastwards (not down-wind) if they are to fly across the Atlantic.

(5) It is suggested that many of the birds reached Europe after reversed migrations (oriented north-east). Similar prolonged movements are performed by the same species in spring. In a few cases there is direct evidence for association between arrivals in Europe and observed north-eastward movements off the U.S. coast.

(6) A few of the records were directly associated with tropical hurricanes moving into the temperate North Atlantic.

(7) Birds seen to cross the Atlantic on ships comprise a different group of species, and occur at different dates, from those seen at west-coast observatories. It is concluded that most of the latter crossed the Atlantic unaided.

(8) Most spring records have been of buntings (Emberizidae), which have not been recorded at all in autumn, but which frequently cross on ships.

(9) Among the records of American passerines in Europe before 1940, those of thrushes and other long-distance migrants fall into the same patterns as the recent records, and it is suggested that most of them were genuine records of wild birds. There are many old records of American blackbirds and other short-distance migrants: it is suggested that most of these were escaped cage-birds. There is some evidence that transatlantic crossings have become much more frequent in the last fifteen years.

REFERENCES

- ALEXANDER, W. B., and FITTER, R. S. R. (1955): 'American land-birds in western Europe'. *Brit. Birds*, 48: 1-14.
- ANON. (1945): *U.S. Navy Marine Climatic Atlas of the World*. Washington, D.C.
- ANON. (1961): 'Land birds at sea'. *Sea-Swallow*, 14: 28-30.
- BAGG, A. M. (1955): 'Airborne from Gulf to Gulf'. *Bull. Mass. Audubon Soc.*, March-April 1955.
- (1956): 'The changing seasons'. *Audubon Field Notes*, 10: 308-314.
- (1958): 'The changing seasons'. *Audubon Field Notes*, 12: 320-333.
- (1961): 'The changing seasons'. *Audubon Field Notes*, 15: 380-389.
- BAIRD, J., BAGG, A. M., NISBET, I. C. T., and ROBBINS, C. S. (1959): 'Operation Recovery—report on mist-netting along the Atlantic coast in 1958'. *Bird-Banding*, 30: 143-171.
- BARRINGTON, R. M. (1900): *The Migration of Birds as observed at Irish Lighthouses and Lightships*. London.
- BRITISH ORNITHOLOGISTS' UNION (1958): 'British Records Committee: second report'. *Ibis*, 100: 299-300.
- CLARKE, W. E. (1912): *Studies in Bird Migration*. Vols. 1-2. London.
- DAVIS, P. (1953): 'American Robin on Lundy'. *Brit. Birds*, 46: 364-367.
- (1954): *A List of the Birds of Lundy*. Exeter.
- (1959): 'A second Gray-cheeked Thrush at Fair Isle'. *Brit. Birds*, 52: 316.
- DENNIS, R. H. (1963): 'White-throated Sparrows in Hampshire'. *Brit. Birds*, 56: 114.
- DRURY, W. H., and KEITH, J. A. (1962): 'Radar studies of songbird migration in coastal New England'. *Ibis*, 104: 449-489.

- AND, A. L. (1961): 'White-throated Sparrow and American Robin crossing Atlantic on board ship'. *Brit. Birds*, 54: 439-440.
- (1963): 'A remarkable fall of American land-birds on the "Mauretania", New York to Southampton, October 1962'. *Brit. Birds*, 56: 157-164.
- SCOM, L., and SNYDER, D. D. (1955): *The Birds of Massachusetts*. Salem.
- MOND, C. E. (1959): 'Notes on land birds at sea'. *Sea-Swallow*, 12: 18-19.
- RIS, G. J., PARSLow, J. L. F., and SCOTT, R. E. (1960): 'Northern Waterthrush on the Isles of Scilly: a bird new to Great Britain and Ireland'. *Brit. Birds*, 53: 3-518.
- LOM, P. A. D. (1960): *The Popular Handbook of Rarer British Birds*. London.
- IS, C. (1963): 'American sparrows crossing the Atlantic on board ship'. *it. Birds*, 56: 153-154.
- ARTHUR, R., and KLOPFER, P. (1958): 'North American birds staying on board ship during Atlantic crossing'. *Brit. Birds*, 51: 358.
- GESON, J. M. (1959): 'Myrtle Warbler crossing the Atlantic on board ship'. *it. Birds*, 52: 237-238.
- AUD, N. (1956): 'Notes d'ornithologie française. Supplément à la Liste des oiseaux de France'. *Alda*, 24: 53-61.
- ET, I. C. T. (1959): 'Wader migration in North America and its relation to transatlantic crossings'. *Brit. Birds*, 52: 205-215.
- M, E. P., CONNELL, C. E., and STODDARD, H. L. (1961): 'Flight energy and estimated flight ranges of some migratory birds'. *Auk*, 78: 515-527.
- SH, A. L. (1961): 'White-crowned Sparrow crossing Atlantic on board ship'. *it. Birds*, 54: 253-254.
- ENSON, H. M. (1957): 'The relative magnitude of the trans-Gulf and circum-Gulf spring migrations'. *Wilson Bull.*, 69: 39-77.
- WART, R. E., and ROBBINS, C. S. (1958): *Birds of Maryland and the District of Columbia*. Washington, D.C.
- NE, C. M. (1962): 'Report on rare birds in Great Britain in 1961 (with 1959 and 50 additions)'. *Brit. Birds*, 55: 562-584.
- EY, K. (1959): 'Myrtle Warbler crossing the Atlantic on board ship'. *Brit. Birds*, 52: 237.
- LIARD, J. (1962): 'Nouvelles captures intéressantes à Ouessant'. *Oiseau*, 32: 79.
- MIAMSON, K. (1954): 'American birds in Scotland in autumn and winter 1953-4'. *I. Nat.*, 66: 13-29.
- and FERGUSON-LEES, I. J. (1960): 'Nearctic birds in Great Britain and Ireland in autumn 1958'. *Brit. Birds*, 53: 369-378.

Studies of less familiar birds

122. Spoonbill

Photographs by Guy B. Farrar and Eric Hosking

(Plates 35-38)

SHORTLY BEFORE he died on 15th March, 1963, in his seventieth year, the late Guy Farrar sent us a selection of photographs of the spoonbill (*Platalea leucorodia*) and we are glad to publish these now as a tribute to this grand photographer. He was one of the first to take photographs of waders and gulls on mud-flats, among rocks and along the

tide-line, and some of his best results appeared as long ago as 1938 in his book *The Feathered Folk of an Estuary*. He also had the unusual gift of being able to obtain remarkably expressive and comprehensive shots of the habitats in which he found his birds.

The Spoonbill is now primarily an Asiatic species which breeds in suitable areas from south-east Europe and north-east Africa to India, China and Manchuria; it is generally local and usually not very numerous. In Europe it is largely confined to Austria, Hungary and the Balkans, but a few dozen pairs still nest in southern Spain and there are the surprisingly big and geographically isolated colonies in the Netherlands, at one of which Guy Farrar took his pictures in the spring of 1962. The species is a summer visitor to the more northern parts of its range and it winters chiefly in Africa, Iraq, India and China. It formerly bred in south-east England and south Wales, but drainage and disturbance had driven it out by the middle of the 17th century; now it is but an annual visitor on the east and south coasts (chiefly during the post-breeding dispersal, though odd ones are liable to turn up at any season).

On passage and in its winter quarters this very specialised bird is found in open marshland with shallow water, in which it wades to feed. It sweeps the spatulate end of its bill from side to side under water, keeping its mandibles slightly open to fasten on anything edible. At times this feeding method develops into a frantic rush hither and thither, backwards and forwards, with the tip of the bill submerged. Food so caught includes small fish, frogs, water snails, leeches and water beetles. For breeding, however, the Spoonbill resorts to dense vegetation growing in or near water. In Europe it is primarily a reed nester, in the habitat shown by Eric Hosking's photographs taken in Hungary (plate 38), but some of the Dutch colonies are in bushes, as can be seen from plates 35-37; the Asian race breeds in trees. Colonies vary in size from a few scattered pairs to hundreds. Nests are sometimes only a few feet apart. They are large structures built of dead reeds (and sticks where these are present), and the surrounding vegetation becomes trampled down by adults and young until quite large open spaces are exposed. Both sexes build the nest, incubate the four white eggs smeared with reddish-brown, and feed the young. The latter spend four or five weeks in the nest and regularly return to it for the next two or three weeks until they are able to fly.

Brief notes on the plumage are given in the caption to plate 35. The male is slightly larger than the female (with a larger head and thicker neck) and his crest may sometimes be as much as five inches long. The juvenile has a considerable amount of black in the wings and no crest; succeeding stages show less black and the bird becomes white by its third winter or summer.

I.J.F.-L.

Notes

Alternative leg positions of birds in cold weather.—It is known that some shore birds, particularly gulls and waders, will adopt alternative leg positions to prevent their feet freezing in cold weather, for example by flying with them tucked forward into their body feathers instead of trailing out behind. In fact, Hugh Boyd has drawn my attention to a paper published by H. Madsen in 1945, entitled 'On the different positions of the legs of birds during flight and in cold weather' (*Dansk Orn. Foren. Tidsskr.*, 39: 98-104): this includes a Danish photograph of a Coot (*Fulica atra*) flying with its legs drawn up in this way, as well as others of gulls and a Spotted Redshank (*Tringa erythropus*). Nevertheless, I was very struck by the number of shore birds flying with their feet tucked forward during the hard weather of early 1963.

On 13th January, when the weather was exceptionally severe on the Sussex coast (-6° C at 12.30 p.m.), I was by the old channel of the River Ouse between Newhaven and Bishopstone; about 40 Coots, ten Redshanks (*Tringa totanus*) and 120 Dunlins (*Calidris alpina*), as well as a few Black-headed Gulls (*Larus ridibundus*), were drawing their feet up forward as soon as they took flight, even if travelling only for short distances. The outlines of the Coots and Redshanks were so shortened as a result that they had quite a puzzling appearance. The next day it was much less cold and Coot in the Cuckmere valley were flying with their legs in the normal trailing position. On the 15th, however, under the cliffs east of Brighton, temperatures were again well below freezing and I noted that most of the gulls there were tucking their legs in their body feathers as soon as they left the water of the pools by the shore. On 5th February, in the same area, the temperature was only just below freezing and all the gulls had their legs in the normal trailing position, but two of three Redshanks flew off with theirs hidden.

It also seems relevant to record some observations of a slightly different nature which I made during the same period at Slimbridge, Gloucestershire, where day temperatures were sometimes down to -5° C in January. It is my experience that, while shore birds regularly stand on one leg, most small Passerines either keep both feet on the ground or, in very cold weather, lie on the ground and tuck both legs into their feathers. In January and February 1963, however, I frequently saw a Robin (*Erithacus rubecula*), a Blackbird (*Turdus merula*) and a Pied Wagtail (*Motacilla alba*) at Slimbridge standing on one leg while feeding; the other leg was always hidden in the body feathers and from time to time the positions were reversed. The Robin and the Blackbird did this not only on the ground, but also while perching. Incidentally, it is normal for ducks and geese

in the collection at Slimbridge to lie on the ground when it is cold, but it is perhaps worth adding that many of the wild White-fronted Geese (*Anser albifrons*) lay down and carried on feeding with their legs out of sight during this cold spell.

L. P. ALDER

Red-footed Falcon in Lancashire in winter.—At about 3 p.m. on 26th January 1963 R. Wagstaffe was driving us along a farm track near Hundred End, close to the embankment which separates the Ribble estuary from the reclaimed land north-east of Southport, when we saw a dark grey bird of prey standing in a field. The weather was sunny at the time and as the bird was to the north of us we were able to see it in very favourable conditions, at a range of about 28 yards, after the car had stopped. We observed it through 8× and 10× binoculars for a second or two on the ground, apparently feeding, and then in flight as it flew away from us carrying its prey in its talons. Whilst flying away, it banked to show the under side of the wings and then alighted on a post. A few seconds later it flew out of sight and was not seen again that day.

The first, and by far the most striking, feature noted was the bright red legs and feet. These were not a pure red, but rather red tinged with orange. The upper sides of the wings and back were dark grey barred with medium grey. The upper side of the tail and under sides of the wings showed more pronounced barring, whilst the breast seemed to be faintly speckled (though this was by no means prominent). All three of us have independently examined skins of the Red-footed Falcon (*Falco vespertinus*) belonging to the City of Liverpool Museums and each of us has picked out an immature male as the bird we saw.

On 30th January the falcon was seen again by R. H. Parker, C. Simms and R. Wagstaffe. On 3rd February a distant view was obtained by A. A. Bell, R. J. Raines and R. Wagstaffe. The last sighting that we know of was on 4th February by D. L. Clugston, C. F. Farnell, J. C. Gittins and C. D. Totty. Unfortunately, on these subsequent occasions the observers were unable to obtain any further details of the plumage. However, it is worth adding that C.S. noted it feeding on a Brambling (*Fringilla montifringilla*).

There is, we believe, only one previous record of the Red-footed Falcon in Lancashire. Curiously, that was also an early one—at Leigh on 15th March 1959 (*Brit. Birds*, 53: 417). The present record appears to be the only fully authenticated winter record for the British Isles and the most remarkable thing about it is that the bird should have occurred at a time when conditions in general were unusually severe. The Red-footed Falcon does not normally winter in Europe at all, but is only a summer visitor which migrates to tropical and southern Africa.

J. A. and M. E. HARRISON

Jay taking fish from river.—On 12th April 1962 the train on which I was travelling made a short unscheduled stop a mile or so to the east of Bath, Somerset. From the window I was able to see the River Avon, which at this point runs alongside the railway track, and I was happily watching two Jays (*Garrulus glandarius*) when one suddenly flew out from the bank, stalled in mid-flight, dropped to the surface of the river and caught a fish in its bill. It returned to the bank with its alive and wriggling capture, and then what appeared to be a squabble started with the second bird. At this stage the train drew away and consequently I did not see the outcome.

I have been unable to trace any previous references to Jays catching fish, though the habit appears to be not infrequent among Carrion Crows (*Corvus corone*) (*Brit. Birds*, 40: 158 and 245; 41: 95 and 278; 47: 105; 48: 91; and 54: 120).

J. T. R. SHARROCK

Jay learning to feed from nut-holder.—During the winter of 1962-63 a pair of Jays (*Garrulus glandarius*) regularly visited my garden in Hampstead, London, to feed from the nuts in spiral wire holders on two fruit trees. The contents hung out of their reach, but the male Jay accidentally discovered that shaking the holder made several nuts drop out and then over a few weeks he perfected a technique. First he hoisted up the holder with claw and beak, but later he developed a smooth and economical sequence of movements, bending down from the branch, seizing the bottom of the holder in his beak and turning it upside down; then he would hop to the ground, eat about half a dozen nuts and carry away another three or four in his beak. The female, although often present when this was done, never learned the trick nor apparently even attempted to do so. She would merely peck feebly at the top of the holder or sometimes flutter in front of it like an outsize finch.

DENISE SALFELD

Blue Tit with acarine mange.—On 21st December 1961 a male Blue Tit (*Parus caeruleus*) was received at the Veterinary Laboratory of the Ministry of Agriculture, Fisheries and Food, at Lasswade, Midlothian. It had been sent by Mr. P. J. Hewitt who had caught it at Little Bookham, Surrey, and who had killed it because its bedraggled appearance, closed eyes and feeble struggles gave the impression that it was unlikely to survive for long. Post-mortem examination showed widely, white thickened areas of denuded skin, which are characteristic of mange, at the base of the beak and around the eyes and vent. Under the microscope, the diseased tissues were seen to be heavily infested with mites. These were males and immature stages (larvae and nymphae) of an undescribed species of *Myialges* (fam. Epidermoptidae). The females of this genus parasitise what are variously known

as bird-keds or flat-flies (Hippoboscidae) and, in this instance, were present in large numbers on one of these insects, an *Ornithomyia*, which was also found on the Blue Tit. I am grateful to Dr. G. O. Evans of the British Museum (Natural History) for his examination of the parasites.

J. W. MACDONALD

Blackbird feeding in association with Grey Squirrels.—On 21st January 1963, when frozen snow was lying about two inches deep on Southampton Common, Hampshire, two Grey Squirrels (*Sciurus carolinensis*) were busily engaged in scraping up the hard-packed snow with their fore-paws to forage in the leaf-litter below some oak trees. An adult male Blackbird (*Turdus merula*) was taking advantage of the exposed ground to search for food with them and all three were so preoccupied that I was able to get to within three feet by a not particularly cautious approach. There was no sign of any animosity between the squirrels and the Blackbird, although the latter was often picking about within inches of one or other of them. After a few minutes, I moved closer still and the squirrels ran off while the Blackbird flew away weakly.

The exploitation by the Blackbird and the degree of tolerance shown by the squirrels both seem worth recording. J. T. R. SHARROCK

Pied Wagtails feeding on dragonflies.—On 16th June 1959 I saw a pair of Pied Wagtails (*Motacilla alba*) catching insects over the River Severn about Bewdley, Worcestershire. They were taking most of them to the opposite bank for consumption, but presently one came to my side of the river and I could see that it had a female damselfly *Agrion splendens* in its bill. This insect was common in the area and from the similar actions in the other captures it seemed probable that the same species was involved. Dragonflies are not mentioned in *The Handbook* as part of the food of the Pied Wagtail, though both Grey and Yellow Wagtails (*M. cinerea* and *flava*) have been reported taking them.

F. FINCHER

Reviews

Silent Spring. By Rachel Carson. Hamish Hamilton, London, 1963. xxii+304 pages. 25s.

The theme of this book is that the last two decades have seen an ever increasing use of synthetic organic chemicals to control pest organisms, that these poisons have incidentally caused serious destruction among the more desirable forms of wildlife and that they may well be doing grave harm to Man himself. The evidence is drawn largely from the United States, but the implications extend to all parts of the world

where these substances are used. The harm caused by chlorinated hydrocarbons to wildlife, particularly birds, is demonstrated beyond doubt. There is a depressing catalogue of incidents involving catastrophic destruction and local extermination of birds characteristic of rural and urban districts. At least ninety species have been affected, including such favourites as American Robins and Cardinals. Total bird populations have been decimated in the worst hit areas.

Some harrowing cases show that certain widely used pesticides can be immediately harmful and even deadly to both wild and human life, but the more general danger comes from their usually persistent and accumulative nature, leading to a more insidious, chronic poisoning. Experiments with birds have confirmed that doses insufficient to kill can cause serious physiological disturbance, including reduced viability of offspring and sterility, which must lead to population decline. When there is the alarming discovery that the poisons enter various food chains and accumulate at each successive level, so that the final predators may be the organisms most affected, though they are remotest from the source of contamination. The application of 'low toxicity' DDT and DDD to inland and brackish waters has been disastrous locally to Western Grebes, Bald Eagles and Ospreys.

The message of *Silent Spring* has equal import in Britain, despite the lesser use of toxic chemicals here. The flood of wild bird deaths caused by seed dressings from 1959 to 1961 drew widespread attention. Fear has concern diminished among those who note a persistent decline of some common species in certain agricultural districts. In assessing the effects of this exceptional winter on bird life, we may reflect upon the point that the utilisation of fat reserves under adverse conditions releases stored pesticide residues into the tissues. Most alarming of all is the effect on our birds of prey. In a few short years the chemical industry has done infinitely more harm to our Sparrowhawk, Kestrel and Peregrine populations than a whole century of game-keepers and egg-collectors, and these traditional foes of the protectionist fade into insignificance beside the new menace. At least ten species of raptor and owl are already known to have suffered ill-effects and, therefore, to be potentially threatened. With some species the situation seems to be worsening despite voluntary restrictions on the use of the most harmful pesticides. As in the United States, we have to face the possibility that, if the use of pesticides continues as at present, our fauna may suffer serious impoverishment over a large part of the world, and some of the most cherished species could even disappear. There are few types of habitat which are entirely free from contamination, and few species, therefore, which are exempt from possible harm. Seasonal movements extend the risk to birds which spend much of their lives in pesticide free areas.

Silent Spring has been criticised as presenting a one-sided case. But it is surely right for us to know this side, having heard only the other before. Rachel Carson has compiled with rare assiduity and presented with devastating effect an enormous weight of irrefutable evidence to show that the toxic chemicals of modern agriculture are *really* toxic, and that the damage they are causing must be weighed against their beneficial effects. Her design is clearly to arouse us from our ignorance, complacency or apathy about this latest menace to life on Earth. The apprehension of British manufacturers of agricultural chemicals at the revelations is reflected in their circulation of a counterblast before *Silent Spring* was even published in this country.

This could be the test case to decide whether wildlife counts for anything at all in the modern view of 'progress'. And ornithologists have no cause for optimism about the judgement. That some portion of mankind has a vital interest in 'useless' forms of wildlife matters nothing to those with whom personal material profit is ever the driving force, however well hidden behind altruistic sentiments. Certainly, in a hungry world, maximum agricultural efficiency is essential, but, as Miss Carson advocates, it may be achieved by methods other than drenching the land and waterways in poison. In any case, this will always be a hungry world until it is more widely recognised that a population unhindered by other checks will continue to increase to the limits of its food resources, for these cannot be boosted indefinitely. As a whimsical thought, perhaps Man is unwittingly evolving his own effective though undramatic means of population control through chemicals. The issue is more likely to be decided on the human aspect, and the public, scared by mention of cancer-inducing properties of some pesticides and with the thalidomide debacle keenly in mind, will perhaps see that more than lip service is paid to the need for adequate research into the whole problem.

This skilful and compelling presentation of a matter which affects us all should be read and pondered by naturalist and layman alike.

D. A. RATCLIFFE

Development of Behaviour in Precocial Birds. By Margaret Morse Nice. Linnaean Society of New York, 1962. xii+211 pages. \$4.00.

Mrs. Nice, as most readers will know, has had wide experience of studying birds, both in the wild and in captivity. She has also hand-reared the young of many species. Moreover, she has affection for and sympathy with the objects of her studies—qualities which are not quite so universal among students of animal and human behaviour as could be wished. Here we have the results of her many years of personal study and observation of young birds, of careful and thorough

survey of the relevant literature and of personal contacts with many other ornithologists of similar interests.

As the title indicates, this work is primarily concerned with the development of behaviour in young precocial birds. It is, however, even more informative than the title and its author's reputation might lead one to expect. The reciprocatory behaviour of the parent birds is also discussed and comparisons with altricial species supply a great deal of information about these as well. The middle chapters deal with various kinds of young birds according to their degree of dependence, starting (chapter 5) with the completely independent megapodes and ending (chapter 11) with altricial species.

No less interesting are the introductory chapters, in which the author gives a clear and comprehensive summary of what is known of parental care and the parent-young relationship in all groups of animals from wood-lice to mammals. Ornithologists may well find here facts of which they were quite ignorant. The reviewer, for example, had read *Rikki-tikki-tavi* as a child and felt deep sympathy for Nag and Nagaina in their attempts to protect their eggs from the combined forces of tailor-birds, men and a mongoose. He was pleased and surprised, therefore, to learn that King Cobras do show parental care and that Kipling had not, as he had later unjustly assumed, been missing 'writer's licence'.

No one interested in the behaviour and breeding biology of birds or in the parent-young relationships of animals in general can afford not to possess this book.

DEREK GOODWIN

The Birds of the Lake Counties. By Ralph Stokoe, with a contribution by Ernest Blezard. Carlisle Natural History Society, Carlisle, 1962. 144 pages, one map, two photographs. 55s. (plus 1s. postage) from Ralph Stokoe, 4 Fern Bank, Cocker-mouth, Cumberland.

It is both pleasant and appropriate to be writing this review in Lakeland's most beautiful valley, surrounded by some of the birds described in this welcome book, which follows 70 years after *A Vertebrate Fauna of Lakeland* by H. A. Macpherson and 20 years after *The Birds of Lakeland* by Ernest Blezard and others. Here the record is brought up to date.

The book has three sections. The first, and main, one deals with status and distribution, while the second describes observations on migration at Grune Point, south Solway, giving useful tabulated data on species ringed and retrapped there and a summary of spring and autumn migration from 1959 to 1961. The third section is a short but valuable contribution by Ernest Blezard on the food of 36 species of birds.

Ralph Stokoe opens the first section with a thoughtful discussion of the causes of the fluctuations that have taken place in bird numbers in the Lake District during recent years. Many of these are familiar, but one or two such as hens in deep litter, aerodromes not yet reverted to their original state, climbing and water-skiing, strike a new note. The systematic arrangement in which the status and distribution of the birds is discussed follows that of *The Handbook of British Birds* and not the now generally adopted Wetmore order. This seems a quite unnecessary piece of conservatism. Study of the status of the birds given in this book reveals some interesting parallels with that of the same species elsewhere. Thus the Tree Pipit has decreased in several areas, and the Twite is now scarce as a breeder. On the other hand, the Hawfinch has increased. The Nuthatch remains scarce, but it is a joy to read that the Barn Owl continues common throughout Lakeland. The Reed Warbler has nested annually in recent years at one Westmorland tarn: surely its farthest north in this country.

Ernest Blezard's contribution on the 'Food of Birds' is particularly valuable and in certain instances adds considerably to our knowledge. But I found some of his introductory remarks difficult to understand, and I am still puzzling over a sentence that reads . . . 'In another reference to it (i.e. *The Handbook*), a solitary case of corn under Goldeneye there is now brought to three if the corn, in the usual sense, agrees with the oats in two birds shot together.'

STUART SMITH

ALSO RECEIVED

Animal Wonderland. By Frank W. Lane. Revised edition. Oliver and Boyd, Edinburgh and London, 1962. 18s.

Birds—A Primer of Ornithology. By George E. Hyde. English Universities Press, London, 1962. 7s. 6d.

Dăuători al Vinatului si Combaterea Lor. By M. Bodea, I. Cîrciu and D. Radu. Asociația Generală a Vinătorilor si Pescarilor Sportivi, Rumania, 1962. No price given.

Bird. By Lois and Louis Darling. Methuen, London, 1963. 30s.

Letters

Uses of photography and sound-recording to reinforce sight records of unusual birds

Sirs,—Your editorial on sight records of unusual birds (*Brit. Birds*, 55: 557-560), though comprehensive, omits reference to the value of reinforcing such records by photography and sound-recording—both of which have been much improved, ornithologically speaking, during the past ten years.

For identification pictures of birds a modern miniature camera with eye-level penta-prism finder and, say, a 300 mm. lens—used preferably with a fast colour film—is ideal, while for sound-recording it is now possible to buy portable battery-operated sets which, when used with a light parabolic reflector, reproduce bird-calls very acceptably. Photographs of an unusual bird should, where possible, be taken in flight as well as at rest. A colour film may register features, such as the colour of the iris, which would not appear in black-and-white. Though a cine film, showing action, is presumably the best medium of all, stills can also be invaluable, preferably in the form of transparencies which can be projected. Such pictures register an instantaneous and objective image of the bird and may indicate features which an observer might miss—or which, like shape and stance, are difficult to put into words, anyway. If the bird in question happens to be consorting with other species, then this should always be photographed, to indicate comparative scale; also, short-focus pictures of the bird in its general environment should not be omitted. A sound-recording of a bird's call is much more comprehensible than any verbal rendering. Further, if a tape recorder is available when one is studying the bird, one can record a running commentary on its features and actions, which is much easier than trying to watch and write at the same time; also, photographs then being taken can be mentioned in the commentary.

For recognition purposes, photography and sound-recording may often be diagnostic even when poor in quality and artistically unacceptable. For instance, even a small image of a bird may be recognised when suitably enlarged on a screen and, similarly, the recorded call of a bird can be of value even when very soft or when confused with other noises (and, where desirable, the results can be copied on a sound spectrogram, which greatly facilitates study).

It should be stressed that an adequate and duly-authenticated photograph or sound-recording of a bird is a piece of physical evidence comparable to a specimen of the bird itself, on which a Rarities Committee can form its own objective opinion at first-hand; in contrast, a report, which is a thing transmitted to the Committee through the medium of the observer, can only form material for an opinion at second-hand. It is therefore suggested that a sight record should now be regarded as ideal only if supported by a photograph and/or sound-recording.

MYLES E. W. NORTH

Woodpeckers finding ants under snow

—In the recent review of *Våra Fåglar i Norden* (*Brit. Birds*, 55: 1961), it is stated that Dr. K. Curry-Lindahl credits the Black Woodpecker (*Dryocopus martius*) with hearing keen enough to locate an ant-

nest under the snow. However, I think there may be another explanation.

I made some relevant observations on a Green Woodpecker (*Picus viridis*) at Randan Wood, near Bromsgrove, Worcestershire, on 27th January 1947. I was watching from my house when I saw this bird land on the snow just in front. It immediately began pecking into the snow, which was between three and four inches deep at that point, without any preliminary exploration. Having made a hole in the snow, it carried on pecking into the soil beneath and soon there were the usual signs of feeding on ants (the head held fairly steady with the bill in the ground, and an occasional quick look round for possible enemies). After some time, the bird departed and I went out at once to examine the spot. I found a small hole in the ground just over three inches deep and at the bottom of this were several ants of the genus *Myrmica*.

Now I had seen a Green Woodpecker feeding at this same place on several occasions before there was any snow and it seemed clear to me that the bird knew the exact site from these previous visits. May this not have been the case with Dr. Curry-Lindahl's Black Woodpecker? That birds have good memories for this kind of thing was clearly shown by Dr. P. O. Swanberg's observations on the Thick-billed Nutcracker (*Nucifraga c. caryocatactes*) in Sweden (*Proc. 10th Int. Orn. Congr.*, pp. 548-549). Dr. Swanberg described and illustrated the way in which this bird can find buried hazel nuts under as much as 18 inches of snow. In that case scent had been suggested as the means by which the buried nuts were located, but Dr. Swanberg did not accept this and he referred to contrary evidence. F. FINCHER

Proposed check-list of Shropshire birds

Sirs,—We are at present engaged in compiling a check-list of the birds of Shropshire, based in the main on observations over the past ten years. We should be most grateful to hear from any of your readers who have unpublished notes for this period. In particular, we should welcome information regarding the east of the county and the areas of Wenlock Edge and Corvedale which have been little watched in recent years. All correspondence should be sent to E. M. Rutter, Eversley, Kennedy Road, Shrewsbury, Shropshire.

F. C. GRIBBLE, E. M. RUTTER and T. W. PEMBERTON

Requests for information

Effects of the severe winter of 1962-63.—The severe weather of last winter has probably had a considerable effect on the numbers of some species of birds, and an analysis of this is being undertaken by *British Birds* as for previous hard winters (c.g. 1939-40 and 1946-47). Any information on breeding populations which is

based on actual counts made from one year to another will be particularly welcome; but other reliable data on any changes that have occurred in the numbers of birds of different species nesting, or good evidence that there has been little or no change, are also very important. Equally necessary are details of changes shown by counts at regular intervals during the winter, numbers of birds found dead, and observations of hard weather movements between 1st November 1962 and 20th March 1963. A questionnaire has been drawn up, and anyone who can supply information is asked to write for a copy from one or other of the organisers—H. M. Dobinson, The Old Barn, Sonning Common, Nr. Reading, Berkshire, and A. J. Richards, 220a Hamilton Road, Reading, Berkshire.

Food of the Herring Gull.—M. P. Harris, of the University College of Swansea, is collecting information on the food of the Herring Gull (*Larus argentatus*). As far as possible, animals eaten as carrion are being excluded. Any specific or generic identifications are of value and should be sent to him at Dale Fort Field Centre, Dale, Haverfordwest, Pembrokeshire. Full acknowledgement will be given to all records which are later used in any publication.

Birds of the Small Isles.—Unpublished information on the birds of Muck, Eigg, Rum and Canna is required to complete a review of the ornithological changes that have taken place on these islands since records were first published. In particular, dates of visits, species lists with approximate counts, and proof of breeding would be of great value. Records for Muck and Eigg should be sent to Miss J. U. Flower, 5 Airthrey Avenue, Glasgow, W.4; those for Rhum and Canna to Mr. P. R. Evans, c/o E.G.I., Botanic Garden, Oxford.

Blue-ringed Lesser Black-backed Gulls.—It is intended to ring about 2,500 young Lesser Black-backed Gulls (*Larus fuscus*) at Walney Island, Lancashire, in May 1963, as part of a dispersal and migration study. They will be marked with a blue plastic ring on one leg and a metal ring on the other, and the organisers would be grateful if observers who see any of these birds could send details (including date, number and locality) to E. D. Ponting, 7 Burlington Grove, Morecambe, Lancashire.

News and comment

Edited by Raymond Cordero

New Dictionary of Birds.—Work has been going on in earnest for over five years on a *New Dictionary of Birds*, a centenary enterprise of the British Ornithologists' Union. The formidable task of organising and editing has been undertaken by G. H. R. Landsborough Thomson. Over 160 authors, including some from every continent, have made contributions, although the general subjects have been covered mostly by writers in Britain. The book will run to well over half a million words, and will contain numerous diagrams and drawings in the text, as well as 16 colour plates and 32 plates of photographs.

Mr. Landsborough stresses that the *Dictionary* is in no sense a revision of Alfred Newton's classic. It is an entirely new work, planned on lines which are different in many respects; in particular, it is much less historical in its approach. Among its points of similarity are that it is arranged alphabetically under mainly English words; that it includes many entries of encyclopaedia rather than ordinary dictionary length; that the articles deal both with general subjects in the ornithological field and with bird groups as such; and that the scope is world-wide. The general subjects have been covered in the following main divisions: form and function; systematics and evolution; distribution and ecology; ethology (behaviour); birds and man; and methodology.

Publication, as a commercial venture by Thomas Nelson and Sons Limited, is expected next year. With the new and enlarged edition of the *Field Guide* also scheduled, 1964 is destined to be an important year for ornithological literature.

A Belfast centenary.—On 6th March this year the Belfast Naturalists' Field Club celebrated its centenary, an event which is being marked by special meetings and an exhibition at the Ulster Museum in September. The club has about 500 members, excluding juniors, organised into five sections, bird matters being covered by Zoology. Field clubs, of which Belfast was the pioneer, have played a profound role in the Irish natural history movement. Robert Lloyd Praeger, for example, whose *The Way That I Went* is surely one of the best naturalist-travel books ever written, first joined the Belfast club at the age of eleven, when many pupils of the founder were still members. He has described the enthusiasm and eagerness to impart knowledge of 'men who knew all there was to know about local birds and insects and flowers and rocks and fossils' and how he picked up from them the 'field lore that is not found in any book, but passes from mouth to mouth, and so from generation to generation'.

Wildlife in Britain.—In time for the recent National Nature Week, Penguin Books published *Wildlife in Britain* (a Pelican original, 7s. 6d.), written by the indefatigable Richard Fitter. In the space of a mere 191 pages, including index, Mr. Fitter ranges, very readably, from the physical setting, over plant and animal life, habitats and the natural history movement in Britain, to conservation, naturalists at work and ways of observing wildlife. The many photographs are well chosen. The book deserves a wide, popular sale.

Birds of Staffordshire.—That active and enterprising organisation, the West Midlands Bird Club, has recently published *The Birds of Staffordshire (1962)*, by J. Lord and A. R. M. Blake. This is the first account of the status of the birds in the county since 1938. Copies (7s. 6d. each) are available from K. I. Darlow, 6 Nut-hurst Road, Maypole, Birmingham 14.

New warden for Portland.—Frank Clifton, formerly warden of Bardsey Bird Observatory, is now the resident warden of Portland Bird Observatory and Field Centre.

New Welsh nature reserve.—The Nature Conservancy's recently declared Oxwich National Nature Reserve on the south coast of the Gower Peninsula in Glamorgan extends over 542 acres of sand dunes, reed beds and salt marsh. In addition to being of outstanding interest to the botanist, the area is well visited by wildfowl in the winter and by birds of passage. It has a small colony of Herons and is the most westerly breeding station of the Reed Warbler in the British Isles.

The Nature Conservancy has also announced the inclusion of the foreshores of Skomer and adjacent islands in the existing Skomer Island National Nature Reserve, bringing the total area up to 759 acres.

Beachy Head ringing station.—Eastbourne Council has approved the establishment of a ringing station in Whitebread Hollow, Beachy Head, and the Sussex Ornithological Society, under whose auspices the station will be run, is now planning the construction of a Heligoland trap there.

Tailpiece.—An extract from the *Evening News*, 28th February: 'People in Holy Loch, the Polaris submarine base, yesterday could scarcely believe their eyes when they saw a penguin sitting on the rocks by the shore. Penguins rarely venture farther south than the Shetlands.'



Recent reports

By I. J. Ferguson-Lees

(These are largely unchecked reports, not authenticated records)

VAGRANTS AND OTHER LESS COMMON BIRDS

Normally April and May provide us with quite a scattering of vagrants from southern and south-eastern Europe, but this year such wanderers seem to have been rather few. There were two reports of a **Little Egret** (*Egretta garzetta*) on St. Mary's Isles of Scilly, on 8th April and from the 17th to the 20th, but probably the same bird was involved in each case and the only other southern heron was a **Purple Heron** (*Ardea purpurea*) identified at Cresswell (Northumberland) on the 24th and 25th. Three **Bee-eaters** (*Merops apiaster*) appeared at Weston-super-Mare (Somerset) on 23rd April and there was a **Bonelli's Warbler** (*Phylloscopus bonelli*) in song in a Cheshire wood on 19th May, but otherwise very little in this category.

There does not even seem to have been any large-scale movement of **Black Terns** (*Chelidonias niger*), though one straggler reached as far north as Fife on 21st April and a **White-winged Black Tern** (*Ch. leucopterus*) was seen at Cooling (Kent) on the 27th. A **Gull-billed Tern** (*Gelochelidon nilotica*) appeared at Dungeness (Kent) about the same time, on the 25th, 26th and 28th. **Hoopoes** (*Upupa epops*) seem to have turned up in larger numbers than in the last year or two, especially in Kent where there have been reports from several localities on a dozen different dates; unusual, most have been in south coast counties, but odd ones occurred as far north as Shropshire, Cambridge and Lincoln.

Curiously, most of the other rarities during this spring period were American ducks. A drake **Green-winged Teal** (*Anas crecca carolinensis*) was seen at Rostherne (Cheshire) from 1st to 9th April and another at Butley Creek (Suffolk) on the 11th. Meanwhile, a drake **Surf Scoter** (*Melanitta perspicillata*), possibly accompanied by a duck, was identified off St. Catherine's Point (Isle of Wight) on the 18th. This summary is largely confined to April and the first twenty-one days of May, but, in view of these other American ducks, it seems relevant to add that a **Ring-necked Duck** (*Aythya collaris*) was found at Loch Morar (Inverness) on 2nd and 3rd January. Two earlier East Anglian observations are also of particular interest: a **Great Bustard** (*Otis tarda*) was unfortunately killed when it struck overhead wires at South Creake (Norfolk) on 29th March and this recalls the **Houbara Bustard** (*Amamya dotis undulata*) which spent much of November and December a few miles from Blythburgh (Suffolk) before disappearing at the onset of the snow. There have been very few records of the Great Bustard in Britain this century and none of the Houbara since 1898.

ARRIVALS OF SUMMER VISITORS

Following the outline in the March issue (*Brit. Birds*, 56: 119-120), we have received reports of summer visitor arrivals from many counties and the non-passerines, waders and thrushes are analysed below. The coverage is not complete by any means, but it seems clear that the earlier species were generally rather late and that the later ones were more or less on time.

Widgeon (*Anas querquedula*). Arrival 14th-16th March in SE England, East Anglia, Lincoln and Midlands as far west as Stafford; subsequently, several in SW England and even S Scotland in late March and April. Normal arrival.

Pintail (*Pandion haliaëtus*). Odd ones in E coast counties from Norfolk and Lincoln to Aberdeen from 21st April. In Inverness two pairs built and laid, but the Loch Garten nest came to grief when the female was blown off and one egg dislodged in a very high wind.

- Little Ringed Plover** (*Charadrius dubius*). First reported Middlesex 23rd March and in other SE counties and as far north as Nottingham 26th-31st, spreading to most breeding areas by 12th April. Normal.
- Common Sandpiper** (*Fringa hypoleucos*). March records (e.g. Tyneside on 23rd) may refer to surviving winterers, but reports as far north as Montgomery and Nottingham in second week April suggest small influx then. Slightly late.
- Stone Curlew** (*Burhinus oedicnemus*). Odd ones East Anglia and SE England last few days March, but very little evidence of influx until 8th-11th April. Late.
- Common Tern** (*Sterna hirundo*). Early birds in Kent from 7th April, as far north as Lincoln by 11th and even inland in Oxford and Nottingham on 10th, followed by slight passage in next few days. Early.
- Arctic Tern** (*Sterna macrura*). First reported Lincoln 19th April and in other counties in next ten days.
- Little Tern** (*Sterna albifrons*). Several reports E and S coasts 17th-20th April. Normal.
- Sandwich Tern** (*Sterna sandvicensis*). Small numbers E coast from Kent to Northumberland and Aberdeen in last three days March, building up over next three weeks. Normal.
- Turtle Dove** (*Streptopelia turtur*). First reported Kent 18th April, then in several counties as far north as Derby by end month. Normal.
- Cuckoo** (*Cuculus canorus*). First reported Kent 9th April, then in a number of counties from Devon to Shropshire, Derby, Lincoln and Northumberland in next ten days, followed by influx about 19th-24th. Slightly late.
- Swift** (*Apus apus*). First reported Kent 14th April and Devon 18th, then in several counties as far north as Caernarvon, Nottingham and Northumberland by 24th; recorded in twenty counties in next three days. Early (or normal on basis of last few years).
- Wryneck** (*Jynx torquilla*). Reported from several localities in Kent in second and third weeks April. Slightly late.
- Swallow** (*Hirundo rustica*). Odd birds in southern counties and as far north as Stafford in mid-March, but no influx until 10th-13th April and few heavy movements until week following 16th. Late.
- House Martin** (*Delichon urbica*). First reported Shropshire 31st March, then hardly any until recorded in a dozen or more counties from Cork and Somerset to Derby and Lincoln 10th-14th April; widespread ten days later. Normal.
- Sand Martin** (*Riparia riparia*). First reported Devon 16th March, then very few others until second week April. Late.
- Ring Ouzel** (*Turdus torquatus*). A few as far north as Derby and Northumberland as early as 23rd and 24th March, but no evidence of influx before 13th-20th April. Late.
- Wheatear** (*Oenanthe oenanthe*). First reported Somerset 10th March, then only small numbers for at least next fortnight; influx in SE from 30th March, in SW and W about 11th April and in N during 15th-24th. Late.
- Whinchat** (*Saxicola rubetra*). First reported Dorset 15th March (extremely early), no others until 16th April (Derby) and very few before fourth week April. Late.
- Redstart** (*Phoenicurus phoenicurus*). Very few before 12th April when reported from several counties south of Devon to Lincoln; no big numbers until third and fourth weeks April. Late.
- Nightingale** (*Luscinia megarhynchos*). First reported several southern counties 14th-15th April, then as far north as Lincoln and Nottingham and as far west as Devon in next week. Normal.

(Warblers, flycatchers, pipits and wagtails to be summarised in next issue)

Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions are sent to authors before publication.

After publication, 25 separates of papers are sent free to authors (two or more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet only. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of any publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital initials for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are as used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the English name. Subspecific names should not be used except where they are relevant to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and no other, except in tables where they may be abbreviated to '1st Jan.', 'Jan. 1st', or 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise involve much unnecessary work. These should take the following form:

WILKINSON, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

SMITH, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34. Various other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in the style used in this issue. They must either fit into the width of a page, or be arranged to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this should be light blue or very pale grey. It is always most important to consider how the drawing will fit into the page. The neat insertion of lettering, numbers, arrows, etc., is perhaps the most difficult part of indian ink drawing and, unless he has had considerable experience of this kind of work, an author should seek the help of a skilled draughtsman.



The unique

Henoldt

Diasport

smallest in the world

The Henoldt Diasport is the smallest 8 x 20 prism binocular made—a veritable jewel of a binocular—which can be carried in the pocket and yet gives full 8 x magnification with the brilliant clarity for which Henoldt—makers of the world's largest range of binoculars—are renowned.

An illustrated booklet on the unique Henoldt range and name of your nearest stockist is available from the sole British importers:

First binocular in orbit

The Henoldt Diasport was carried into space by the American astronauts Glenn and Scott-Carpenter.

Degenhardt

AND COMPANY LIMITED

Carl Zeiss House · 20/22 Mortimer St · London · W1
LANgham 6097/9

British Birds

Principal Contents

Icelandic Black-tailed Godwits in the British Isles

J. D. R. Vernon

Movements of tits in Europe in 1959 and after

Stanley Cramp

Studies of less familiar birds: 123—Glaucous Gull

W. Puchalski and I. J. Ferguson-Lees

(with four plates)



Reviews

1 JUL 1963

PURCHASED.

News and comment

Recent reports

Three
Shillings



July

1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

Photographic Editor

Eric Hosking
20 Crouch Hall Road
London, N.8

'News and Comment'

Raymond Cordero
Rohan Lodge, Wadhurst Park
Wadhurst, Sussex

Rarities Committee

D. D. Harber
1 Gorrington Road
Eastbourne, Sussex

Contents of Volume 56, Number 7, July 1963

	<i>Page</i>
Icelandic Black-tailed Godwits in the British Isles. By J. D. R. Vernon ..	233
Movements of tits in Europe in 1959 and after. By Stanley Cramp ..	237
Studies of less familiar birds: 123—Glaucous Gull. By I. J. Ferguson-Lees. Photographs by W. Puchalski (plates 39-42)	263
Reviews:—	
<i>Collins Guide to Bird Watching.</i> By R. S. R. Fitter. Reviewed by D. G. Andrew	267
<i>The Birds of Cheshire.</i> By T. Hedley Bell. Reviewed by Dr. R. J. Raines	268
News and comment. Edited by Raymond Cordero	268
Recent reports. By I. J. Ferguson-Lees	270

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 61/62 Watling Street, London, E.C.4

British Birds

Vol. 56 No. 7

JULY 1963



Icelandic Black-tailed Godwits in the British Isles

By J. D. R. Vernon

MORLEY AND PRICE (1956), in their review of the distribution of the Black-tailed Godwit (*Limosa limosa*) as a passage migrant and winter visitor to the British Isles, discussed the marked increase in numbers which occurred between 1938 and 1952. This increase was particularly striking along the south coast where there were large wintering flocks, notably in Dorset, Hampshire and Sussex, and in parts of Ireland. Little was known of the subspecific identity of these birds, though Morley and Price suggested that the increase may have been partly due to an increase in breeding birds in Holland. However, earlier in 1956 the B.O.U. Taxonomic Sub-Committee had recognised the Icelandic form (*Limosa l. islandica*) as a valid race occurring in the British Isles on passage (*Ibis*, 98: 161): this was on the strength of a bird taken in North Uist, Outer Hebrides, on 24th April 1951 (*Ibis*, 96: 300). Then, two years later, by an examination of Irish museum skins, Williamson and Ruttledge (1958) showed that the majority of Black-tailed Godwits wintering in Ireland were actually of this race. Specimens of *islandica* can be distinguished from the Continental form (*Limosa l. limosa*) by their shorter bills (sex for sex) and by their darker plumage in the breeding season. Salomonsen (1935) gave the bill-lengths of *islandica* as 76-85 mm. for males and 85-100 mm. for females, and of *limosa* as 83-89 mm. for males and 101-121 mm. for females. In the absence of recoveries in the British Isles of birds tagged abroad, bill-length on museum skins can be used to determine subspecific identity. The author recently examined specimens in the British Museum (Natural History) and smaller numbers in the collections at Bristol, Exeter, and the National Museum of Wales, Cardiff. Further data were collated from information sent in by other museums

in this country and from the American Museum of Natural History; these included records of specimens obtained from Iceland and the Continent. In each case the bill-length was noted, together with locality (where obtained) and sex, and complete details are given in tables 1-3.

Examination of the tables shows that 29 of the specimens obtained in Britain, including all those taken in Wales and Scotland, have the bill-length of *islandica*, whereas the few *limosa* are all from the east or south-east of England. The Scottish records of *islandica* lend support to Williamson's suggestion (1958) that the occasional nesting of Black-tailed Godwits in Caithness and Shetland concerns birds of this form. Williamson (*in litt.*) has also recently shown, by an analysis of ringing recoveries, that in the case of the Redshank (*Tringa totanus*), Snipe (*Gallinago gallinago*) and Golden Plover (*Charadrius aprivarius*) there is a definite bias towards recoveries of Iceland-ringed birds in Ireland, south-west England, Wales, Lancashire and the Hebrides, whilst Continental-ringed birds of these species are generally recovered in southern and eastern England only. Indeed, except in the case of the Snipe, there is little overlap and, as Williamson suggests, this may indicate that the two populations are largely allohiemic. The examination of the Black-tailed Godwit specimens reported in this paper suggests a similar distribution in winter in the British Isles, with the Continental form being limited to the south and east coasts of England. This would support Norrevang (1959) and later Boyd (1962), who surmised that the majority of Black-tailed Godwits wintering in the British Isles were Icelandic in origin, with perhaps a few from the Continent (Denmark and Holland).

Williamson and Rutledge (1958) suggested that, in view of the high density of godwits wintering in Ireland, that country might well be the main winter-quarters of the Icelandic population. However, A. Gardarsson (*in litt.*) believes that the Icelandic breeding population exceeds the number which spend the winter in Ireland by, probably, several thousands and also that the winter distribution of *islandica* may not just be limited to the British Isles, but may range further south to France and the Iberian peninsula. In this connection, it is interesting to note that Norrevang (1959) quoted one bird which was ringed in Iceland and recovered in September in Ille-et-Villaine, western France, and that in table 1 three of 23 birds obtained on the Continent—at Dunkerque (Belgium), at Havre (Belgium) and in Andalusia (Spain)—approximate to *islandica* (providing that the diagnosis of sex is correct). Specimens obtained in Norway on spring and autumn passage have also been found to be of the Icelandic form (Holgersen and Willgohs 1956). Further examination of skins in museum collections both in this country and on the Continent, plus more

extensive ringing of nestlings, should throw more light on the winter range of the Icelandic form.

I am indebted to A. Gardarsson of the Museum of Natural History in Reykjavik for information on the Black-tailed Godwit in Iceland, also to the following museums who kindly allowed me either to examine skins in their collections or sent relevant details: American Museum of Natural History (*per* Dean Amadon), Birmingham Museum (L. Bilton), Bolton Museum (E. Gorton), Bristol Museum (P. Bird), British Museum (Natural History) (J. D. Macdonald), Exeter Museum, Manchester Museum (E. L. Seyd), Royal Scottish Museum (A. S. Sclarke), National Museum of Wales (L. Cowley) and Yorkshire Museum (G. F. Willmott).

REFERENCES

BOYD, H. (1962): 'Mortality and fertility of European Charadrii'. *Ibis*, 104: 368-387.
 BOLGERSEN, H., and WILLGOHS, J. F. (1956): 'First breeding of the Black-tailed Godwit, *Limosa limosa* (L.), in Norway'. *Astarte*, 13: 1-8.
 BIRLEY, A., and PRICE, K. L. H. (1956): 'The Black-tailed Godwit in Great Britain and Ireland, 1938-1952'. *Brit. Birds*, 49: 258-267.
 BJORRETVANG, A. (1959): 'The migration patterns of some waders in Europe, based on the ringing results'. *Vidensk. Medd. Dansk Naturh. Foren. Kbh.*, 121: 181-222.
 BLOMONSEN, F. (1935): *Zoology of the Faeroes* ('Aves', part LXIV). Copenhagen.
 WILLIAMSON, K. (1958): 'Bergmann's Rule and obligatory overseas migration'. *Brit. Birds*, 51: 209-232.
 ——— and RUTTLEDGE, R. F. (1957): 'Icelandic Black-tailed Godwits wintering in Ireland'. *Brit. Birds*, 50: 524-526.

Table 1. Specimens of Black-tailed Godwits (*Limosa limosa*) which can be assigned to the Icelandic race *islandica* on the lengths of their bills

Blomonsen (1935) gave the bill length of this race as 76-85 mm. for males and 85-90 mm. for females (as against 83-99 mm. and 101-121 mm. for the corresponding sexes of typical *limosa*). In the list below, therefore, nos. 1, 16, 24 and 28 are below the minimum for males (though nos. 1 and 28 are juveniles), while nos. 7, 11, 26, 29, 30, 31 and 32 are below his minimum for females (though the first four and the last of these are possibly wrongly sexed as the measurements are also well below those for male *limosa*, and the other three are juveniles)

No.	Museum	Date	Locality	Sex	Bill (mm.)
	National of Wales	30.8.22	Loch Bee, South Uist	♂ juv.	69.9
	Royal Scottish	15.9.17	Tentsmuir, Fife	♂	76.5
	British (Nat. Hist.)	9.9.05	Loch Brisdale, Orkney	♂	77
	Royal Scottish	2.9.14	Tiree	♂	80
	National of Wales	22.1.49	Taf estuary, Carmarthen	♂	75
	Royal Scottish	10.8.35	Peterstone Wentlloog, Monmouth	♂ juv.	78.5
	British (Nat. Hist.)	13.8.35	Lake Vyrnwy, Montgomery	♀	77
	National of Wales	20.9.35	Pendine, Carmarthen	♀	94
	British (Nat. Hist.)	26.6.14	Iceland	♂	77.2

BRITISH BIRDS

No.	Museum	Date	Locality	Sex	Bill (mm.)
10	British (Nat. Hist.)	29.5.40	Grimness, Iceland	-	80.9
11	British (Nat. Hist.)	15.9.16	Tralee, Co. Kerry	♀	81
12	British (Nat. Hist.)	15.9.16	Tralee, Co. Kerry	♀	88
13	British (Nat. Hist.)	15.9.16	Tralee, Co. Kerry	♂	85.2
14	British (Nat. Hist.)	3.9.32	Weymouth, Dorset	♂	77.8
15	Bristol	0.10.26	Portbury, Somerset	-	76.5
16	British (Nat. Hist.)	3.9.74	Great Yarmouth, Norfolk	♂	67
18	Exeter	-	Rye, Sussex	♀	92
19	British (Nat. Hist.)	-	Pagham, Sussex	♀	86
20	British (Nat. Hist.)	18.4.43	Pagham, Sussex	♂	81.5
21	British (Nat. Hist.)	20.5.35	Wilstone, Tring, Herts.	♀	96
22	British (Nat. Hist.)	21.1.58	Hayling Island, Hampshire	-	84.1
23	British (Nat. Hist.)	23.4.68	Canvey Island, Kent	♀	95
24	Birmingham	0.0.83	Norfolk	♂	70
25	Bolton	0.5.15	Breydon, Norfolk	♀	95
26	Birmingham	0.0.89	Norfolk	♀	76
27	Bolton	0.10.59	Blackpool, Lancashire	♀	79
28	Royal Scottish	9.9.08	Great Yarmouth, Norfolk	♂ juv.	71.5
29	Royal Scottish	-	Caister-on-Sea, Norfolk	♀ juv.	82
30	Royal Scottish	12.9.10	Great Yarmouth, Norfolk	♀ juv.	78.5
31	Royal Scottish	14.8.11	Great Yarmouth, Norfolk	♀ juv.	75
32	Birmingham	-	Curdworth, Warwickshire	♀	78
33	British (Nat. Hist.)	19.7.16	Dunkerque, Belgium	♀	97.4
34	British (Nat. Hist.)	14.5.74	Havre, Belgium	♀	99.0
35	British (Nat. Hist.)	5.5.98	Andalusia, Spain	♀	95.6

Table 2. Specimens of Black-tailed Godwits (*Limosa limosa*) which can be assigned to the typical race *limosa* on the lengths of their bills

Salomonsen (1935) gave the bill length of this race as 83-89 mm. for males and 101-121 mm. for females (as against 76-85 mm. and 85-100 mm. for the corresponding sexes of the Icelandic race *islandica*). In the list below, therefore, nos. 2, 8, 13, 17, 20 and 24 are above his maximum for males and are possibly wrongly sexed (though the measurements are also above those for female *islandica*)

No.	Museum	Date	Locality	Sex	Bill (mm.)
1	Royal Scottish	0.8.15	Fairfield, Sussex	♂	95
2	American Nat. Hist.	0.7.79	Stallingborough, Lincolnshire	♂	106
3	Birmingham	0.0.83	Norfolk	♂	101
4	Birmingham	0.0.90	Norfolk	♂	92
5	Birmingham	0.0.90	Norfolk	♂	87
6	Manchester	(April)	(Leadenhall Market, London)	♂	94
7	York	(30.3.86)	(Leadenhall Market, London)	♂	99
8	Bolton	0.4.05	Breydon, Norfolk	♂	106
9	British (Nat. Hist.)	0.10.09	Essex	♀	111
10	Royal Scottish	0.4.30	Overijssel, Holland	-	109
11	British (Nat. Hist.)	28.3.76	Havre, Belgium	♀	115.8
12	British (Nat. Hist.)	0.4.12	Camargue, France	-	109.2

TIT MOVEMENTS IN EUROPE IN 1959 AND AFTER

Museum	Date	Locality	Sex	Bill (mm.) ¹
British (Nat. Hist.)	0.5.06	South Spain	♂	105.5
British (Nat. Hist.)	29.5.37	East Poland	♂	94.5
British (Nat. Hist.)	29.5.37	East Poland	♀	117.1
British (Nat. Hist.)	5.6.14	Central Hungary	♀	114.0
British (Nat. Hist.)	5.6.14	Central Hungary	♂	102.5
British (Nat. Hist.)	5.6.14	Central Hungary	♀	109.2
British (Nat. Hist.)	28.7.34	Rumania	♀	106.5
Royal Scottish	21.1.11	Famagusta, Cyprus	♂	102
Royal Scottish	17.3.88	Cyprus	-	119
Royal Scottish	0.0.71	? Geso	-	104
American Nat. Hist.	24.4.02	Denmark	♂	87
American Nat. Hist.	0.0.68	Rylland, Denmark	♂	103
American Nat. Hist.	0.5.08	Sarpa, Russia	♂	98
American Nat. Hist.	1.6.82	Sarepta, Russia	♀	117
Royal Scottish	10.4.10	Cremona, Italy	♀	110
British (Nat. Hist.)	26.1.96	Coto Doñana, Spain	♀	111.2
British (Nat. Hist.)	27.5.89	Omsk, U.S.S.R.	-	103.5

Table 3. Specimens of Black-tailed Godwits (*Limosa limosa*) which are indeterminate

Museum	Date	Locality	Sex	Bill (mm.)
British (Nat. Hist.)	Spring	Pagham, Sussex	-	84.1
British (Nat. Hist.)	-	Tralee, Co. Kerry	-	88.0
British (Nat. Hist.)	1819	France	-	86.5
British (Nat. Hist.)	1819	France	-	90
Royal Scottish	25.8.11	Caister-on-Sea, Norfolk	♀ juv.	83
British (Nat. Hist.)	-	Pagham, Sussex	-	86.0
British (Nat. Hist.)	0.10.09	Essex	♂	83.5

Movements of tits in Europe in 1959 and after

By Stanley Cramp

INTRODUCTION

EARLIER PAPER (Cramp, Pettet and Sharrock 1963) described irruptions of Great, Blue and Coal Tits (*Parus major*, *caeruleus* and *parus*) into the British Isles in the autumn of 1957 and showed that they formed part of considerable movements of all three species over large areas of western and central Europe. Although the Coal Tit was known to be an irruption species in some parts of Europe, it has not been generally realised that Great and Blue Tits, normally

sedentary birds, also move considerable distances at times of peak population. The examination of earlier observations showed that such movements had occurred on a large scale at irregular intervals (in the British Isles the previous irruption of any size had been in 1949) and had probably varied in extent and nature in different years.

There were again indications of irruption movements during the autumn of 1959, and, as before, appeals for relevant observations were made in ornithological journals and on the B.B.C. In the event, the irruptions into the British Isles proved to be on a much smaller scale than in 1957, but over considerable areas of Europe they were much larger. In 1957 there was strong evidence that the irruptions were due to the high numbers of tits surviving in the previous mild winter, and in 1959 also tit numbers appear to have been unusually high, due both to a mild winter in many countries and to a good summer which resulted in a high fledging success. Census figures for two areas in England and one in Holland show, however, that numbers of Blue and Great Tits were again very high in the 1961 breeding season, reaching record levels in two of the areas, yet the irruption movements which might have been expected in these countries in autumn did not occur on any large scale. Some possible reasons for this are examined.

MOVEMENTS IN THE BRITISH ISLES

In 1957 movements and increases of Blue, Great and, to a much smaller extent, Coal Tits were noted in the British Isles after the breeding season, and they were followed by an influx of all three species on the east and south coasts of England from mid-September onwards. The pattern was similar in 1959, but on a smaller scale, especially among the native populations. From mid-June, but mainly in July and August, small numbers of tits, mostly Blue, were seen at observatories on the south and east coasts of England where they are not normally present in the breeding season; inland, increased numbers of Blue and Great Tits were trapped at Godalming (Surrey) in August, while the first wanderers appeared in central London at the end of the month.

The first sign of any movement into the country was at Dungeness (Kent) on 4th September, when two Continental Coal Tits were trapped. In the late evening of the 14th another appeared and there were eight more on the 15th; then on four days from 23rd September to the end of the month small numbers (six to fifteen) were reported, and all trapped or observed closely were believed to belong to the Continental race. Numbers of this species at other observatories were small: Sandwich Bay (Kent) reported some Continental birds on 16th September; there were two only at Gibraltar Point, on 28th; singles were identified at Cley on various days from the 11th (with three on

the 24th); at least three different Continental birds were recorded at Portland (Dorset) from the 14th; and, further west, a single Coal Tit was seen at St. Agnes (Scilly Isles) from the 19th to the 21st. Some may have moved inland, for in central London, where the species breeds only occasionally, three were seen in the gardens of Lambeth Palace on the 7th and seven on the 9th, when there were also twelve in Regent's Park. Small numbers were seen in these two places later in the month and during the third week of September a few were noted at Broomfield (Kent). Much further north, some were observed at Arncliffe Point (Cumberland) between 13th and 26th September, but it seems unlikely that these can have been connected with the small eruption in the south.

In the first half of September, a few Blue and Great Tits were recorded at various observatories, but it seems probable that these and others on the coast were, like those in August, wandering local birds. The first large increases were of Blue Tits—on 17th September at Gibraltar Point (12); on the 19th at Sandwich Bay (20) with 25 on the 20th and 50 on the 30th; on the 20th at Selsey Bill (Sussex); on the 21st at Dungeness (ten, rising to 30 on the 26th), Portland (11, with 20 on 25th and 38 on 26th) and Spurn (12, with ten on 28th). At Brevensey Marsh (Sussex) there was a big increase of Blue Tits on the 24th and 25th, with considerable numbers a few miles inland on the 26th. Radar observations showed a moderate passage of birds then between west and north-west across the Straits of Dover from the Pas de Calais area, most continuing inland on reaching the Kent and Sussex coasts; that night there was again a north-west movement, and L. F. Parslow (*in litt.*) considers it possible that both may have involved tits. In the last week of September a moderate westerly movement of Blue Tits was observed at Cley (Norfolk).

Inland records, however, were comparatively few and restricted mainly to south-east England. There were moderate movements at Broomfield in the third week of September and in central London numbers increased, reaching a maximum of 21 on the 23rd in the built-up area and of 22 on the 22nd in Regent's Park. In north-east England, Blue Tits were seen on the coast at Redcar and Filey (Yorkshire), where there was a southerly movement on the 24th, and in the town centres of Redcar and Middlesbrough (Yorkshire).

Movements of Great Tits in September were on a smaller scale, with 11 at Sandwich Bay on the 20th (and 20 on the 30th), and a maximum of 25 at Dungeness on the 26th; there were only very small numbers at Portland, Gibraltar and Spurn, and none at Cley. Inland reports were correspondingly few, with a small passage at Broomfield, odd birds in central London and an increase at Nuneaton (Warwickshire). In October Coal Tit movements appeared to have died out at most

observatories after the first few days, though two were seen at Flamborough (Yorkshire) on 10th October, and small numbers occurred at Cley until the 22nd and at Folkestone (Kent) until the 19th. In the Isles of Scilly four birds of the Continental race were identified on 3rd October and one on the 7th, while there was one at Cape Clear Island, off the coast of southern Ireland, on the 6th and again on the 11th. Williamson (1959) stated that in the early days of October high pressure over the Continent, giving east to south-east winds over western France, led to a drift-invasion at these two observatories at this time.

Blue Tit numbers at Gibraltar Point were small in October, after a peak of 40 on the 2nd, and at Spurn also, though the species was numerous at Tetney Marsh (Lincolnshire) on the 10th. At Cley the moderate westerly movement ceased after 4th October. There was a little more activity on the south coast of England, for although Dungeness had only one small peak (15 on the 6th), Sandwich Bay reported more than ten on 1st, 9th and 14th October, and Portland over twenty on 3rd October and twenty on the 13th. On the 5th about two hundred Blue Tits, with some twenty Great, were seen on the Sussex coast near Pevensey Bay. Eighty or more were recorded at Warden (Kent) on the 11th, about 50 at Pevensey on the 13th and a small passage at St. Margaret's Bay (Kent) as late as the 23rd. Inland, moderate numbers occurred in central London throughout the month and there was some increase at St. Albans (Hertfordshire) on the 20th. In early November small increases in Blue Tit numbers were observed at places on the Kent coast and in central London, and there was five-fold increase at this time at Malham Tarn, well inland in Yorkshire, which lasted well into the month.

Records of Great Tit movements in October were few. Spurn had small numbers, with a peak of about ten on the 10th and 11th, but Gibraltar Point had none after the 2nd and Sandwich Bay none after the 1st. Some occurred at Dungeness and Portland (maximum 12 on the 13th), and 30 were seen at Pevensey on the 13th. Except for slight increases in central London there were no inland reports of this species on the move.

In 1957 there was an increase of all three species of tit at many west coast observatories some days after the invasion of the east and south coasts of England, suggesting that many, perhaps with some British birds, had moved north and west across the country. There was little evidence of this in 1959. Only odd Blue Tits were seen on single days at some west coast observatories—Hilbre, Calf of Man and Skokholm (though they were said to be in every gully on the south coast of Pembrokeshire on the 13th)—and none was reported at Bardsey or the Irish observatories of Great Saltee, Copeland and Tory Island. Inland, there were few signs to suggest passage across the country.

This is to be expected in view of the smaller coastal irruption, but the few observations of the directions of migrating tits in the London area suggest that there may also have been a tendency in 1959 for the birds to move out of the country again. Thus, of the 13 examples recorded, two were flying west, five south-west, four south and two south-east (*London Bird Report for 1959*), contrasting with the observed movements between north-east and west there in 1957 (Cramp 1960). The only evidence of this on the coast, however, appears to have been of six Blue Tits leaving out to sea at Selsey Bill on 3rd October.

In Scotland, reports of invading Great Tits were more widespread than in 1957. A small party of Continental Great Tits arrived on the Isle of May (Fife) some time after 7th October. Others, probably of continental origin, were seen on Unst (Shetland) at the end of October and on Fetlar (Shetland) from 16th October. There was a single Great Tit on Fair Isle on 13th October, and two at Voe (Shetland) on 1st December. An increase of this species, as well as of Blue and Coal Tits, was noted along a two-mile stretch of the River Don near Waverurie (Aberdeenshire) in early October.

Return movements in the British Isles

The signs of return passage were noted mainly on the east and south coasts of England, reaching a peak for Blue and Great Tits in late March. At Spurn, the first increase was recorded on 12th March when there were six Great Tits; this was followed by seven Great and six Blue on the 13th, and a maximum of 40 Great and about 30 Blue on the 24th. There was a small passage of Blue and Great Tits further north at Redcar on 26th March, and to the south Cley had five Great on the 31st. On this latter date, two Great Tits were seen flying NNW from the Shipwash light-vessel, off the Suffolk coast, and next day four were noted moving WSW. On 4th April, three Great Tits which had overwintered on the Isle of May after the small October influx were joined by five others; all were trapped and identified as the Continental race. At Dungeness, there were few signs of returning Blue Tits, but ten Great were seen on 16th March and about 20 on the 21st. Portland had only small numbers in the spring, except for 14 Blue Tits on 13th March, when this species was said to be unusually numerous at Christchurch Harbour (Hampshire). The only reports suggesting passage inland before the coastal exodus were from Ulverston (Lancashire), where Blue and Great Tit numbers were high in February and March, and from Nuneaton (Warwickshire), where there was a marked influx of Blue Tits from 28th February to 7th March. Rather surprisingly, there were more reports of Coal Tits on the east in the spring of 1960 than in the spring of 1958, but numbers were still very small. Five Continental Coal Tits were seen at Dunge-

ness on 2nd April and one on the 11th, while there were three at Sandwich Bay on the 9th. Further north, two appeared at Spurn and one at Gibraltar Point on 15th April. In East Anglia, a probable Continental Coal Tit was seen at Cley on 23rd April and the next day one was trapped at Bradwell (Essex); this bird was recovered on 4th May on the Noord-Hinder lightship off the Dutch coast. On the west coast there was a marked influx of Coal Tits at Grune Point on 2nd April; three were trapped and from their clear grey backs were thought likely to be northern European birds. The last migrant Coal Tit was seen at Spurn on 15th and 16th May; this was exceptional, but, as in 1958, the earliest of the three species to arrive in autumn seemed to be the last to leave.

Recoveries of ringed tits

The ringing recoveries support the observational evidence that in the British Isles movements were on a smaller scale than in 1957. There were far fewer recoveries over ten miles from the place of ringing: in 1959-60 they formed 2.8% of all Blue Tit recoveries and 2.5% of all Great Tits, compared with 6.2% and 5.7% respectively in 1957-58, and were only slightly above the average of 1.6% and 2.1% respectively for the years up to 1956. Only one Blue Tit ringed in the nest in Britain in 1958 moved more than 30 miles, although, unlike 1957, there was one instance of an adult moving 80 miles to the north. The smaller degree of movement among British-ringed nestling Blue Tits is also shown by the fact that in 1957 0.30% of all those ringed in the year were recovered more than ten miles away, whereas in 1959 the proportion was only 0.08%. As in 1957, no Great Tit nestlings ringed here were recovered more than 30 miles away.

There were no instances of Great Tits being ringed and recovered during the irruption (mid-September to 30th November) and only one Blue Tit—a bird which was ringed at Cap Gris Nez (France) on 2nd October and then found at Gravesend on 28th November. Evidence of return movements was provided by a Great Tit ringed at Esher (Surrey) in October 1959 and recovered on the East Friesian Islands, Germany, in April 1960; and another ringed at Shoreham (Sussex) on 12th March 1960 and found at Bremerhaven, Germany, in July. A third, ringed on the Isle of Wight in February, had reached Holland by 14th March, before the main outward movements were reported from the south coast. There were no recoveries showing return movements of Blue Tits and the single Coal Tit example has already been mentioned.

Attacks on paper, milk-bottles and putty

The attacks on paper, milk-bottles and putty, which were an important

ector in bringing the 1957 irruption to the attention of the general public, were also on a much smaller scale in 1959-60. Milk-bottles were raided regularly in many areas from autumn to spring and so only predations in new areas or on a much increased scale tend to be reported, but even so there were reports in 1959-60 from only 17 places (mainly in the south-east, with one in south Wales and four in the north of England), less than 10% of the 1957-58 figure. Attacks on paper were mentioned in a mere five instances (compared with 121 in the earlier irruption) and putty in only two (compared with 43).

MOVEMENTS OBSERVED ELSEWHERE IN EUROPE

Holland

In Holland, the first evidence of the irruption was the appearance of some hundreds of Coal Tits on 4th September on the islands of Terschelling and Vlieland and on the west coast of the province of Friesland. They were seen also at Groenekan and Leimuïden on the 11th, the Hague and Woerden on the 5th, Den Helder and Aalsmeer on the 7th, Oostburg on the 9th, Hilversum and Schouwen on the 12th, Amsterdam on the 13th and Walcheren on the 14th. Though the earliest passage was in September, some continued in the first half of October. Blue Tits did not appear on passage until the middle of September: on the 14th at Hoofdplaat in southern Holland, about the 18th on Terschelling, and many in the reeds on the edge of IJsselmeer on the 20th and 27th. In September and October Great Tits were seen with the Blue Tits, though in smaller numbers, and their movements continued a little into November. Although some thousands of Blue and Coal Tits passed along the Dutch coastline and through eastern Holland, J. Taapken (*in litt.*) considers that the irruption was on a smaller scale than in 1957. No tit was observed setting out across the sea, but a Great Tit ringed in the nest at Nunspeet in May 1959 was found on a lightship off the Essex coast on 28th September. Other Great Tits ringed in Holland were later recovered in Belgium (three) and northern France (one), while two Blue Tits were found in Belgium and one in south-west France.

Return passage of both Great and Blue Tits was seen at the end of February and in March, all observed passage being to the north-east; no Coal Tits were reported. A Great Tit ringed at De Bilt in November 1959 was found in north-west Germany on 29th March 1960, and another ringed in northern France in December was recovered in Holland on 17th March. A Blue Tit ringed in Holland in January 1960 was found on the Baltic coast of Germany in April, while one trapped in early April was found three days later about 100 km. away at Wangerooge, off the German North Sea coast (Taapken and Taapken 1960, J. Taapken *in litt.*).

Dr. H. N. Kluyver informs me that an enquiry conducted by H. van Balen showed that opening of milk-bottles by tits in Holland was more common than usual in the autumn of 1959; paper-tearing was also observed and there was one case of putty being eaten.

Belgium

There has been little published information on the movements of tits in Belgium. A large passage of Blue Tits was observed at Grufflange on 13th September, and from 1st October to 14th November small numbers of this species were seen moving along the Orneau at Gembloux. Return passage was noted on 13th March 1960, when Great Tits were noted moving north-east at Putte-Kapellen and some 300 Blue and about 100 Great Tits were seen flying south-east at Braakman (*Le Gerfaut*, 49: 395; 50: 311-312). The ringing recoveries, however, are of particular interest and suggest that there must have been considerable activity (Verheyen 1960, 1961). Three Great Tits ringed in October were recovered in France (Nord, Brittany and Basse-Pyrénées), but birds of this species ringed as nestlings moved much greater distances—to Brittany and the Gironde in France, whilst one ringed in May 1959 was found some 1,700 km. to the south-west at Montefrio, near Granada, in southern Spain, on 20th October. The only Blue Tit recovery showing movement over any distance was a nestling ringed at Antwerp in May 1959 and recovered at Cannes, in southern France, in November. There were several recoveries showing return passage: three Great Tits ringed in Belgium in October 1959 were found in Holland between 11th March and 15th June 1960, one ringed in December was recovered on Heligoland on 2nd April, and one ringed near Namur was recorded on the Baltic coast of Poland, also in April; three Blue Tits ringed in Belgium between November and March were recovered later to the north-east, in Germany.

Germany

The full analysis of tit movements in Germany in 1959 is still being prepared. On Heligoland, Dr. G. Vauk (*in litt.*) states that the invasion was twice as heavy as in 1957, with Great Tits the most numerous, followed by Blue and Coal in that order. Feeny (1959), in an account of three weeks on the island in September 1959, described how the first Coal Tits arrived on the 1st and a flock of 30, with the first Great Tits, on the 7th; peak movement was on the 14th, when the observatory garden alone held about 50 Coal, some 70 Great and about the same number of Blue (first seen on 11th September). Information gathered by Ulfstrand (1962) from various correspondents was mainly negative, however, with little sign of significant movements in north-west Germany, the island of Rugen or Mecklenburg.

There have so far been no long distance recoveries of the tits ringed at Heligoland in 1959, but Mohr (1960) showed that a number of Blue Tits ringed as nestlings in central and southern Germany in May 1959 were recovered between October and December in areas to the south and south-west. Thus, nestlings ringed in central eastern Germany were found in north Italy (two), Switzerland (two), south France (one) and 1,470 km. to the south-west on the northern coast of Spain (one), while others ringed in southern Germany were recovered in north Italy (two) and south France (one).

Information on more recent recoveries of tits kindly supplied by G. Zink, of Vogelwarte Radolfzell, gives further evidence of a considerable movement in 1959 among birds ringed in southern and central Germany. Thus, eight Blue Tits, all ringed as nestlings, were recovered outside Germany in the autumn and winter—five in France (Normandie, Provence, eastern and central Pyrénées), two in north Italy and one on the east coast of Spain. A Blue Tit ringed in Bavaria in August was recovered near Tarragona, on the east coast of Spain, on 8th October. Seven Great Tits ringed as nestlings were recovered in France, from the east to the Atlantic coast and the south-west. A Great Tit ringed in Bavaria in July was recovered in the Dordogne, and one ringed near Linz, Austria, in September was found at Belluno, north Italy, in early October. Two other nestling Great Tits were recovered in Luxembourg and Switzerland. Finally, a Coal Tit ringed in Saxony in May 1959 was found at Castellon, on the east coast of Spain, about 1,700 km. to the south-west; not only the first Coal Tit recovery from Spain, but easily the longest known journey for this species.

Scandinavia and Finland

The 1957 irruption movements were mainly confined to southern Sweden and parts of Denmark, with Coal Tits concerned only in the island areas and the east Baltic coast. While no movements were recorded in Denmark in 1959 (C. A. Blume *in litt.*), a marked irruption was observed at Revtangen on the south-west coast of Norway (H. Høggersen, A. Bernhoft-Osa *in litt.*). It began abruptly on 19th September and lasted until 20th October in the case of Blue Tits and until 30th October with Great. It is estimated that, in all, some 13,000 Blue Tits and 5,500 Great Tits passed over, with 18 Coal Tits on 20th and 21st October. The birds came from the north and north-east, flying very high, swerved south-west to avoid passing over the Oslo lake, then continued south down the coast. The few recoveries of birds ringed in Norway (Høggersen 1961) show no great movement; the recovery of a nestling Great Tit 205 km. to the north-east suggests a tendency to follow the coast rather than attempt a crossing of the

Skaggerak. Haftorn (1950) pointed out that, although Great Tits occur in autumn at various places in the west of Norway, there were no records of birds departing over the open sea. Yet that a few may do so on occasion is suggested by the Scottish records of this species in 1959 and earlier years and, even more strikingly, by the discovery of two Great Tits in a garden at Reykjavik, Iceland, on 4th December 1959. This is the first time any species of tit has been recorded in Iceland. They remained until 5th March 1960, and Dr. Finnur Gudmundsson (*in litt.*) believes that they must have arrived about the middle of October when an unusually large wave of drift migrants reached Iceland.

In Sweden, a large-scale exodus of Blue and Great Tits was seen at Falsterbo, on the southern coast. A total of 3,573 Blue Tits were counted on passage, rather less than in 1957 (5,612), but the number of Great Tits (7,535) was the highest recorded since 1949 and about five times more than in 1957. There was no evidence of return movements in spring and there were no reports of attacks on milk-bottles or paper—indeed, such behaviour has apparently not been reported so far in Sweden (Staffan Ulfstrand *in litt.*). At Ottenby, further north off the east coast of Sweden, no watch was kept on visible migration, but the numbers of Blue and Great Tits ringed jumped sharply. Blue Tits, which were about twice as numerous as Great, were ringed from 16th September to 31st October, with peak figures on 23rd October, and Great Tits from 4th to 31st October, with peaks on 17th and 18th October. Only two Coal Tits were trapped, both in late October. The trapping figures for Great Tits show evidence of return passage between February and April 1960, but no Blue Tits were caught although some were seen in February with flocks of Great Tits in Lund (Miss Anna Tolstoy *in litt.*).

The only evidence of movements of these species in Finland comes from the Åland islands, at the entrance to the Gulf of Bothnia. In his valuable account of tit movements observed there Linkola (1961) showed that the autumn of 1959 had the largest passage of Great Tits ever recorded, with about 1,000 between 22nd September and 29th October. Departure directions varied widely, with most between east and south-east, towards the mainland of Finland or Estonia, and some between west and north-west, towards Sweden. Movements of Blue Tits were on a smaller scale, with 490 counted between 26th September and 6th November, but this was still the largest movement for this species known there. Only about 140 Coal Tits were recorded, in contrast to 1957, when this was by far the most important tit. Long-tailed Tits (*Aegithalos caudatus*) were relatively numerous, but no Willow Tits (*Parus montanus*) were seen, although J. Koskimies (*in litt.*) states that huge numbers of this species moved along the western

and southern coasts of Finland. A distinct return passage of Great Tits was observed in the Åland islands in the spring of 1960. Three of the Great Tits ringed in the autumn of 1959 were later recovered in Sweden—90 km. south-west, 110 km. SSW and about 410 km. south-west.

In the eastern Baltic, Prof. E. Kumari (*per* K. Williamson) reported 50 outstanding movements of Blue, Great or Coal Tits, although a considerable invasion of Long-tailed Tits was recorded from late September onwards.

Switzerland

After the large-scale movements of tits in Switzerland in 1957, there was little sign of passage in the autumn of 1958. In 1959, however, it was again marked in all parts of the country, from the lowlands to the Alps and Jura, although P. Géroudet (*in litt.*) considers that numbers generally were a little lower than in 1957. At the Col de Pretolet, however, numbers seen and ringed were far in excess of those reported in 1957 (de Crousaz 1960). Coal Tits (4,982 ringed) were the most numerous, with Blue and Great Tits in roughly equal numbers (2,907 and 2,729 respectively), compared with 1,251 Coal Tits, 407 Blue Tits and 1,625 Great Tits ringed in 1957. The first movements of Blue and Coal Tits were seen in late August, as in 1957. Coal Tits, however, reached their peak first, with between four and five thousand estimated on some days from 7th to 12th September, and passage continued quite strongly until the end of the month, gradually declining until about the third week of October. Numbers of Blue Tits remained small until the second week of September, reached 168 on the 20th, up to 400 between the 21st and 27th, and a peak of 1,100 on the 29th. They continued to be the most numerous in early October, with over three hundred daily, then declined markedly after the 18th, though small numbers were recorded until the end of the month. The Great Tit peak occurred much later: numbers were small from the second week of September, increased up to 80 daily towards the end of that month and reached a maximum of 3,500 on 10 October. There were still as many as 600 to 800 between 13th and 15th October, but the movement faded out before the end of the month. It is perhaps worth stressing that these very high numbers at the Col de Pretolet were passing from Switzerland to France at a height of some 10,000 feet.

Extensive ringing activity yielded a wealth of recoveries, only a sample of which can be shown on the maps (figs. 1 and 2). Great Tits were recovered mainly to the south-west in south France, with some to the north Italian coast. Blue Tits were also found in south France, but a more south-easterly tendency led to a higher proportion in Italy,

especially on the coast, as far east as Liguria. The south-easterly tendency was even more pronounced with the Coal Tits, leading to a large percentage of Italian recoveries, some almost due east in the Italian lake region. Among birds trapped at the Col de Bretolet were a Great Tit ringed as a nestling in Wurttemberg, two Blue Tits ringed as nestlings further north in Switzerland and a Coal Tit ringed at the nest in Switzerland. The ringing results so far suggest that the Blue and Great Tits trapped in the autumn at the Col had their origin in Switzerland, Germany (Wurttemberg, Bavaria, Saxony and Oberlausitz) and Czechoslovakia (A. Schifferli and U. Glutz von Blotzheim *in litt.*, Schifferli 1961).

Return movements, on a rather small scale, were observed in Switzerland in February and March (Great Tits); in March, chiefly at the end of the month (Blue Tits); and also in March, though in very small numbers (Coal Tits) (Dr. P. G eroulet *in litt.*).

France

In southern France, in the Camargue, the invasion was also on a larger scale than in 1957. In his account of observations made at the Tour du Valat Hope Jones (in MS.) demonstrates that the pattern of tit movements shown by the trapping there corresponded fairly closely with that at the Col de Bretolet, but with a peak about ten days later in each species. Thus, Coal Tits showed the earliest peak at the Tour du Valat, from 21st to 25th September; Blue Tits reached a maximum from 15th to 20th October; and Great Tits had a much sharper peak from 11th to 15th October. The proportions of the three species at the two stations differed considerably, with 812 Blue, 90 Great and 81 Coal Tits trapped at the Tour du Valat.

Hope Jones visited the eastern Pyr n es between 5th and 16th November and found Blue and Great Tits very common at Banyuls-sur-Mer, just short of the Spanish frontier, with small groups, almost certainly on passage, on the bare hillside of the Pic del Tourn (608 metres above sea-level). In Spain, there were numbers of Blue and Great Tits in the hinterland of the Costa Brava and at Puigcerda, near Andorra. He found no evidence of unusual numbers of Coal Tits either in Spain or in the French lowland areas, though some were seen at higher levels, usually in conifers.

During the winter months small numbers of Blue Tits, and some Great, remained in the Camargue; then in February there were signs of a return passage. Thus, on 14th February three Blue Tits were seen to come in from the south at Beauduc near the Camargue shore, and in the next fortnight at the Tour du Valat two waves of migrating Blue and Great Tits were seen. During the second, from the 22nd to 27th, groups of up to 25 (mainly Blue with some Great) were

observed; they were very restless and all flew off NNE. Only one Coal Tit was seen, on 22nd March. Numbers were much smaller than in the previous autumn and Hope Jones suggests that, although some birds moved as far as the Pyrénées, with Blue and Great penetrating into Spain, many may have moved back on reaching the sea at the Rhône delta. The only recoveries from any distance of tits ringed at the Tour du Valat support this: two Blue Tits ringed in October were recovered before the end of the year 35 km. to the north and 127 km. to the north-east. There were also good numbers of Long-tailed Tits in the Camargue in November, but Hope Jones states that their movements there are not necessarily associated with those of the *Parus* tits; the record year for Long-tailed Tits at the Tour du Valat was 1958, when very few *Parus* tits were seen.

His analysis of Blue Tits ringed as nestlings and recovered in Mediterranean France shows that they were mostly from Germany (14) and Switzerland (five), whilst nestling Great Tits came from Switzerland (six), Germany (three) and central Poland (one). Recoveries there of older Blue and Great Tits ringed elsewhere suggest similar areas of origin. There were no recoveries in the Camargue of Coal Tits ringed elsewhere as nestlings. Details of other tits ringed in France and recovered between May 1959 and May 1960, kindly supplied by M. Roux, show that, while no Great Tits ringed in the summer and autumn were recovered outside France, there were a number ringed in the winter which were found later in other countries, in all cases showing movements to the north-east and including Belgium (one), Holland (two), Germany (three), Czechoslovakia (one) and Poland (two). A Blue Tit ringed as an immature in July 1959 in western France (Mayenne) was found on the north-west coast of Spain in November.

I have received no observations of tits on passage elsewhere in France, although the ringing recoveries show that irruption movements must have occurred over much of the country, reaching the Atlantic coast, the south-west and the Pyrénées. In the Channel a strong passage of Great Tits, with Blue Tits, was recorded in Jersey on 14th and 15th October; on the 22nd a general influx of Great Tits began there and numbers built up to the winter level between then and the end of the month. Small numbers of Coal Tits, from one to three a day, were seen from 18th October (E. D. H. Johnson *in litt.*).

Winter areas in Europe

Reports from elsewhere in Europe are largely negative, due in many cases, perhaps, to the scarcity of observers. Thus, Dr. C. F. Turczek (*in litt.*) knew of no published or other observations suggesting movements of tits in Czechoslovakia, and no signs of an autumn irruption

were seen in Hungary (Dr. A. Keve *in litt.*) or Poland, although there Dr. A. Dyrz informs me that there were unusually large numbers of Great Tits in Wroclaw in late February and early March 1960. The occurrence of many Great Tits on the island of Silba, Yugoslavia, from the autumn of 1959 till early January 1960 (Mrs. Renata Rucner *in litt.*) and of small, but unusual, numbers of Coal Tits in the town of Reghin in western Rumania (Kohl Istvan *in litt.*) suggests that the irruption movements may have extended further east in Europe.

DISCUSSION

Summary of the 1959-60 movements

The irruption of Blue, Great and Coal Tits in 1959 was on a markedly smaller scale in the British Isles than in 1957, and confined mainly to the south and east coasts, with little evidence of penetration inland or to the west coasts and Ireland. In Scotland, however, Great Tits in small numbers, some of undoubtedly Continental origin, reached Shetland, Fair Isle and the Isle of May—a feature noted in some earlier irruptions (for example, in 1910, 1914 and 1932) but not in 1957. In Holland, numbers of all species were considerable but still rather below 1957 and, though little observational evidence has been obtained, the ringing results suggest that Belgium must have been similarly involved. There were also few reports from north-west Germany, except at Heligoland where the invasion was about twice as heavy as in 1957.

In Scandinavia, Denmark was not apparently affected, but there was a large movement of Great and Blue Tits on the west coast of Norway (not involved in 1957) and it seems probable that from there came not only the Great Tits in Scotland but also the first examples of this species to reach Iceland. In Sweden, large numbers of these two species were noted off the east coast, with five times as many Great Tits at Falsterbo as in 1957. On the Åland Islands, off Finland, it was a record year for both Blue and Great Tits, though here, as in Scandinavia, Coal Tits were very little involved, and on the eastern Baltic coasts no tit movements of any kind were recorded.

In central Europe, reports of visible movements were largely restricted to Switzerland, where the heavy passage observed at the Col de Bretolet suggests that the irruption was on a considerably greater scale than in 1957, with Coal Tits the most numerous species and Blue and Great in roughly equal numbers. In southern France, tit numbers were also much greater than two years before, but here Blue Tits predominated, with relatively few Great and Coal. Many of these birds seem to have moved back on reaching the Rhône delta, but some Blue and Great Tits, apparently on passage, were seen along the French coast as far as the Pyrénées, with a few further south in the

hinterland of the Spanish Costa Brava. Isolated records (Great Tits wintering in Yugoslavia and seen on return through Poland in spring, and an increase of Coal Tits in western Rumania) suggest that irruption movements also occurred further east in Europe in 1959.

Recoveries of ringed tits

Ringling recoveries were far more numerous than in 1957 and enable the observational record to be considerably augmented, especially in central and south-west Europe (see figs. 1 and 2). The pattern of the 1957 recoveries suggested that the tits from the low-lying parts of north-west Europe kept almost entirely to land below 200 metres, while those from central Europe migrated through much more mountainous areas, and, on the evidence then available, the irruptions from these two areas appeared to be largely distinct geographically. The additional ringling recoveries for 1957 which have since come to hand do not alter this general picture, although four of them are perhaps worthy of special mention: two instances of Swedish Great Tits being recovered in Denmark; a Blue Tit ringed as a nestling in central Germany in May 1957 and recovered at Nimes, in southern France, in November; and a Great Tit ringed as a nestling near Berlin in May 1957 and found south of the Pyrénées, in Navarre, in December 1959. Important differences are shown by the recoveries in the 1959 movements, however. The tits from the low-lying areas of north-west Europe appear to have kept mainly to land below 200 metres again, but there were two exceptions, both of birds ringed in Belgium. The first was a nestling Blue Tit ringed at Antwerp and recovered near Cannes in November, and the second a young Great Tit ringed in May and found near Granada, in southern Spain, in October. The latter almost certainly passed over much higher country during its journey and may have made a direct crossing of the Pyrénées. The maps of recoveries show clearly, however, that the Pyrénées act as a barrier for many tits, and the four others to reach Spain in the 1959 movements could all easily have arrived by coastal passages which avoided the heights of the Pyrénées. In 1959, too, unlike 1957, there were several cases of overlap with tits ringed in north-western and central Europe and recovered later in the same areas, mainly in south-western France, although two central European birds reached the coast of the Bay of Biscay and one north-western one got to the French Riviera.

The recoveries and observations so far suggest that these tit movements originate in three main regions of western and central Europe—(1) Norway, Sweden and Finland, (2) the low-lying areas of north-west Europe, and (3) central Europe. The first region is the most clearly distinct, being separated from the others by sea. The excellent

analysis by Rendahl (1959) shows how rarely have birds ringed in those countries been found across the Baltic or even across the narrow channels of the Skagerrak and Kattegat. Thus, of the numerous recoveries he analysed, only six showed crossings into north-west Europe—four Great Tits and a Blue from Sweden later recovered in Denmark, and a Norwegian Great Tit found in Bavaria. There are also very few cases of tits crossing even the narrow Gulf of Bothnia, although the observations of Linkola (1962) show that such movements do occur. It seems likely, too, that some of the Coal Tits irrupting on the eastern coasts of the Baltic originate in Finland, though no recoveries so far have shown any crossing of the narrow Gulf of Finland. Since Rendahl's analysis two recoveries have been published which may have involved direct crossings of the Baltic—a Coal Tit from the Åland islands in 1956 found in Kassel, central Germany, in October 1957, and a Great Tit ringed in Latvia in August 1961 found on Gotland, Sweden, in the following November. In the main, however, the tits from this region fly over the sea with reluctance and there are several instances of their being observed trying vainly to cross from Falsterbo to Denmark (Cramp, Pettet and Sharrock 1960, Ulfstrand 1962). Despite this, it seems likely, as mentioned earlier, that the Great Tits which reach Scotland, especially the northern isles, in small numbers from time to time, often in years when no invasions are recorded further south in the British Isles, and which in 1959 even reached Iceland, come from Scandinavia, probably Norway.

In 1959 it appears that the irruption movements in the north began later than those in western Europe. The first movements of both Blue and Great Tits on the coast of Norway were seen on 19th September and at Ottenby, on the east coast of Sweden, on 16th September (Blue) and 4th October (Great), much later than the first increases were recorded on Heligoland (Great, 7th September; Blue, 11th September). The Heligoland dates link more closely with those for Holland and England—thus, Coal Tits started on Heligoland on 1st September and in Holland and south-east England on the 4th, while Blue Tits, which reached Heligoland on 11th September, were recorded first in Holland in the middle of the month and in England on the 17th. Finally, while Coal Tits may irrupt in different years from Blue and Great Tits in Fenno-Scandia (Ulfstrand 1962) the three species have all irrupted together in recent years in the other two regions.

The other regions, north-western and central Europe, are not separated by any natural barriers and there must clearly be some area of overlap, but there seem to be certain broad differences between the movements originating in them. There is insufficient evidence to show whether the movements begin at different times, but the Col de Bretolet observations in 1959 suggest an earlier start there than in



PLATE 39. Adult Glaucous Gull (*Larus glaucescens*) swallowing an Eider's egg, Irsberg, July, 1957. Besides carrion and crabs, the species takes many chicks and eggs of auks, terns, ducks and geese, and even grown birds, especially Little Auks which it can easily catch on the wing. (pages 203-206. *Journal of the Pacific Ornithologists*)

PLATE 40 (*below.*) Adult Glaucous Gull (*Larus hyperboreus*) in flight. This bird is variable in size, from Herring Gull to Great Black-backed. The plumage of the adult is entirely white and pale grey, and the total lack of black on the white-tipped grey primaries is well shown here, as are the heavy yellow bill and pale eye





PLATE 41 (above). Glaucous Gulls *Larus hyperboreus*, mostly adults, by a tundra pool on Spitsbergen. These birds breed mainly on coasts, sometimes on low-lying shores but more often on sloping cliffs and stacks. Note that when the primaries are full-grown the wings reach well beyond the tail (page 264) (photos: W. Puchalski)



PLATE 12. Adult Glaucous Gull (*Larus hyperboreus*) calling by a broken Lider's egg; this species is rather silent except when it is feeding. Below, first-summer bird eating the corpse of an adult; note the paleness of its markings, the lack of black on wings and tail, and its dark-ended bill (page 264) (photos: W. Puchalski)





G. 1. The more important recoveries of ringed Great and Coal Tits (*Parus major* and *ater*) in autumn 1959 and spring 1960. Recoveries of Great Tits are marked by a continuous line from a black circle (the place of ringing) to an arrowhead (the place of recovery), and those of Coal Tits by a broken line from a cross to an arrowhead; black circles and crosses on their own indicate increases, and short arrows show observed movements



FIG. 2. The more important recoveries of ringed Blue Tits (*Parus caeruleus*) in autumn 1959 and spring 1960. Recoveries of Blue Tits are marked by a continuous line from an open circle (the place of ringing) to an arrowhead (the place of recovery); open circles on their own indicate increases

north-west Europe. The sea and mountains seem to act as barriers in a rather different way. Thus the tits from central Europe which move through the Alps and adjacent ranges in numbers have not, so far, been proved to make a sea crossing. Rydewski (1960) showed that there were no records of any tit recoveries on any island in the Mediterranean (and I know of none since), while Hope Jones, as mentioned earlier, thought that many moved back on reaching the sea at the Rhône delta. By contrast, the tits from north-western Europe, which for the most part seem to prefer to avoid land over 200 metres (though movements to the south-west or south would not take them over any really high land unless and until they reached the Pyrénées) cross the sea much more readily, not only the narrow Straits of Dover, but also the North Sea to the east coast of England and sometimes possibly across the wider stretches of the English Channel further west. There is evidence that some reached Ireland in 1957, while at least one Coal Tit did in 1959. Finally, the majority of tits irrupting from these two regions move into different areas for the winter—those from the north-west going mainly to the western shores of Europe, some as far south as the coasts of the Bay of Biscay and others moving north and west into the British Isles, while the central European birds reach as far as the Mediterranean shores of Italy, France and Spain. There is, however, a considerable area of overlap in western France and isolated examples elsewhere. In all three regions, too, and in both 1957 and 1959, there was a general tendency for the Coal Tits (when involved) to be the first of the three species to irrupt, followed by Blue Tits and then Great Tits.

This discussion has ignored eastern Europe, where similar irruptions of Great, Blue and Coal Tits almost certainly occur, though few details are so far available. Some slight evidence has already been given of movements of Great Tits in Poland and Yugoslavia in 1959, and of Coal Tits in Rumania, and there are a number of ringing recoveries pointing to movements involving eastern Europe in 1959 and other years. Great Tits ringed in Poland have been recovered in Germany, Belgium, France (both south-west and south-east) and northern Italy, while others ringed in France, Germany, Hungary and Czechoslovakia in winter or on passage have been recovered later in Poland. Great Tits ringed in Czechoslovakia and Lithuania have been found in Yugoslavia and birds ringed in Hungary have been recorded in Russia, Czechoslovakia and northern Italy. Other Great Tit recoveries show movement from Czechoslovakia to Russia, Switzerland to the Ukraine, and France to Czechoslovakia. There are fewer instances of Blue Tits being involved in movements further east in Europe, but birds ringed in Poland have been recovered in Yugoslavia, one from western Russia and another from northern Italy and another from Czechoslovakia in Switzerland.

Hope Jones (in MS.) points out that in the case of Blue Tits ringed as nestlings in Germany the recoveries show evidence of a crystallisation of the standard direction on a southward cline through Germany. It is true that nestlings from north-west Germany show an average direction of movement to the places of recovery in the following autumn or winter rather north of south-west, while those from central Germany move, on average, almost south-west and those from southern Germany between south-west and SSW. However, it is far from certain that the concept of a standard direction can properly be applied to these irrupting tits, for their direction seems to be affected by geographical and other factors little understood. Thus, in the British Isles, especially in 1957, most of the tits tended to move between west and north (some even NNE), although these undoubtedly included birds from north-western Europe which must previously have travelled west or south-west. In Fenno-Scandia there is a wide spread of the directions between the place of ringing and those of recovery, in some cases influenced by coasting to avoid sea crossings, so that although there are signs of a tendency between south-west and south-east for Great Tits a number moved to most other points of the compass, while no clear tendency can be seen for Blue Tits. At the Col de Bretolet, where many of the Blue Tits ringed must have come from central and southern Germany (and so have a presumed south-west or SSW standard direction) birds were recovered in places between south-west and south-east of the Col. This south-easterly tendency was even more noticeable in the case of Coal Tits ringed there, some even moving due east.

Figs. 1 and 2 show that movements of ringed birds occurred over much greater distances in 1959 than in 1957, probably reflecting merely the larger numbers of recoveries available. However, the record distance for any species of tit still appears to be 1,800 km. (over 1,100 miles) for a 1957 Great Tit (mentioned in the earlier report) which was ringed near Moscow and recovered in western Hungary, though there are a number approaching this for all three species, including 1,700 km. for a Coal Tit and about 1,620 km. for a Blue Tit.

The reasons for the 1959 irruption

In 1957 the available evidence strongly suggested that the irruption was due to the high numbers of tits surviving the mild winter of 1956-57. Population details are now available for Great and Blue Tits in two areas of broad-leaved woods in southern England during the years 1957-62. These are Marley Wood (Wytham), 63 acres of mixed broad-leaved in Oxfordshire (Dr. C. M. Perrins *in litt.*), and part of the Forest of Dean, about 60 acres of oak in Gloucestershire (Dr. Bruce Campbell *in litt.*). The results are shown in table 1.

TIT MOVEMENTS IN EUROPE IN 1959 AND AFTER

Table 1. Populations of Great and Blue Tits (*Parus major* and *caeruleus*) in two broad-leaved woods in southern England, 1957-62

	Marley Wood, Wytham		Forest of Dean			
	Great Tit	Blue Tit	Great Tit		Blue Tit	
	Pairs	Pairs	Pairs	Young*	Pairs	Young*
1957	48	c. 32	75	500	79	628
1958	28	17	28	180	49	429
1959	44	20	36	251	55	451
1960	51	25	20	129	49	340
1961	86	44	45	309	72	489
1962	43	21	21	124	46	365

*Young=young presumably fledged

Thus in 1958, when no irruption movements occurred, there was a sharp decline from the high figures of 1957 in the numbers of nesting Great and Blue Tits in both woods, but in 1959 the numbers rose again, most markedly in the case of Great Tits at Marley, and almost reached the 1957 level. Dr. David Lack (*in litt.*) considers that, although the average clutch size was slightly lower even than in 1957, the total numbers of young produced were again higher than normal because of the high population of breeding pairs. The increases in 1959 of nesting pairs of Blue Tits at Marley and of both species in Dean, however, were much less and the totals remained in all cases well below those of 1957. Breeding success for both species was high in Dean, but even so the numbers of young presumed fledging were much lower than in 1957. The figure for the years 1960-62 will be discussed later.

In Holland there was a slight change in the census area (not involving any important changes in the type of vegetation or the density of nesting boxes) and H. N. Kluyver (*in litt.*) has kindly recalculated the

Table 2. Numbers of pairs and young fledged (first and second broods combined) of Great, Blue and Coal Tits (*Parus major*, *caeruleus* and *ater*) breeding in five areas in Holland, per 100 boxes

	Great Tit		Blue Tit		Coal Tit		Boxes actually inspected
	Pairs	Young	Pairs	Young	Pairs	Young	
5	23	168	4	45	2	24	534
6	23	205	5	40	3	38	539
7	53	343	8	61	5	35	416
8	30	235	4	43	1	13	510
9	51	401	10	105	2	27	391
10	36	280	9	87	1	13	314
11	68	424	20	166	1	8	312
12	34	230	19	137	2	20	312

data for the years 1955-62 on the basis of results per 100 boxes (table 2).

Again excluding for later consideration the years 1960-62, the figures in table 2 show that the breeding populations of Great Tits reached marked peaks in 1957 and 1959, with the total number of young produced in both years much above the average. The numbers of Blue Tits in the sample are smaller, but here again 1957 and 1959 were peak years for breeding pairs and for total numbers of young, with 1959 showing an even higher relative number of young per pair than in the case of the Great Tit. The figures for Coal Tits are perhaps too small to be significant, but there was no sign of a repetition of the 1957 peak in 1959. Dr. Kluyver again counted the numbers of Great Tits roosting in the nest boxes in winter (December or January): the figures per 100 boxes were 44 in 1955, 58 in 1956, 39 in 1957, 42 in 1958 and 54 in 1959. The low figure for 1957 suggested a high emigration in the late summer and autumn, whereas, as he points out, the high one for 1959 indicates that fewer birds may have emigrated, which agrees with the rather smaller irruption noted in western Europe and especially into the British Isles.

These results, valuable though they are, provide only a limited picture of the 1959 position, however, even for western Europe, and can throw little light on events in central Europe, where the irruption was on such a large scale, or in Fenno-Scandia. Dr. Paul G eroudet (*in litt.*) states that in Switzerland the exceptionally fine summer, following a mild winter and a very good seed crop in the autumn of 1958, led to very successful nesting for tits there in 1959, but for other areas a more general approach must be based on the strong evidence that climatic factors played a major part in the events leading to the high numbers in the autumn of 1957. The Meteorological Office has kindly analysed the monthly mean charts for various regions of Europe to find the departures from the average of temperature and precipitation. From these it is confirmed that in north-western Europe (including northern Germany, Holland, Belgium and northern France) the summer of 1959 was warmer and drier than average, and that central and southern Germany, Poland and Czechoslovakia showed the same tendency, although the warmer weather set in rather later in the season. In Fenno-Scandia (Finland, Sweden, Norway and Denmark) the summer was even more markedly warm, with less than average rainfall except in Norway. The winter of 1958-59 was both less cold and drier than average over all this area of Europe, except in Fenno-Scandia, which had a cold spell in December and January. In the British Isles the summer of 1959 was exceptionally good, but the figures in table 3 show that the preceding winter was rather below average, due mainly to a cold January, and was markedly more severe than that of 1956-57.

TIT MOVEMENTS IN EUROPE IN 1959 AND AFTER

Table 3. Differences from the 1921-50 averages of the monthly temperatures in England and Wales during the winters of 1956-59 (°Fahrenheit)

	1956-57	1957-58	1958-59
December	+2.3	0.0	+0.4
January	+2.5	-0.9	-3.7
February	+1.9	+1.2	+0.5
Average	+2.2	+0.1	-0.9

Thus it appears probable that in central Europe the high numbers of tits in the autumn of 1959 were due both to a mild winter, with the survival of large numbers to breed, and to a good summer, with high fledging success. Similar factors also affected north-west Europe, and here the figures for Holland in table 2 lend more detailed support. In northern Scandinavia, however, the effects of a good summer on breeding may have been offset to some extent by a less mild winter. In England and Wales, the fine summer was preceded by a winter rather colder than average, so that only in the case of the Great Tits at Marley Wood did the 1959 total of nesting birds approach the 1957 figure. The fine summer was apparently conducive to a high nesting success for both species in the Forest of Dean, but clutch sizes of Great Tits at Marley were low. As a result, the numbers of young in both woodland areas were probably somewhat (but not markedly) above the average, which may well account for the rather small movements of British tits in 1959.

Although the census results in tables 1 and 2 thus accord well with the tit irruption movements over large areas of Europe in the years 1955-59—as do those for 1948-54 in England and Wales (Lack 1958)—the changes in the populations shown for 1960-62 are rather puzzling. Presumably because of the mild winters in both 1959-60 and 1960-61, the numbers of nesting pairs of Great and Blue Tits in Marley continued to rise, reaching a record level in 1961, well above 1957 and 1959. In the Forest of Dean, however, numbers of nesting pairs of both species fell in 1960 and though they rose again in 1961 they, and the numbers of young fledging, remained below the peaks of 1957, though still above 1959. In Holland, the numbers of breeding pairs of Great Tits fell in 1960 and Blue Tits much less so, but both species, as in Marley, reached record levels in 1961. On the figures for Holland and Marley, therefore, a major irruption might have been expected for both Great and Blue Tits in 1961. Yet no very marked movements were reported in either Holland or the British Isles, although at Osterbo the largest passage of these two species ever recorded took place (Ulstrand 1962). Dr. Kluyver (*in litt.*) suggests that irruptions

are the consequence of high populations of tits only if these occur over a large area. The figures of breeding pairs and young in 1961 were below 1957 for both species, even in the Forest of Dean, only some 100 miles west of Marley Wood, and Dr. Kluyver suggests that tit numbers were also not particularly high over large areas of Europe to the north-east and east of Holland where the movements affecting that country originate. C. M. Perrins (*in litt.*) believes that, although the numbers of nesting pairs at Wytham were exceptionally high in 1961, the breeding season was a poor one and very few young were produced. In Germany also, tit broods seem to have been extremely unsuccessful in 1961 (Pfeifer 1962). The results therefore are apparently not so conflicting as might appear at first sight, but they illustrate the complexity of the problem and the desirability of having figures of both nesting pairs and breeding success over a wide area.

High numbers over a wide area are one important factor leading to these irruption movements, but food supply is also relevant and here there is far less information available. Ulfstrand (1962) has, however, made an extremely valuable and detailed study of the feeding habits of various tits in southern Sweden. He found that the Great Tit there bases its entire food economy in autumn and winter on beech mast when this available; that Blue Tits use it to a smaller extent, though it serves them as an easily accessible and highly nutritive reserve supply, and that Coal Tits are also temporarily attracted to it. In southern Sweden the years 1949, 1955, 1957 and 1959 were all marked by particularly poor crops of beech mast, and in three of these years (1949, 1957 and 1959) there were large tit irruption movements in Sweden, whilst in 1955 the ringing figures suggest a moderate movement at Falsterbo. However, Ulfstrand pointed out that these large movements involved tits from other parts of Sweden (and probably much of Fenno-Scandia) outside the beech-wood areas, and he concluded that the absence of beech-mast is not responsible for the initiation of such movements, but rather that they start as a response to increased population density, and that once the birds are on the move the extent of their wandering is strongly influenced by the food situation met on the way. Thus, if the tits from northern Sweden which have started to irrupt meet a rich mast supply in the south they stay in the beech woods; if not, they continue to move and are then recorded as irrupting at Falsterbo and elsewhere. There is no full information on food supplies elsewhere in Europe, but Dr. Paul G eroudet informs me that 1959 was a very poor autumn for fruits and berries in Switzerland, and in the Forest of Dean the crop of beech mast was poor in 1957, nil in 1958-60, very poor in 1961 and good in 1962 (C. R. Dick *in litt.*).

As in 1957, all the evidence from ringing recoveries and trapping where the birds could be aged suggests that a very high proportion of

juveniles was involved in the irruption movements. This is found also with many partial migrants as well as other irruption species and it may be that the younger birds have a stronger migratory urge, or, as Ulstrand suggested, that they are normally the socially and physiologically inferior birds which are forced to move out in times of overpopulation linked with food scarcity. The observational evidence in both 1957 and 1959 suggests that only a small proportion of the birds seen irrupting in autumn return in the following spring and that the proportion is higher in the case of the Great Tit than the two smaller species, which may imply that this is mainly due to mortality rather than birds staying on to breed in the areas they have invaded.

SUMMARY

(1) The irruption of Great, Blue and Coal Tits (*Parus major*, *caeruleus* and *ater*) to the British Isles in the autumn of 1959 was on a much smaller scale than in 1957. It was confined mainly to the south and east coasts of England, but a few Continental Great Tits occurred in Scotland. In north-west Europe (Belgium, Holland, Denmark and north-west Germany) the movements in some areas were on a larger scale, but generally still below 1957. In Norway, Sweden and Finland the numbers of Great and Blue Tits reached record levels, but Coal Tits were little involved. The first Great Tits were recorded in Iceland. In central Europe the numbers of all three species were higher than in 1957, with Coal Tits the most numerous in Switzerland; record numbers were reported in southern France. There are some indications of similar movements further east in Europe.

(2) The more numerous ringing recoveries supplement the observational evidence, and show more clearly the large numbers involved in central Europe, and their movement in some cases into southern and western France, northern Italy and Spain.

(3) The evidence so far indicates that three main regions in western and central Europe can be distinguished. In the first (Norway, Sweden and Finland) the irrupting tits rarely cross the sea, the movements started later in 1959, and, in contrast with the other two regions, irruptions of Coal Tits have not always coincided with those of Great and Blue Tits in recent years. Tits from the second region, the low-lying areas of north-western Europe, seem to prefer to avoid the mountainous areas, but many may make a sea-crossing, while those from the third region (central Europe) move through the Alps and other ranges in large numbers, but have not so far been shown to cross the sea. In the main the tits from these three regions winter in different areas—though there is a considerable area of overlap between western France and, to a lesser extent, in Spain—and the central European birds have started to irrupt earlier in 1959. In all regions, and in both 1957 and 1959, however, there is a tendency for Coal Tits (when involved) to irrupt first, followed by Blue and then Great.

(4) The evidence again suggests that an abnormally high population of tits at the breeding season was the main cause of the irruption. These high numbers appear to have been due in central and north-western Europe to the mild winter of 1958-59, leading to increased survival, followed by a good summer which resulted in high fledging success. In Fenno-Scandia and the British Isles the effects of the mild breeding season may have been mitigated to some extent by more severe conditions in the preceding winter. In Sweden, and possibly elsewhere, there was a shortage of some foods, especially beech mast, in the autumn of 1959, but

while this may have affected the extent of the movements it does not seem to have been responsible for their initiation.

(5) In most recent years a good correlation has been found to exist between the population figures of Great and Blue Tits in three census areas in England and Holland and the irruption movements of these species. In 1961, however, though numbers were high in these areas, and reached record levels in two of them, no large-scale movements developed in these countries. Possible reasons for this are discussed.

ACKNOWLEDGEMENTS

Again grateful thanks are due to the many people who helped in the enquiry, above all to the correspondents and organisers of ringing schemes in many European countries, whose names have been mentioned earlier and whose kindness and ready help alone make possible a survey of bird movements which ignore national boundaries. The British Trust for Ornithology once again made the ringing records in this country available, and Miss E. P. Leach supplied details of birds marked abroad and recovered here. I am also indebted to the following for information and help of various kinds: J. Allen, Dr. J. Ash, H. A. R. Cawkell, R. Chislett, R. P. Cordero, L. A. Cowci, P. J. Crowther, Miss A. H. Dodson, E. H. Gillham, D. F. Harl, P. F. Holmes, P. Hope Jones, Dr. D. Lack, F. Lancaster, W. I. Leckonby, A. T. Macmillan, J. F. Naylor, C. Ogston, Dr. C. M. Perrins, J. L. F. Parslow, R. A. Richardson, R. E. Scott, J. T. Sharrock, P. L. Simmonds, R. K. Smith, R. Stokoe, A. D. Townsen, D. I. M. Wallace, K. Williamson and I. D. Woodward.

REFERENCES

- CRAMP, S. (1960): 'The irruption of tits and other species in the London area 1957-58'. *London Bird Report*, 1958: 62-69.
- , PETTET, A., and SHARROCK, J. T. R. (1960): 'The irruption of tits in autumn 1957'. *Brit. Birds*, 53: 49-77, 99-117, 176-192.
- DE CROUSAZ, G. (1960): 'Activités de l'observatoire ornithologique alpin du col Bretolet en 1959'. *Nos Oiseaux*, 25: 169-194.
- FEENY, P. P. (1959): 'Autumn migration in Heligoland'. *Bird Migration*, 1: 153-161.
- HAFTHORN, S. (1950): 'Kjöttmeisa, *Parus m. major* L., som trekkfugl'. *Fauna*, Oslo 1950: 121-139.
- HOLGERSEN, H. (1961): 'Ringmerkingsoversikt 1959'. *Sterna*, 4: 177-220.
- (1961): 'Ringmerkingsoversikt 1960'. *Sterna*, 4: 297-334.
- HOPE JONES, P. (in MS.): 'The invasion of Blue, Great and Coal Tits into the Camargue in 1959'.
- KRONEISL-RUCNER, R. (1960): 'Bird-banding in 1957 and 1958'. *Larus*, 12-13: 7-14.
- LACK, D. (1954): *The Natural Regulation of Animal Numbers*. Oxford.
- (1958): 'A quantitative breeding study of British tits'. *Ardea*, 46: 91-100.
- LINKOLA, P. (1961): 'Zur kenntnis der wanderungen finnischer meisenvögel'. *Orn. Fenn.*, 38: 127-145.
- MOHR, R. (1960): 'Ringfunde der Blaumeise (*P. caeruleus*)'. *Auspicium*, 1: 103-110.
- PATKAI, I. (1960): 'Bird-banding of the Hungarian Institute of Ornithology in the years 1954-1957. 20th Report'. *Aquila*, 66: 135-200.

- DECK, A. C., and TAAPKEN, J. (1961): 'Bird ringing in the Netherlands, No. 44 (1957-59)'. *Limosa*, 34: 33-156.
- RIFFER, S. (1962): 'Grosses Steiben von Jungvögeln in der Brutsaison, 1961'. *Auscinia*, 35: 21-23.
- ND AHL, H. (1959): 'Die wanderungen der schwedischen Meisen'. *Bonn. Zool. Beitr.*, 10: 351-386.
- ODZEWSKI, W. (1960): 'Recoveries of ringed birds on Mediterranean islands'. *Av. Ital. Orn.*, 30: 1-77.
- RIFFERLI, A. (1959): 'Schweizerische ringfundmeldung für 1957 und 1958'. *Orn. Beob.*, 56: 157-177.
- (1962): 'Schweizerische ringfundmeldung für 1959 und 1960'. *Orn. Beob.*, 58: 166-196.
- STRAND, S. (1962): 'On the nonbreeding ecology and migratory movements of the Great Tit (*P. major*) and Blue Tit (*P. caeruleus*) in southern Sweden'. *Vår Fågel.*, Suppl. 3: 1-145.
- HEYEN, R. (1960): 'Résultats du baguement des oiseaux en Belgique (ex. 1959)'. *Le Gerfaut*, 50: 337-382.
- (1961): 'Résultats du baguement des oiseaux en Belgique (ex. 1960)'. *Le Gerfaut*, 51: 1-55.
- LIAMSON, K. (1959): 'Aspects of autumn migration in 1959'. *Bird Migration*, 147-152.

Studies of less familiar birds

123. Glaucous Gull

Photographs by W. Puchalski

(Plates 39-42)

EDITORIAL COMMENT with the photographs and paper by Kay (1977) on the characters of the Glaucous Gull (*Larus hyperboreus*) in Peter expressed the hope that pictures of adults on the breeding grounds would soon be available. In fact, however, those now published sixteen years later are the first to have been sent to us and they do not include any of the bird at the nest. Nevertheless, they illustrate rather strikingly the strength and power of this Arctic Gull (especially plate 42a) and its varied feeding habits (plates 39 and 42b). The distant shot of a group by a tundra pool (plate 41) shows how conspicuous, even at long range, are the white wings which this species shares with the Iceland Gull (*L. glaucoides*). The white tips to the pale grey primaries are also seen to advantage in the light study on plate 40. Plate 42b brings out the features of the plumages which are much paler than the corresponding plumages of other gulls except the Iceland and become progressively whiter until the fourth or fifth year. The *Handbook* emphasised the proportions of wings to tail as a means of separating Glaucous and Iceland Gulls. It was considered that

the wings of the Glaucous Gull scarcely reached the tip of the tail while those of the Iceland Gull extended well beyond. In fact, however, Kay (1947) pointed out that this largely depended upon the time of year. The Iceland Gull *is* relatively longer-winged, but Kay observed that only in winter do Glaucous Gulls' wings fall short of the tail because the primaries are moulted in autumn and are not fully grown before the end of the following February. He pointed out that first-winter Glaucous Gulls (which do not moult their primaries in autumn) have tips reaching well beyond the tail and he presumed this to be the case with adults in summer. Unfortunately none of these photographs is a side-on close-up, but a careful examination of plate 41 certainly shows the wings projecting and a similar impression is given by plate 42a. The most puzzling feature, however, is the timing of the moult, for while *The Handbook* states that there is a complete moult from July to November or December, and that only the body feathers are changed in March or April, Johnston (1961) found that Glaucous Gulls in arctic Alaska moulted their primaries from May onwards. For example, adults collected there in July (the month in which these photographs were taken in Spitsbergen) had six new inner primaries. Johnston also calculated that each primary did not take more than 14 days to replace. The only possible solution to this apparent contradiction seems to be that the outermost three or four primaries are not moulted until September or October and that they take much longer than the others to reach their full length.

Anyway, it is clear that wing length alone is not to be relied upon as a field character, and nor is size. Glaucous Gulls are usually considerably larger—near the size of Great Black-backed (*L. marinus*)—but Kay showed that a small female Glaucous Gull may be little larger than a Herring Gull (*L. argentatus*) and so very near to a large male Iceland Gull. The best distinctions, in fact, lie in the form of the head and bill. The Iceland Gull is markedly smaller even than the Herring Gull about the head and its bill is very much shorter and less heavy than the massive hooked dagger of the Glaucous Gull which shows well in these pictures. The immature Glaucous Gull has the added distinction that its bill is creamy-flesh for three-quarters of its length, with only the tip dark brown (plate 42b), while in the young Iceland Gull this dark colour extends back for at least half the length.

Mention of Alaska and Spitsbergen will already have shown that the Glaucous Gull has a wide range and its distribution is actually circum-polar. The southern limits of its breeding range roughly coincide with the Arctic Circle, except that it does not quite reach this latitude in Scandinavia and parts of Siberia, while it extends south of the Arctic Circle in Iceland, Greenland, Canada (including Newfoundland) and Alaska. In winter the species wanders as far south as the British

s (especially north Scotland to East Anglia, chiefly from mid-October to early April) and other coasts of the North Sea and southern Atlantic, also to the north-eastern United States, California and Japan; beyond these limits (roughly latitude 40°N to 50°N) stragglers occur very much more irregularly. At all times they are found mainly on the coast or in offshore waters and seldom inland but, for example, one or two (usually immatures) are recorded at the London reservoirs in winter and in parts of Scotland they frequent rubbish dumps some miles from the coast. Sometimes individuals return year after year to the same places in Britain and occasionally one will stay throughout the summer.

The Glaucous Gull's traditional victim is the Little Auk (*Plautus alle*). Two years ago we published a photograph, also by Mr. Puchalski, showing one with a dead Little Auk in its bill (*Brit. Birds*, 54: plate 47a). Indeed, nearly every colony of Little Auks in the Arctic has a dependent community of these gulls nesting near-by. Glaucous Gulls are able to catch Little Auks on the wing with comparative ease (Bateson 1961). They will also hover over the surface when one dives into the sea and swims under water, waiting to attack it as soon as it comes up (Larson 1919). They take their greatest toll, however, from recently hatched young birds (Lovenskiold 1954). They also destroy many eggs and young of other auks—especially Brünnich's Guillemot (*Uria lomvia*)—and of terns, ducks and geese. Plate 39 shows one in the act of swallowing the egg of an Eider (*Somateria mollissima*). Pennie and Andrew (1956) found them a considerable menace in the colonies of Pink-footed Geese (*Anser brachyrhynchus*) and Barnacle Geese (*Branta leucopsis*) in Spitsbergen. They also saw a Glaucous Gull attempt to take an egg of a Red-throated Diver (*Gavia stellata*) which, however, drove it off. Barnacle Geese nest mainly on rocky buttresses and ledges where they are safe from such predators as Arctic Foxes (*Lepus lagopus*), indeed from everything except Glaucous Gulls. On the other hand, Larson (1960) found the nest of a Pink-footed Goose eight to ten metres from the nearest Glaucous Gull nest at the edge of a colony of the latter. He concluded that, since Glaucous Gulls are capable of defending themselves against Arctic Foxes (Lovenskiold 1954) and since they begin breeding first, the goose must have built its nest deliberately there. Incidentally, while many authors state this species to be less fierce and rapacious, more sluggish and cowardly than the Great Black-backed Gull, Duffey and Sergeant (1950) recorded adults diving at gulls and striking them with their feet, and others (e.g. Paget and Duffey 1922) have observed them 'stooping' like terns, skuas and Great Black-backed Gulls. Perhaps the Glaucous Gull does not always do things its own way, however. Burton *et al.* (1960) recorded that

Glaucous Gulls were sometimes struck by Arctic Terns (*Sterna macrura*) and that one dead one at Kapp Linné, Spitsbergen, had apparently been killed by them.

The Handbook gives as the food of this species such varied items as carrion, blubber, excrement, birds and their young or eggs, fish, crabs, molluscs, starfish, worms, insects, seaweed, moss and berries. It is also a pirate, robbing Eiders and other birds of food. Duffey and Sergeant (1950) examined the contents of the stomachs of five Glaucous Gulls and these included remains of eggs, young birds and cephalopods. They added, 'Pellets showed that the food near the southern auk colonies was largely eggs and young birds, but in the north and west, where there were few auks, it was almost exclusively the crab *Hyas araneus*.' Burton *et al.* (1960) found that *Hyas* crabs made up 25% of the volume of the contents of twelve stomachs they examined; these otherwise contained 40% remains of young Arctic Terns, 15% echinoid plates and spines, 15% garbage and 5% fish.

Plate 42b shows an immature Glaucous Gull eating the corpse of an adult. This form of cannibalism must be accidental and probably rather unusual, since the number of dead Glaucous Gulls cannot be all that large in any one area, but (as happens with many other gulls) adults will regularly eat wandering chicks of their own kind. They are also said to encourage their young in the art of sucking eggs at a very early stage, sometimes when still in the nest (Fisher 1954); the adult breaks a hole in the egg and the chick leisurely helps itself. At a later stage, when they are deserted by their parents, the fledged young feed on crowberries (*Empetrum nigrum*).

I. J. FERGUSON-LEES

REFERENCES

- BATESON, P. P. G. (1961): 'Studies of less familiar birds: 112—Little Auk'. *Brit. Birds*, 54: 272-277.
- BENT, A. C. (1919): *Life Histories of North American Gulls and Terns*. United States National Museum Bulletin 113. Washington.
- BURTON, P. J. K., BLURTON-JONES, N. G., and PENNYCUICK, C. J. (1960): 'Bird notes from Vest-Spitsbergen in the summer of 1957'. *Sterna*, 4: 113-151.
- DUFFEY, E., and SERGEANT, D. E. (1950): 'Field notes on the birds of Bear Island'. *Ibis*, 92: 554-563.
- FISHER, J., and LOCKLEY, R. M. (1954): *Sea-Birds*. London.
- JOHNSTON, D. W. (1961): 'Timing of annual molt in the Glaucous Gulls of northern Alaska'. *Condor*, 63: 474-478.
- KAY, G. T. (1947): 'The Glaucous Gull in winter'. *Brit. Birds*, 40: 369-373.
- LARSON, S. (1960): 'Ornitologiska iakttagelser från Väst-Spitsbergen sommaren 1958'. *Vår Fågelvärld*, 19: 193-207.
- LOVENSKIOLD, H. L. (1954): *Studies on the Avifauna of Spitsbergen*. Skr. Norsk Polarinst. 103. Oslo.
- PAGET WILKES, A. H. (1922): 'On the breeding-habits of the Glaucous Gull as observed on Bear Island and in the Spitsbergen Archipelago'. *Brit. Birds*, 16: 2-8.
- PENNIE, I. D., and ANDREW, D. G. (1956): 'Bird notes from Spitsbergen, summer 1955'. *Sterna*, 2: 49-63.

Reviews

Collins Guide to Bird Watching. By R. S. R. Fitter. Collins, London, 1963. 254 pages; 112 black-and-white photographs; 11 line drawings by R. A. Richardson. 21s.

This book is designed as a complementary volume to the same author's *Pocket Guide to British Birds* (Collins, 1952). It is therefore rather surprising to find that almost half the space is devoted to a species by species account of the commoner British birds. These accounts largely consist of a summary of the identification features which are already given more fully—and sometimes more accurately—in the earlier book. For instance, both sexes of the Wigeon are now credited with conspicuous white wing-patches, and the duck Garganey is said to show the same blue-grey forewing as the drake. But generally speaking the text is reliably and well written.

The *Pocket Guide* was widely criticised because of the complications of its artificial system of classification under which the birds were divided into three groups (Land, Waterside and Water), with up to eight divisions in each group based solely on size. In the present book the same three initial groupings are preserved, but the subdivisions are based on 'roughly natural groupings', although their sequence is again largely artificial. This system works out reasonably well with the Land Birds, but with the Waterside and Water Birds the groupings become more and more unnatural, and it is hard to see how any grounds of practical convenience can justify, for instance, the grouping together of Coot, Moorhen and the phalaropes under the heading 'Surface feeders; narrow, pointed bill; short wings'. It is a very curious fallacy that the identification of birds—and still more a proper understanding of them, which is presumably the object of this book—should be made easier by deliberately obscuring and distorting their natural relationships.

The book commences with a 45-page summary of the techniques of bird-watching. This is soundly (if conventionally) written and one's only complaint is that it could usefully have been expanded. The beginner will, for example, find no helpful advice as to how he can put his new-found proficiency to constructive use. The final section is a useful topographical guide giving the noteworthy habitats, special reserves, societies and literature of every county in the British Isles. This is admirably up to date in its information, but it can be misleading. The inclusion of Strathy Bog in Sutherland as a reserve 'where birds are the primary or a significant interest' is a case in point—without it very mildly!

D. G. ANDREW

The Birds of Cheshire. By T. Hedley Bell. John Sherratt and Son, Altrincham, 1962. xii+244 pages; one colour, 35 black-and-white photographs; one map. 30s.

This book has as its main substance a systematic list of species of birds which have been recorded in the county of Cheshire. The list has been compiled almost entirely from previously published literature and what it does, in fact, is very briefly to collate and compare information contained in present-day periodic journals with that in the previous works of T. A. Coward, C. Oldham and others. This comparison often appears to reveal great changes in status through the years, and one feels that these might profitably have been discussed more fully.

Subsidiary chapters are headed 'History of Recording', 'Coverage by Recorders', 'Topography' and 'Summaries of Related Species'. The last-named, rather novel chapter is designed primarily for the beginner and describes briefly the distributions and habitats of widely related groups of birds within the county. Under 'Topography' the author has contented himself by referring the reader to the account given by T. A. Coward and C. Oldham in *The Vertebrate Fauna of Cheshire* (1910) and otherwise mentioning only a few areas which have changed considerably or developed ornithological interest in more recent years.

Unfortunately, one must draw attention to the fact that there are a number of inaccuracies and mis-statements which do much to detract from the authoritative value of this well conceived and nicely printed book.

R. J. RAINES

News and comment

Edited by Raymond Cordero

Growing toxics threat from sprays.—A growing proportion of the birds believed to have been poisoned by agricultural and horticultural chemicals and sent to the R.S.P.B. for analysis are garden birds. This trend was already evident in the year from September 1961 to August 1962, covered by the Joint Committee of the B.T.O. and R.S.P.B. in its recently published third report, when 119 incidents of mortality were recorded. The proportion of deaths due to seed dressings has declined as a result of the voluntary ban on their use, but deaths from sprays and garden pesticides are mounting. For the period since August 1962 the Joint Committee reports the sending in of over 160 bodies, the largest number ever. Toxic chemicals are no respecters of size, strength or specialised feeding, and casualties include nine species of birds of prey (with Barn Owl, Tawny Owl and Kestrel featuring most prominently), Great Crested Grebes and ducks (from a London reservoir), Heron, Woodpigeon, Blackbird (one of the commonest victims recently), Swallow, House Martin (fledglings), Greenfinch, Song Thrush, Starling, Pheasant and Partridge. Kent was the most commonly affected area as regards deaths from sprays. Some birds contained up to five different poisons, and most recent cases have included mercury. A dead Kite from Wales was found to contain 15 parts per million of

drin and, while it is not known whether this was sufficient to kill the bird, it is clear that even sub-lethal doses are capable of seriously reducing fertility. Meanwhile, the Minister of Public Buildings and Works has decided to withdraw use of persistent chlorinated hydrocarbons in the Royal Parks. The Ministry of Agriculture, Fisheries and Food, on the other hand, has just published a booklet, *Chemicals for the Gardener*, which purports to be a list of those which can be safely used without damage to wild life, but which includes, for example, aldrin, dieldrin, DDT and BHC, all known to scientists to be acutely and persistently poisonous to mammals and birds.

Work of the I.C.B.P.—We live in an age when abbreviations proliferate, but the meaning and importance of I.C.B.P. should be known and remembered by all who care for wild birds. The International Council for Bird Preservation was founded in 1922 by Dr. Gilbert Pearson, an American, and, in the forty or so years since, it has played an important role in the endless struggle to preserve the world's avifauna.

The 1962 report of the British Section (price 3s.) gives a good idea of the problems that together with the account of the 13th world conference of the I.C.B.P. conducted in it, makes interesting, yet at times sad reading, especially the information on the effects of toxic chemicals. In Israel, for instance, as a result of feeding on grain poisoned with thallium, some species of raptor, including the Black Kite, Common Buzzard and Egyptian Vulture, have been reduced to less than 10% of their former numbers.

As the long battle against oil pollution goes on and, happily, the intergovernmental conference last year could result in big increases in the size of the zones where oil is not to be discharged into the sea. These include the Baltic and the North Sea, and the destruction of thousands of birds every year, particularly Long-tailed Jaegers, has been a great cause for concern to the I.C.B.P. for many years. The campaign against oil pollution continues to be waged, but it is a costly business and further funds are needed for the struggle to reach the final goal of total prohibition of the discharge of waste oil into the sea. Readers who would like to make a contribution to this vital work should send donations to the Secretary of the British Ornithological Union, c/o British Museum (Natural History), Cromwell Road, London S.W.7. The I.C.B.P. also publishes a bulletin. The latest (price 15s. from the address above) was published in Japan, and includes the results of the 1958 international conference of the White Stork. Since 1934 the number of breeding pairs has been almost halved, and in the intervening years the species has disappeared from Sweden and Switzerland.

Tracking bird movements by artificial satellites.—In an article in *Natural History* (February 1963) Dwain W. Warner, Curator of Birds, University of Minnesota, outlines the possibilities that progress in electronics and space research may offer for the ornithologist. Tiny radio transmitters, which together with batteries weigh less than an ounce, have been placed on and in animals. American Ruffed Grouse are among creatures which have been located intermittently by portable receivers carried in the field. Changes in the signal have distinguished between a perched and a flying bird and analyses of signals have given measurements of the rate of respiration and wingbeats of a duck Mallard. Unfortunately, because radio waves do not curve, signals travelling along the ground are largely lost over any appreciable distance. However, a means of obtaining radio signals from numerous birds that may be moving over vast distances—such as Wandering Albatrosses or wandering penguins in Antarctica—is the artificial satellite, suggests Professor Warner. It could be instrumented to receive and relay to ground stations the

signals obtained from many transmitter-carrying animals in various parts of the world.

Oxford Fellowship for the Director of the E.G.I.—Dr. David Lack has been elected to a Professorial Fellowship at Trinity College Oxford, and thus joins the company of ornithological fellows which includes Drs. W. H. Thorpe and R. A. Hinde at Cambridge and Dr. N. Tinbergen at Oxford. Dr. Lack's important work as Director of the Edward Grey Institute for Ornithology at Oxford will continue as before.

A correction.—In 'News and comment' in March we inadvertently stated that in 1939 Ralph Chislett was elected president of the Yorkshire Naturalists' Trust. It should of course, have been the Yorkshire Naturalists' Union, which has been responsible for ornithology in Yorkshire since as far back as 1862. The Trust, which is a property-owning and conservationist body, was not formed until 1946.

Recent reports

By I. J. Ferguson-Lees

(These are largely unchecked reports, not authenticated records)

This summary is mainly concerned with the last fortnight of May and the first half of June, but it includes some observations from early May and to that extent overlaps with the previous one (*Brit. Birds*, 56: 231-232). It also completes the review of summer visitors begun there.

BLACK TERNS AND A PASSAGE OF SEA TERNS AND WADERS

I commented last month on the scarcity of vagrants from southern and south-eastern Europe up to the time of writing and on the absence of any large-scale movement of **Black Terns** (*Cblidonias niger*), both of which we have come in recent years to regard as regular features of mid-May. In fact, however, everything happened two or three weeks late at the very end of May and in the first few days of June.

Odd parties of **Black Terns** had passed through from late April onwards, mostly in coastal districts, but there was no suggestion of a real influx until 25th-27th May when they began to be noted in Northampton, Nottingham and other inland counties. At first these were groups of five or less, but by the 31st there were several reports of ten to twelve and east coast stations started to record the species regularly. The peak of the influx was clearly on 1st June when between one and two hundred were estimated at Diddington Reservoir (Huntingdonshire), and concentrations of up to 40 or 50 were seen then and during the next two days in various counties across the centre of England from Somerset to Leicester and Nottingham, east into East Anglia. There were still quite a few on the 4th and 5th, but after that the numbers rapidly dropped away. Nevertheless, stragglers continued to be reported for the next ten days or more and these included one as far west as Newborough (Anglesey) on the 8th and one as far north as Loch Spiggie (Shetland) on the 13th. It was not as large an influx as in some other recent years but still quite considerable.

As is often the case, the Black Terns were accompanied by a striking inland movement of sea terns, particularly **Common Terns** (*Sterna hirundo*). On this occasion the sea terns reached their peak a day or two after the Black Terns, but for example, as many as 55 were recorded at one locality in Nottinghamshire on 31st June. This period also saw more **Little Gulls** (*Larus minutus*), mainly on the east coast but including single birds in Nottingham, Glamorgan and Co. Wexford and

RECENT REPORTS

interesting passage of waders. Among these were **Ruffs** (*Philomachus pugnax*) **Spotted Redshanks** (*Tringa erythropus*) in full plumage and rather more **Woodpipers** (*Tringa glareola*) than are usual in spring, with odd ones even in such counties as Huntingdon, Northampton and Nottingham. In addition, there were several **Temminck's Stints** (*Caldiris temminckii*) on the east coast, **Kentish Snipe** (*Charadrius alexandrinus*) as far north as Norfolk and Nottingham, and a pair of **Avocets** (*Recurvirostra avosetta*) in several counties, with one even as far inland as Harrold (Bedfordshire) on 30th May.

SOUTH AND EAST EUROPEAN VAGRANTS

Incident with the onset of the Black Terns were such south and east European vagrants as a **Terck Sandpiper** (*Tringa terek*) at Pennington (Hampshire) on 25th May, a **Marsh Sandpiper** (*Tringa stagnatilis*) on Cowpen Marsh (Co. Durham) from 25th to the 29th, and a **Red-throated Pipit** (*Anthus cervinus*) at the same place on 26th (what was probably another Red-throated Pipit flew over calling at Spurn, Northumberland, on the same day). Then there was a male **Black-headed Bunting** (*Emberiza melanocephala*) on Bardsey (Caernarvonshire) on 28th May, a male **Collared Parrot** (*Muscicapa albicollis*) at Harray (Orkney) on the 30th, and **Great Grey Warblers** (*Acrocephalus arundinaceus*) at Dungeness (Kent) on 1st June and Marazion Marsh (Cornwall) from 6th to 8th June (also one at Sandwich Bay, Kent, on 14th May and one in Leicestershire from 17th May to at least 24th May). During this same period, Marazion Marsh also produced a **Black-winged Stilt** (*Himantopus himantopus*) on 6th and 7th June, and Dungeness what was either a **Greenish Warbler** or an **Arctic Warbler** (*Phylloscopus trochiloides* or *borealis*) on the 2nd and 3rd June, a **Red-footed Falcon** (*Falco tinnunculus*) from the 9th to the 22nd. Another **Red-footed Falcon** was seen at Studland (Dorset) on the 6th, a **Roller** (*Coracias coracias*) near Ainsdale (Lancashire) on the 6th and 7th, and a **Scarlet Grosbeak** (*Caprimulgus erythrinus*) on Skomer Island (Pembrokeshire) on the 12th and 13th. Other rarities at this time included single **Icterine Warblers** (*Hippolais icterina*) (scarcer in spring than autumn) on Fair Isle (Shetland) at the beginning of the week of May and at the new bird observatory at Holme (Norfolk) on 3rd and 4th June; and several **Golden Orioles** (*Oriolus oriolus*), among them a male in Leigh (Somerset) on 1st June and a female at Cape Clear (Co. Cork) on the 8th. **Goosanders** (*Upupa epops*) continued to be in evidence and, in addition to the expected sightings in south coast counties, were reported as far north as Norfolk, Bedfordshire (on 16th June), Nottingham and Co. Durham. Birds of prey were also on the coast at the end of May and the beginning of June: **Ospreys** (*Pandion haliaetus*) were seen in counties as widely scattered as Dorset, Norfolk and Yorkshire, while **Common Buzzards** (*Falco subbuteo*) turned up as far north as Flintshire and Yorkshire.

LATE WINTERERS AND SOME EARLY MAY OCCURRENCES

There were several late records of winter visitors. A **Redwing** (*Turdus iliacus*) at Great Yarmouth (Norfolk) on 6th June was followed by a **Firecrest** (*Regulus ignicapillus*) there on 8th to the 12th. Not far away a male **Brambling** (*Fringilla montifringilla*) was tape-recorded at Melton Constable (Norfolk) on the 17th. Earlier, there had been late **Whooper Swans** (*Cygnus cygnus*) as far south as Yorkshire and Northamptonshire in May, while a male **Lapland Bunting** (*Calcarius lapponicus*) appeared on Skomer Island (Pembrokeshire) on 25th May and what may have been the same bird was singing strongly on near-by Skokholm for several days in early June. There remain a few interesting occurrences from the first three weeks of May. A **Red-billed Sandpiper** (*Limicola falcinellus*) was seen at Duneruc Street (Co. Antrim), from 11th to 18th May. A **Purple Heron** (*Ardea purpurea*) at Blagdon Reservoir (Kent) on 5th May was followed by another at Blagdon Reservoir (Kent) from the 12th to the 14th. A drake **Green-winged Teal** (*Anas crecca*) was seen at Blagdon Reservoir (Kent) from the 12th to the 14th.

BRITISH BIRDS

carolinensis) was identified at Marazion Marsh (Cornwall) on 15th May (my previous summary mentioned two others in April), and a **Whiskered Tern** (*Chlidonias hybrida*) appeared at Spurn (Yorkshire) on 18th May and stayed until the next day. There have been odd **Nightingales** (*Luscinia megarhynchos*) in Ireland since the first record there in 1953, but the total is still very small and so one on Great Saltee (Co. Wexford) on 1st May is worthy of note. Finally, brief mention must be made of the **Sacred Ibis** (*Threskiornis aethiopica*) which found fame in the national press when it took up temporary residence at Diddington Reservoir (Huntingdonshire) from about 12th May to 5th June; there can be little doubt that it had escaped from captivity. It reappeared at Eye Brook Reservoir (Leicestershire) in late June.

ARRIVALS OF SUMMER VISITORS

(Concluded from page 232)

- Grasshopper Warbler** (*Locustella naevia*). First reported Devon 12th April and Kent and Caernarvon 17th; in several other counties in next ten days. Slightly late.
- Reed Warbler** (*Acrocephalus scirpaceus*). First reported Kent to Somerset 27th April. Normal.
- Sedge Warbler** (*Acrocephalus schoenobaenus*). First reported Kent 9th March (extremely early); appeared in Cornwall and several counties in SE England (as far north as Oxford and Cambridge) 10th-12th April; widespread by 21st-27th. Normal.
- Blackcap** (*Sylvia atricapilla*). First arrivals obscured by winterers; simultaneous reports in several counties from Kent and Sussex to Berkshire and Oxford 12th-14th April suggest a small influx then and there was a larger arrival (west to Cornwall and Co. Cork) about 24th-25th. Slightly late.
- Garden Warbler** (*Sylvia borin*). First reported Nottingham 16th April (also on Bardsey, Caernarvonshire), then in a number of counties north to Northumberland in next ten days. Normal.
- Whitethroat** (*Sylvia communis*). First reported Kent 23rd March, then in a number of counties as far north as Nottingham and Lincoln 11th-14th April and a big influx in last twelve days of month. Slightly late.
- Lesser Whitethroat** (*Sylvia curruca*). First reported Kent 20th April, a trickle in next few days and then an influx in SE about 28th-29th. North to Northumberland by 5th May. Late.
- Willow Warbler** (*Phylloscopus trochilus*). Few reports before 5th April when appeared simultaneously in several counties as far north as Nottingham; by 9th odd ones in many areas and a small influx about 14th-15th was followed by bigger numbers on 21st-22nd. Slightly late.
- Chiffchaff** (*Phylloscopus collybita*). First arrivals (surprisingly soon after the end of the severe weather) were summarised in *Brit. Birds*, 56: 119; did not apparently become widespread until about 12th April, almost five weeks later. First ones normal or even early, main populations late.
- Wood Warbler** (*Phylloscopus sibilatrix*). First reported Derby 13th April (early), but then only a scattering in other counties by end month.
- Spotted Flycatcher** (*Muscicapa striata*). Several April reports as far north as Northampton and Derby, more widespread in first week of May and main arrivals about 16th-20th. Normal.
- Pied Flycatcher** (*Muscicapa hypoleuca*). Reported in a dozen counties in last ten days April. Normal.
- Tree Pipit** (*Anthus trivialis*). First reported Northampton 11th April and then in several other counties in all parts in next twelve days. Normal.
- Yellow Wagtail** (*Motacilla flava*). Arrivals in many counties from Kent to Cambridge, Derby and Nottingham in second week April and larger influxes there and further north (also west to Cornwall) during 21st-25th. Slightly late.



Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions are sent to authors before publication.

After publication, 25 separates of papers are sent free to authors (two or more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital letters for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are as used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the English name. Subspecific names should not be used except where they are relevant to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and not '1963', except in tables where they may be abbreviated to '1st Jan.', 'Jan. 1st', or 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise involve much unnecessary work. These should take the following form:

PER, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

PERBY, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34.

As for other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in the style used in this issue. They must either fit into the width of a page, or be arranged to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this should be light blue or very pale grey. It is always most important to consider how the drawing will fit into the page. The neat insertion of lettering, numbers, etc., is perhaps the most difficult part of indian ink drawing and, unless he has had considerable experience of this kind of work, an author should seek the aid of a skilled draughtsman.

A PROVED AID FOR ORNITHOLOGISTS



attracts all garden birds

Swoop wild bird food is an excellent aid to bird study. Its balanced formula of ten different foods—each carefully tested for acceptance by granivorous, insectivorous and omnivorous birds—has been shown to attract no fewer than 34 different species, including Redwing, Goldcrest, Snow Bunting, Crossbill, and even Woodcock! Apart from its obvious use on the bird table, Swoop will be found invaluable as

bait for bird photography. Recommended by the R.S.P.B., Swoop is available at all grocers and pet shops. Price 1/11 per pack.

Swoop
BALANCED-FORMULA
WILD BIRD FOOD



British Birds

Principal Contents

Further notes on the spread of the Eider in Great Britain

J. H. Taverner

The identification of the larger pipits

Kenneth Williamson

Some studies of Richard's and Tawny Pipits

F. G. H. Allen and P. O. Swanberg

(with three plates)

Notes

Reviews

News and comment

Recent reports



26 AUG 1963
PURCHASED.

Three
Shillings



August
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

Photographic Editor

Eric Hosking

20 Crouch Hall Road

London, N.8

'News and Comment'

Raymond Cordero

Rohan Lodge, Wadhurst Park

Wadhurst, Sussex

Rarities Committee

D. D. Harber

1 Gorrington Road

Eastbourne, Sussex

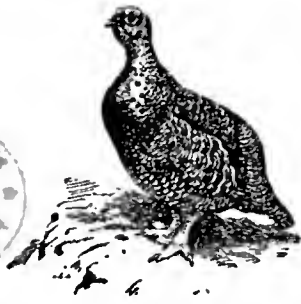
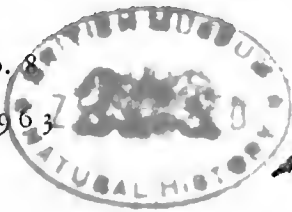
Contents of Volume 56, Number 8, August 1963

	Page
Further notes on the spread of the Eider in Great Britain. By J. H. Taverner	273
The identification of the larger pipits. By Kenneth Williamson	285
Some studies of Richard's and Tawny Pipits. Photographs by F. G. H. Allen and P. O. Swanberg (plates 43-45)	292
Notes:—	
Four Cattle Egrets in Sussex (B. A. E. Marr, Major W. W. A. Phillips and A. B. Sheldon)	293
The identification of the Slender-billed Curlew (K. D. Smith)	294
Rock Pipit anting (A. Barnard)	295
'Industrial' discoloration of House Sparrows and other birds (C. J. O. Harrison) (plate 46)	296
Reviews:—	
<i>Instructions to Young Ornithologists. IV. Sea-Birds.</i> By Mary E. Gillham. Reviewed by Dr. J. C. Coulson	297
<i>The Life of Birds.</i> By Joel Carl Welty. Reviewed by D. I. M. Wallace ..	299
<i>A Sailor's Guide to Ocean Birds: Atlantic and Mediterranean.</i> By Ted Stokes, with illustrations by Keith Shackleton. Reviewed by John H. Phillips	300
Requests for information:—	
Feeding habits of Common and Black-headed Gulls (J. D. R. Vernon) ..	301
Sex ratios of Tufted Ducks (Clive Hartley)	301
Birds of Ayrshire (G. A. Richards)	301
News and comment. Edited by Raymond Cordero	301
Recent reports. By I. J. Ferguson-Lees	302

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 61/62 Watling Street, London, E.C.4

British Birds

Vol. 56 No. 8
AUGUST 1963



Further notes on the spread of the Eider in Great Britain

By J. H. Taverner

INTRODUCTION

PREVIOUS PAPER (Taverner 1959) outlined the post-war spread of Eider (*Somateria mollissima*) in Great Britain. Certain additional facts are described here and the analysis is also extended to the end of the year 1960/61 (1960/61 refers to the period 1st July 1960-30th June 1961 and other terms correspond).

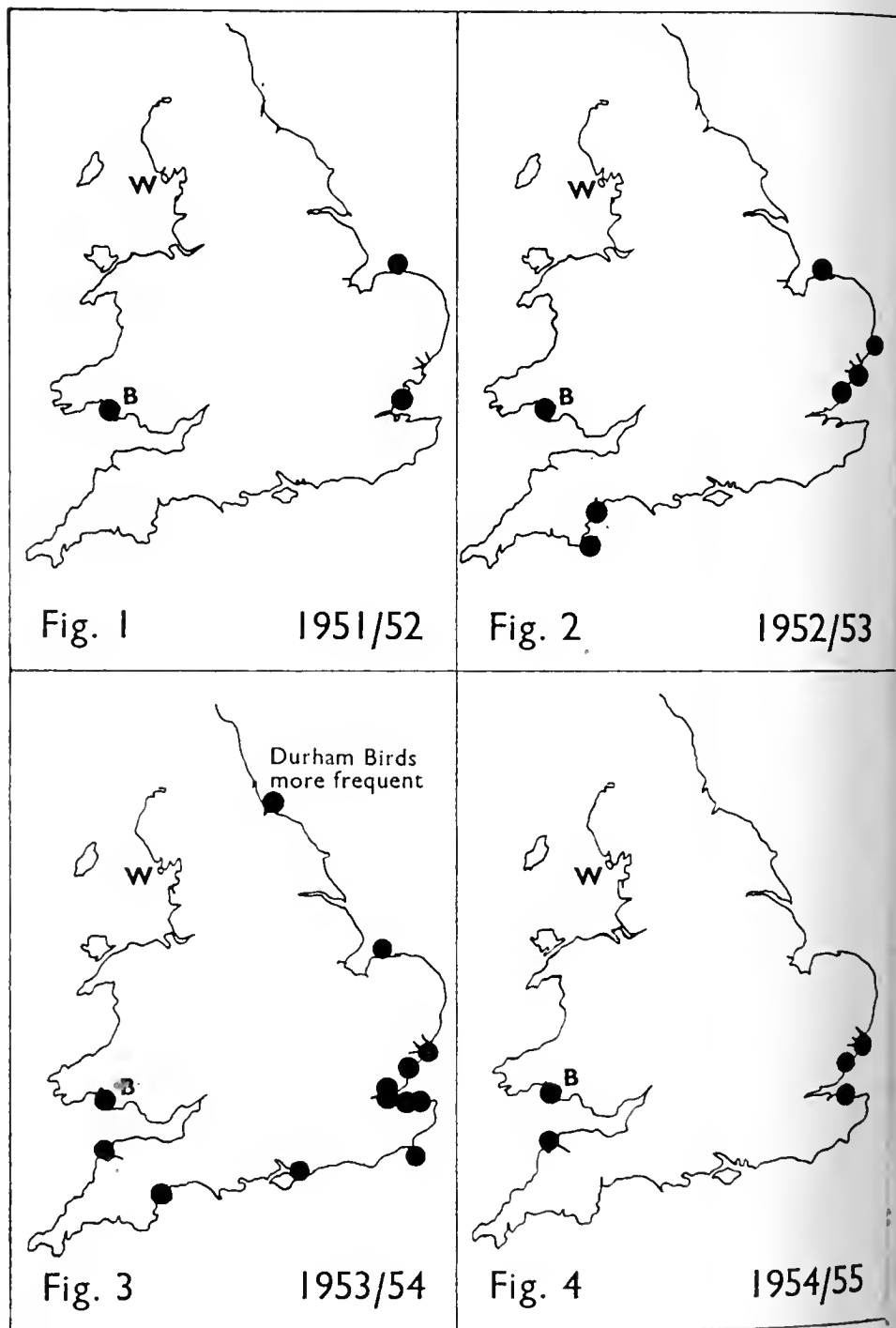
Figgs. 1 to 10 summarise the spread, away from the breeding grounds, up to 1960/61. They show localities where gatherings of ten or more Eiders were seen and a group which was present for only one day is marked in the same manner as one which stayed for several months. The vast majority of these gatherings were outside the breeding season, but a few refer to non-breeding birds in summer and in some cases there were groups which remained above ten throughout the winter of the following summer. Nevertheless, the maps give a very good picture of the spread other than the extension of the breeding range. In particular, they show its cyclical nature with 1954/55, 1956/57 and 1959/60 each having fewer Eiders than the previous year and yet the general trend being one of increasing numbers. The larger number of localities with flocks of ten or more in some years is a true reflection of a higher population in those years and is not the result of the birds' being more dispersed.

Fig. 11 shows the localities that the Eiders have frequented most during the spread, this again referring to birds outside the breeding season or to non-breeders in summer.

RECENT DEVELOPMENTS

The most important developments since my previous paper are as follows:

The yearly fluctuations in wintering numbers continue. Most



FIGS. 1-4. Localities in England and Wales where parties of ten or more Eider (*Somateria mollissima*) were recorded in areas away from the breeding grounds in each year from 1951/52 to 1954/55. Flocks off the Northumberland and Durham coasts and in the vicinity of Walney Island (W) are not shown; the species was also regular in the Burry estuary (B) before the spread started

SPREAD OF THE EIDER IN GREAT BRITAIN

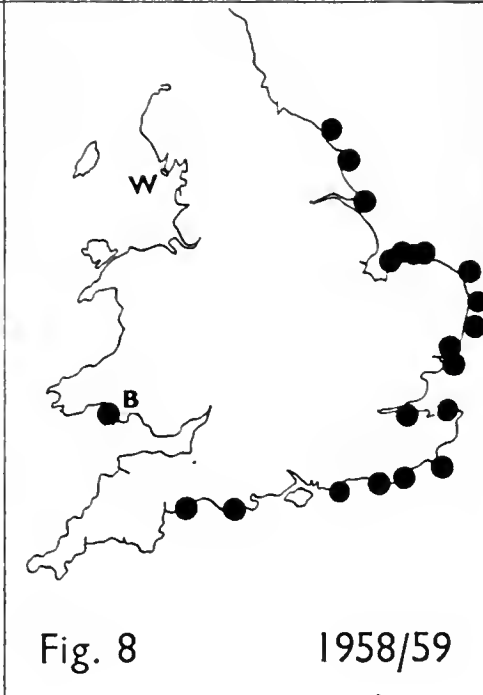
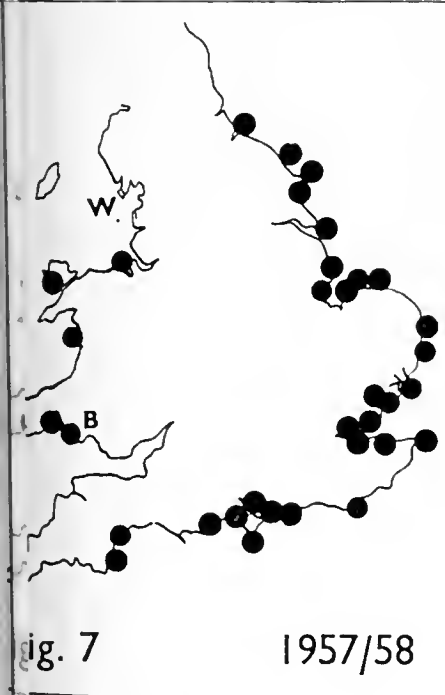
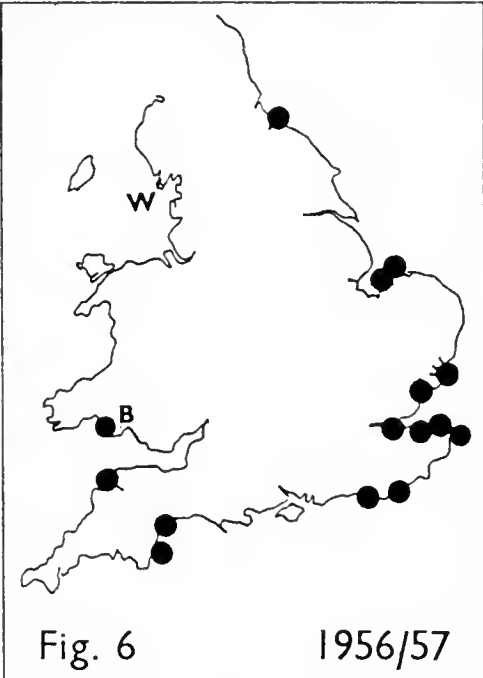
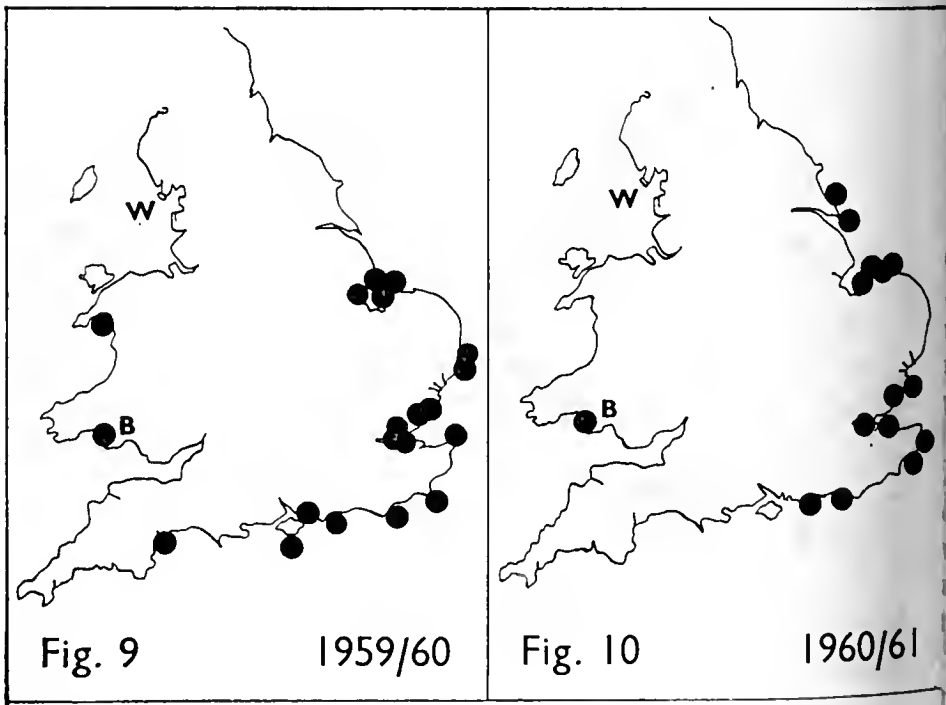


Fig. 5-8. Localities in England and Wales where parties of ten or more Eiders (*Haliaeetus mollissima*) were recorded in areas away from the breeding grounds in any year from 1955/56 to 1958/59. Flocks off the Northumberland and Durham coasts and in the vicinity of Walney Island (W) are not shown; the species was also regular in the Burry estuary (B) before the spread started

coastal counties in England reported low numbers in 1959 and 1960 following the peak year, 1957/58. The annual bird reports for Devon, Dorset, Essex, Norfolk and Yorkshire refer to this decline in one or both of these years and it is apparent from reading the reports of Hampshire (1959, 1960 and 1961), Sussex (1960 and 1961) and Kent (1959 and 1960) that numbers in those counties were low. Two extracts from county reports illustrate this point: 'Fewer than in any of the previous four years' (Dorset 1959) and 'Numbers far fewer than in previous winters, rarely exceeding twenty . . .' (Norfolk 1960).

However, there have been some notable exceptions to this decline. Eighty-five at Selsey Bill on 5th April 1959 and 150 off Westgate from 2nd to 7th May 1960 were the highest *ever* counts for Sussex and Kent respectively and, although these two places are much used by Eiders in winter, the dates suggest that they were birds returning to their breeding grounds: they were not the result of a steady build-up from winter and they could not have strayed from neighbouring coasts because the numbers involved were too high. But the most impressive numbers have come from the Wash, between Heacham and Hunstanton. Odd Eiders were recorded there late in 1959 and 100 were



FIGS. 9 and 10. Localities in England and Wales where parties of ten or more Eiders (*Somateria mollissima*) were recorded in areas away from the breeding grounds in each year from 1959/60 and 1960/61. Flocks off the Northumberland and Durham coasts and in the vicinity of Walney Island (W) are not shown; the species was also regular in the Burry estuary (B) before the spread started

present at the end of November. Then on 6th and 31st December 500 were seen and numbers approached this figure again early in 1960. These, at least 200 took up a fairly stationary position whilst the birds led a somewhat nomadic life, moving round the coast in the direction of Scolt or out into the middle of the Wash. After low totals in the winter of 1960-61, numbers between Heacham and Hunstanton were built up to high levels, 350 being present on 17th December 1961 (Norfolk data from S. Martin and the bird reports of Norfolk and Cambridge). The extent of the post-war spread of wintering Eiders can be appreciated when it is remembered that six at Hunstanton in 1954 was the largest gathering seen there up to that time.

An estimated 1,000 Eider eggs were stolen from the Farne Islands in 1959 and consequently there were only about 120 nests on the Inner Farne (the main area affected) compared with about 670, about 750 and 758 in the previous three years. The low numbers recorded during wintering in England during 1959/60 *could* be connected with this. In 1960, however, wardening started earlier so that few eggs were taken and an estimated 400-450 pairs nested on the Inner Farne. This is similar to the numbers breeding there in 1954 and 1955.

Another unfortunate feature reported from the Farne Islands in 1959-61 was the number of deserted nests, some of them probably the result of interference from visitors.

Almost daily observations on Eider flocks in the Firth of Clyde during 1958/59 are perhaps significant. Numbers varied between 100 and 200, and from October to March only adults were identified, sexes being roughly equal. Around April, the flock was strengthened by the arrival of numerous immature drakes (and possibly immature females) which had wintered elsewhere (N. F. Stewart). Similar examples could be cited for other parts of Scotland and it would be interesting to know if this pattern is widespread in breeding areas since it ties up with the fact that most of the birds seen during wintering in England have been immature.

At Walney Island, Eiders have been scarce from August to November, after which numbers have built up to high winter levels.

The Lancashire bird report for 1959 suggests that 'This annual drop in numbers surely indicates a moult migration analogous to that of the Shelduck?' In view of this, it is of interest to note that Eiders off Suffolk in 1958 were in full moult and flightless during July and August, apparently the first such records for that county. These reports suggest the possibility of unknown moulting movements.

The attention of observers is drawn to this point and any reports of moulting Eiders in July and August, or reports of absence from breeding grounds during these months, may prove very useful.

In my previous paper I suggested that overcrowding in the

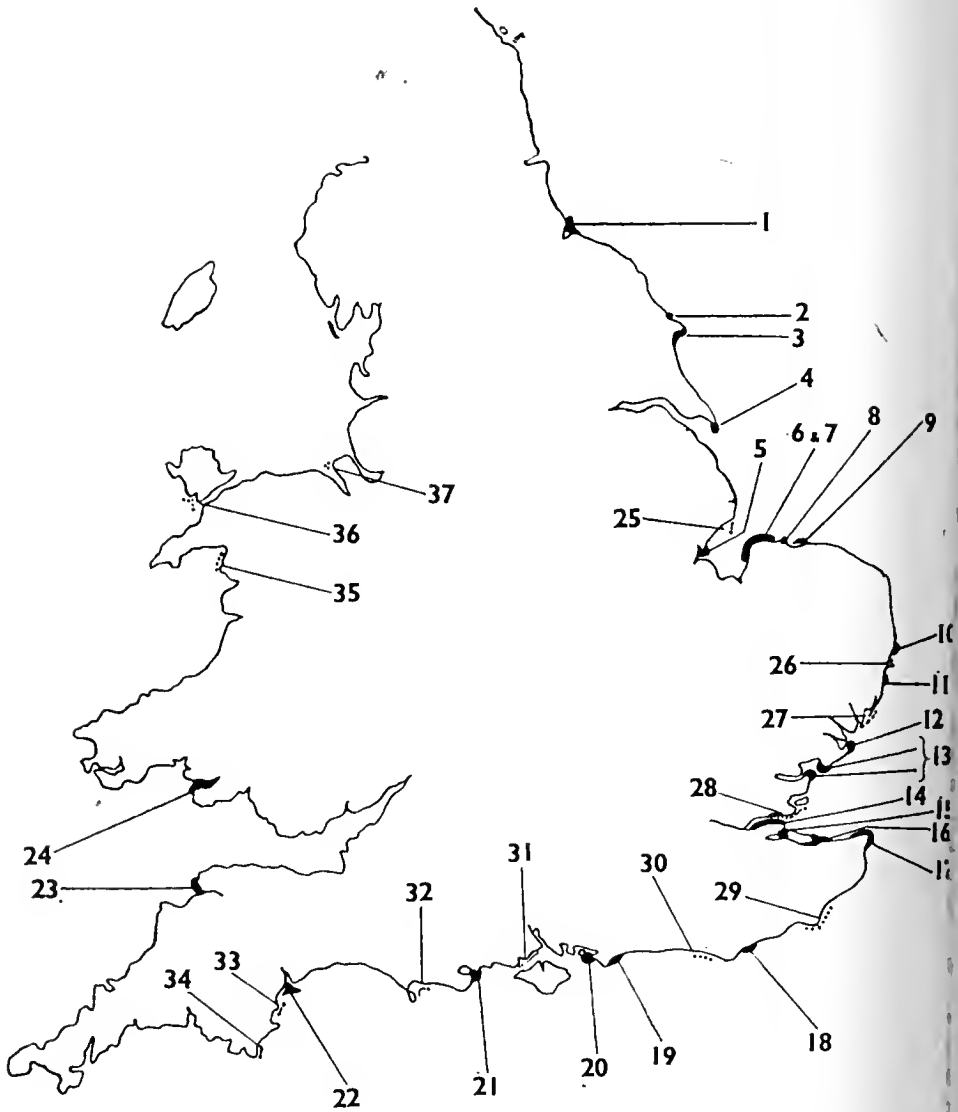


FIG. 11. Localities in England and Wales where parties of Eiders (*Somateria mollissima*) were most often recorded in areas away from the breeding grounds during the post-war spread up to 1960/61. The numbers correspond to those in the key opposite. Main localities are marked in black with numbers in the sea and secondary localities in dots with numbers on the land

Explanation of key. The numbers in brackets correspond to those on fig. 11. Those following each locality show the maximum gathering recorded there during the post-war spread up to 30th June 1961, together with the year and month involved; 'winter' indicates that the count was made from November to March inclusive. An asterisk shows that it is doubtful whether the locality is a main one. Note the importance of the Norfolk coast between Snettisham and Cley and the absence of any localities in Cornwall; note also that most of the main localities are on the east coast and most of the secondary ones on the south and west coasts

SPREAD OF THE EIDER IN GREAT BRITAIN

in localities

Teemouth and Redear	Yorkshire	34	(1957/58, January)
Filey Brigg	Yorkshire	30	(1957/58, November)
Flamborough Head and Bridlington	Yorkshire	74	(1957/58, March)
Spurn*	Yorkshire	45	(1958/59, November)
Witham Mouth/Boston Point	Lincolnshire	25	(1957/58, December)
Snettisham/Holme, especially Heacham/Hunstanton	Norfolk	500	(1959/60, December)
Braceaster/Titchwell/Thornham	Norfolk	250	(1958/59, February)
Wells	Norfolk	200	(1958 May/July)
Morston/Cley	Norfolk	140/160	(1958/59, February)
Lowestoft (Pakefield)	Norfolk	34	(1957/58, January)
Walberswick (Dunwich)	Suffolk	22	(1955/56, June)
The Naze	Essex	100+	(1957/58, April)
Blackwater/Colne (Bradwell, East Mersea, etc.)	Essex	60	(1959/60, April)
Kent side of Thames (down to Allhallows-on-Sea)	Kent	27	(1959/60, February)
Medway estuary	Kent	24	(1955/56, January)
Swale estuary (Seasalter/ Shellness)	Kent	38	(1953/54, December)
Thanet coast (Reculver/Ramsgate, maximum at Foreness)	Kent	150	(1959/60, May)
Langney Point	Sussex	70	(1957/58, January)
Pagham/Selsey Bill	Sussex	85	(1958/59, April)
Chichester Harbour (Black Point and East Head)	Sussex	35	(1957/58, Winter)
Poole Harbour mouth*	Dorset	30+	(1955/56, January)
Exe estuary	Devon	45	(1953/54, Winter)
Taw estuary*	Devon	11	(1953/54, July and 1956/57)
Burry estuary (no count given as Eiders regular before spread)			

secondary localities

Gibraltar Point	Lincolnshire	30	(1957/58, December)
Covehithe/Benaere/Easton	Suffolk	10	(1959/60, Winter)
Havergate/Minsmere/Shingle Street	Suffolk	20/25	(1955/56, May)
Essex side of Thames/Crouch (including Shoeburyness)	Essex	20	(1957/58, Winter)
Dungeness area (maximum was a flock moving east)	Kent	35	(1958/59, April)
Seaford/Cuekmere Haven	Sussex	10	(1958/59, May and 1960/61, November)
The Solent (Hurst, Pennington, Hill Head, etc.)	Hampshire	14	(1957/58, Winter)
Weymouth/Portland	Dorset	7	(1956/57, January/ March)
Forbay	Devon	14	(1957/58, Winter)
Start Point	Devon	18	(1952/53, Winter)
Harlech area	Merioneth	14	(1959/60, April)
Anglesey (Llanddwyn/Pen-y-pare)	Anglesey	23	(1957/58, February)
Hilbre Island	Cheshire	19	(1957/58, April)

fringe colonies on the Farnes and Friesian Islands might lead to a further extension of the breeding range and that coasts such as that of north Norfolk could well be colonised. No such extension has taken place as yet.

FOOD

In response to a question I sent the Wildfowl Trust, P. J. Olney replied that 'The amount of information on the English Eider's feeding habits is almost negligible.' The following data are all that I have been able to obtain as a result of a county-by-county enquiry:

YORKSHIRE.—The only food that Eiders at Teesmouth have been *seen* to take has been crabs (D. G. Bell).

NORFOLK.—At Cley various observers have watched Eiders feeding on crabs exactly as described by Picozzi (1958); at Brancaster in 1958, at high tides, the summer flock showed a preference for the harbour mouth where extensive mussel beds occur, and with the ebb the party would break up and move to Titchwell and Thornham, both well known for their crab beds (P. J. Mountford). Otherwise Eiders have fed regularly on nursery beds of young mussels (R. Chesney).

ESSEX.—Several Eiders were seen eating small green crabs at Southend-on-Sea (Picozzi 1958).

SUSSEX.—There are few records of the food, but in all cases where it has been identified it has consisted of crabs (D. D. Harber).

HAMPSHIRE.—Two were eating crabs off Titchfield Haven, again exactly as described by Picozzi (1958), and another was surfacing with mussels at the same place (G. H. Rees). At Needs Oar Point, Eiders have been seen surfacing with crabs on several occasions.

DEVON.—The food is small (soft) crabs which they bring to the surface before eating (F. R. Smith).

Several of the sites most favoured by Eiders in the spread have been over mussel beds, although there have been instances of flocks staying near such beds without showing any tendency to concentrate over them. Mussels are presumably swallowed under water in most cases, and even if brought to the surface, would be extremely difficult to identify except at very close quarters. Crabs are probably more difficult to manage than other food and, unless very small, have to be brought to the surface before being swallowed. Furthermore, they are more readily identifiable through binoculars, and at longer ranges. It is not surprising, therefore, that most sight records have concerned crabs. In fact, however, it seems evident that mussels and crabs must be of significance to the Eider's diet in England. Some of the observations quoted above seem to show that Picozzi's (1958) account of Eiders eating crabs describes the normal way in which the birds tackle this prey.

HABITAT

Table 1 divides into four categories of coastline the 24 main and 13 secondary localities in which parties of Eiders have most often been

away from the breeding grounds during the spread (see fig. 11). English and Welsh coastal counties are covered except those adjacent to the colonies of Walney and the Farne Islands (i.e. Cumberland, Lancashire, Northumberland and Durham). The Wash has been regarded as an estuary and the Thames is taken as ending around Weymouth Island, the Swale, Medway and Crouch being included as separate estuaries.

Table 1. Types of coastline used by Eiders (*Somateria mollissima*) away from the breeding grounds

Yorkshire) has been included as an estuary in the first column, though it might be regarded as a headland, and Gibraltar Point (Lincolnshire) has been treated as a headland in the second, though it might be taken as part of the Wash

	Main	Secondary
estuaries and natural harbours, other than very small ones	16	7
headlands, other than very small ones	6	4
coasts, unbroken by large estuaries or headlands	2	1
coasts, unbroken by large estuaries or headlands	0	1

Large estuaries and natural harbours

breeding colonies apart, estuaries and natural harbours are obviously the favourite habitats of Eiders in England and Wales. Almost every estuary of any size on the east and south coasts from the Tees to the Exe has been extensively used during the spread and, apart from a few scattered records, *all* post-war Eiders in Wales have occurred around estuaries (Harris 1959). Many small estuaries have been occupied in Ireland as well and it is significant that in the Thames area, one of the main localities, the Eiders have tended to concentrate on estuaries *in* the main estuary, such as the Medway and the Swale. Mostly, the birds prefer to lie just outside the mouth or just along the coast just inside the mouth, not usually coming right into the river or harbour itself. If an estuary is large enough, however, they will move well up the river (the Wash and the Thames estuary in its broadest sense, stretching to Foreness, are examples).

Estuaries carry vast quantities of decaying matter and this forms the principal food of mussels and some species of crab. Consequently, the birds tend to congregate at estuaries and the Eiders' choice of such habitats is thus readily explained.

Headlands

The headlands seem to be a popular second choice and in nearly all cases the Eiders have consistently used the lee side. Flocks in the English Channel have frequented the east sides of such headlands as the

South Devon peninsula (Start Point), Selsey Bill and Beachy Head (Langney Point). Along the east coast they have used the southern sides of headlands most often. At Filey Brigg in Yorkshire, for example, they always keep to the south side and thus the sheltered side: 'I have never seen them feeding in the more choppy water to the north side' (A. J. Wallis).

The more sheltered waters could well provide a richer food supply than the more exposed sides since the food of mussels and crabs would tend to accumulate in the lee of headlands, washed in by the back currents of tides, whereas it would be swept along unbroken coasts.

Low, unbroken coasts

The few localities in this group have been on stretches of coast where Eiders are denied large estuaries and headlands, as in central and north Suffolk (although even there small harbours or estuaries exist). Otherwise, these low coasts are usually avoided.

Unbroken, cliff coasts

The only locality in this category in table 1 is one of the least important and it appears to be the type of coast least liked by Eiders. In Sussex 'the area off the cliffs does not seem to be used as a feeding ground except at the estuaries' (D. D. Harber), and unbroken coasts in Cornwall, Devon and Dorset have recorded very few Eiders (though the larger estuaries and natural harbours have been used regularly). The same is true on the southern coast of the Isle of Wight, which is entirely cliff with no estuaries at all; apart from birds migrating past St. Catherine's Point, no Eiders have been seen along this coast since the spread began whereas the coast of mainland Hampshire not far away has had regular winter records in the last few years.

The water off cliff coasts may well be too deep usually for the birds to feed. Information on depths, which might be of importance, is at present too scanty to be of any use, however.

Nature of the sea bed

The composition of the sea bed seems to be of lesser importance to Eiders in their choice of feeding grounds. Enquiries to observers with detailed knowledge of the exact positions taken up by feeding Eiders in the various localities covered by table 1 have shown that they are found over sand, shingle and rock with comparable frequency. However, sometimes Eiders have shown a preference for rock patches where these occur in places that are basically sand or shingle. At Teesmouth, where sand and rock occur together, the rocks coincide significantly with the most regular haunts (D. G. Bell), whilst along the remainder of the Yorkshire coast the birds are most often seen

er rocky patches although by no means confined to them (R. Sissett). That rocks are far from essential, however, is shown by the number of main Eider localities where there are none at all. The shape of the coastline appears to be far more important to the species' choice of habitat than is the nature of the sea bed.

THE WORLD POSITION

The spread of the Eider in Britain must be viewed as a part of the world situation and not as an isolated movement. The species is increasing in winter and breeding ranges and its numbers in both Europe and North America. There has been an interesting change, for example, in the south of France where R. Lévêque reported in 1959 that, for about the previous four years, 'groups of Eiders have spent the whole year on the Camargue coast and I have seen up to 70 there together in May/June, among them a lot of beautiful males'. He went on to say that 'in neighbouring Switzerland some Eiders are reported now every year; in 1959 at least four are known to have occurred there between 17th and 20th September, two of them in the heart of the Alps' and it is interesting to note that one recovered at Zurich had been ringed at Ottenby, Sweden (*Orn. Beob.*, 50: 154). This suggests the possibility of Eiders moving on from Switzerland down the Rhone valley and thus reaching the Camargue, although why an essentially marine bird should undertake an overland crossing of Europe from Sweden to the Mediterranean is puzzling, to say the least. This isolated outpost in the Camargue, far from the species' normal range, is not unique; indeed it seems rather typical of the Eider during its spread. The Burry flock and the birds at the mouth of the Loire are parallel examples (Taverner 1959).

The position in the remaining seaboard countries of western Europe has been outlined elsewhere (Ringleben 1955). Briefly, breeding numbers have increased noticeably or abundantly in parts of Holland, Denmark, Norway, Sweden and the east Baltic. Breeding expansion along the German coast has been more modest. Nearly all increases have occurred in protected areas, whilst decreases in certain parts of Scandinavia are attributed to heavy hunting and egg-collecting. This supports the view that protection has been the main cause of the spread in Britain.

The increase in the eastern United States (Hebard 1960) is ascribed mainly to similar factors, but it is thought that protection there has not been the sole cause (F. V. Hebard *in litt.*). In my previous paper, I concluded that there must be some other unknown factor involved. The importance of protection in Scandinavia can be illustrated by extracts from two letters, however. F. Salomonsen wrote from Denmark: 'The increase . . . is without any doubt the result of protec-

tion on the breeding places' and H. Holgersen said of Norway: 'From October 1945 the Eider has been completely protected all over Norway and it shows a marked increase in numbers. This increase in Norway followed a serious decline in Eider numbers, partly due to heavy egg-collecting but mainly due to fishing for Lump-suckers (*Cyclopterus lumpus*) with nets set too close to Eider colonies. Large numbers of Eiders were drowned in these nets. The position was made worse by the German army of occupation which killed considerable numbers for food.'

The increase in Scandinavia and the recovery in Switzerland of an Eider ringed in Sweden (showing that the Swedish birds move considerable distances on occasions) raises the question of whether Eiders from this area might be responsible, or partly responsible, for the increase in winter numbers in Britain. In my first paper, I suggested that there was strong circumstantial evidence to show that the Friesian and Farne Islands were the source of our birds. Despite the Swedish recovery, my enquiries in Scandinavia serve to strengthen this view because their birds are, in the main, highly sedentary whereas the Dutch lose most of their Eiders in winter. Thus from Norway: 'The Eiders winter all along our coasts and there are no signs that they move very far away. We have not ringed very many, only about 700, and the recoveries are mostly recaptures at the ringing place' (H. Holgersen); and from Denmark: 'They are absolutely stationary, only the Baltic population moving in winter to the south-west Baltic, the Belts and southern Kattegat. This is all proved by extensive ringing. Naturally, in exceptionally cold weather with complete freeze-ups, the Eiders are forced to move to the North Sea, but nothing is known about their movements in such extraordinary situations' (F. Salomonson). It is possible that some of the birds moving to the North Sea in a freeze-up may reach our shores, but there is no evidence to prove this. Indeed, there is no evidence that Scandinavian Eiders ever reach Britain.

Finally, the Eider population in Iceland has shown no signs of increase or decrease for a long time and the birds appear to be completely sedentary (F. Gudmundsson).

ACKNOWLEDGEMENTS

I am greatly indebted to the following people for supplying information: J. Allen, Miss P. Barclay-Smith, H. R. Beecroft, D. G. Bell, T. E. Brice, the late A. J. Bull, H. O. Bunce, R. Chesney, R. Chislett, F. K. Cobb, R. K. Cornwallis, J. C. Follett, E. H. Gillham, F. E. Gladwell, Dr. F. Gudmundsson, D. D. Harber, E. Hardy, M. P. Harris, Dr. J. G. Harrison, F. V. Hebard, H. Holgersen, R. Hudson, R. Lévêque, S. Martin, M. F. Mörzer Bruijns, P. J. Mountford, P. J.

IDENTIFICATION OF THE LARGER PIPITS

Colney, G. A. Pyman, G. H. Rees, R. A. Richardson, Dr. F. Salomonson, F. R. Smith, K. G. Spencer, Miss J. M. Stainton, F. R. Stewart, I. F. Stewart, A. E. Vine and A. J. Wallis.

SUMMARY

(1) This paper follows a previous one in 1959 where the spread of the Eider (*Somateria mollissima*) in Britain was first described. The spread, away from the breeding grounds, is summarised in a series of maps and the most important developments since the first paper are outlined.

(2) The results are given of a county-by-county enquiry into food identified during the spread. The majority of the rather few records concerned crabs, but vessels have clearly played an important part.

(3) The types of habitat in which Eider gatherings have occurred most frequently are divided into four categories. Of these, estuaries and natural harbours and the most favoured and headlands are also used quite considerably. Unbroken coasts, especially with cliffs, appear not to be favoured unless nothing else is available.

(4) The spread in Britain is concurrent with a spread in other parts of the European and North American range. It is still considered that most of the Eiders in England and Wales originate from the Farne Islands and Holland, and it is shown that Scandinavia and Iceland are unlikely to contribute many of them.

REFERENCES

- HARRIS, M. P. (1959): 'The status of the Eider (*Somateria mollissima*) in Wales'. *Nature in Wales*, 5: 849-852.
- WARD, F. V. (1960): 'The spread of the Eider in America'. *Brit. Birds*, 53: 135-136.
- BOZZI, N. (1958): 'Eider's method of eating crabs'. *Brit. Birds*, 51: 308.
- GLEBEN, H. (1955): 'Die Eiderente (*Somateria mollissima*) als Gast und Brutvogel an der Deutschen Küste'. *Die Vogelwelt*, 76: 125-134.
- WERNER, J. H. (1959): 'The spread of the Eider in Great Britain'. *Brit. Birds*, 52: 245-258.

The identification of the larger pipits

By Kenneth Williamson

THE PROBLEMS OF THE EVERGREEN IN the identification of pipits require accurate discrimination between the two largest species occurring in Europe, the Tawny Pipit (*Anthus campestris*) and Richard's Pipit (*Anthus novaeseelandiae richardi*), and the present appraisal was prompted by a number of reports submitted to the Rarities Committee in recent years in which some confusion was apparent between the two. The possibility that a third species of similar size, Blyth's Pipit (*A. godlewskii*), should not be excluded from occasional occurrence in western Europe, tends to aggravate this problem.

DISTRIBUTION AND RACES

The Tawny Pipit breeds over the whole of Europe (except the British Isles and north-west France) from about 58°N southwards to the

Mediterranean basin, including North Africa, eastwards through Siberia to the Yenesei and Kirghiz Steppes, and in the Near East and northern Iran. Eastern birds tend to be greyer above and whiter below than those in the west; although eastern races *kastschenkoi* (Rivers Ob to Yenesei) and *griseus* (Tian Shan) have been proposed, they are unsatisfactory because the plumage variation is ecological and discontinuous. The greyness of occasional specimens reported in Britain is therefore no proof of affinity with eastern populations. Hall (1961) recognised *kastschenkoi* on the grounds of its smaller average wing and tail, but there is a considerable overlap with the typical race, as her measurements showed. Vaurie (1959) synonymised *kastschenkoi* with *campestris*, but unlike Hall supported *griseus* on the basis of the paler plumage.

In the Palearctic and Oriental regions Richard's Pipit occurs in several non-migratory forms which extend through India, Burma, Malaya and the archipelagoes of south-east Asia to Australia; and in several larger migratory forms which range across Siberia and the mountainous country of central Asia to China. (There are also a number of forms in Africa which are currently regarded as races of *A. novaeseelandiae*, but which in certain structural features seem closer to *A. godlewskii*.) The west Siberian race *richardi* is the darkest; paler races are *dauricus* in Transbaikalia and northern Mongolia, and the greyer and slightly larger *centralasiae* from the Tian Shan east to the Nan Shan in Tsinghai—which Hall considered doubtfully distinct from *richardi*. A somewhat smaller form, *sinensis*, darker above than *richardi* and more rufous below, occupies most of China, and a slightly larger and darker race *ussuriensis*, which Hall (but not Vaurie) considered recognisable, breeds in east Siberia.

Blyth's Pipit inhabits central Asia from Transbaikalia and eastern Manchuria southwards to Tibet and Assam, migrating to India, Ceylon, Burma, and Yunnan. There does not appear to be any geographical variation. It overlaps rather widely the range of *A. novaeseelandiae*, and although it has been considered a race of *A. campestris*, Hall and Vaurie were both of the opinion that as the colour and pattern are quite different, and intergrades between the two are unknown, it should be considered a distinct species. I am in full agreement with this view. Blyth's Pipit, in fact, is much more closely akin in plumage and structure to some of the African forms placed with *A. novaeseelandiae* than it is to any race of *A. campestris*.

DIFFERENCES IN THE FIELD

So far as I am aware, there is no certain way of distinguishing between *A. n. richardi* and Blyth's Pipit in the field, though I should expect each to have a characteristic 'jizz' due to differences in the shape and

of the bill and the proportions of tarsus and tail (see below). The shape and coloration are closely similar, and the slight differences in structure and the pattern of white in the tail seem too small to be appreciable except with the bird in the hand. I have been unable to find a comparative study of their call-notes: these may differ, but until more is known about them the use of voice in support of identification of Richard's Pipits must be treated with some reserve. *The Handbook* describes the note of Richard's as a loud, rapid, and harsh *r-r-rüüp* (given as *r-reep* by Peterson *et al.* 1954) and mentions a soft, double, chirp-like chirp, on the authority of W. E. Brooks; Peter Davis (*litt.*) says that the former is the only note he has heard uttered by Richard's Pipits at Fair Isle. The call-note of the Tawny is given as a loud, full *t-reep* recalling a Yellow Wagtail (*Motacilla flava*); but the normal note on autumn migration, according to Nisbet and Smout (1957), is a sparrow-like *chirrup* not unlike the call of Richard's Pipit. In its actions the Tawny Pipit recalls the Yellow Wagtail, running swiftly over the ground with a horizontal carriage, while Richard's is in a taller, more upright stance. Other features of the *adult* Tawny Pipit, in particular the dark, clear-cut markings on the median coverts, contrasting with the generally sandy-grey plumage, were brought out by Ferguson-Lees and Swanberg (1953).

Confusion between Richard's or Blyth's and *adult* Tawny Pipits is hardly possible, in fact, so different are they in plumage. Richard's and Blyth's Pipits are dark brown above, boldly streaked with blackish-brown on mantle and head; below, they are whitish with a suffusion and bold, dark spotting on the breast. The *adult* Tawny Pipit is a paler, sandier brown above, sometimes inclining to grey on the lower part of the mantle; the feather-centres are dark, and show only as an obscure blotching, except on the head, where the dark streaks are well-defined, and on the upper mantle in worn dress. A diagnostic group of dark, clear-cut spots on the median coverts has already been mentioned. The under-parts are creamy-buff with pale streaks on the sides of the breast, only rarely extending to the throat. There is, however, a danger of confusing *immature* Tawny Pipits with Richard's or Blyth's Pipits of any age, since young birds are not so distinctly streaked above and spotted on the breast. All three are much alike in size, and Tawny Pipits retaining a certain amount of juvenile plumage might easily pass for either of the other species in the field.

Most young Tawny Pipits have moulted into an adult-like first-year plumage by the time the first Richard's Pipits reach Britain (usually late September into October), but even as late as mid-October some have not completed this moult. In a recent examination of specimens at the British Museum (Natural History) I found that two out of

nine October Tawny Pipits from Europe are still largely in juvenile dress; while, looking farther afield, there are juvenile males from Egypt dated 21st and 31st October, and of these the least advanced towards first-winter plumage is the last. The same applies to the eastern populations: birds from wintering-grounds in the United Provinces of India at the same period are still only partially through the moult. In such individuals the worn, dark brown feathers of the juvenile plumage on head and mantle contrast with the new buff and grey-brown feathers, and the breast shows some spotting, so that similarity with Richard's and Blyth's Pipits is strong. Comparing such Tawny Pipits with October-November birds of the other two species, I see the latter pair as a rich, warm brown above, while the Tawny Pipits incline more to greyish-brown in ground-colour, and are less boldly streaked above and more sparsely spotted below.

As with some Tawny Pipits, some Richard's Pipits are late in assuming first-winter plumage, and the protracted nature of this change increases the risk of misidentification. Two Richard's Pipits dated 16th and 24th September (both from Heligoland) and one as late as 16th November (Lincolnshire) are only partially moulted; and although the general effect is of dark brown, not grey-brown, upper-parts, with thin whitish 'scallops' outlining the old feathers as in immature Tawny Pipits, the difference from young *campestris* is by no means strongly marked. As a matter of interest, the Lincolnshire example is the least forward of the three and still has very few of the warm-brown, dark-centred new feathers. The under-parts of both adults and young have a variable amount of buff—mainly on the breast, flanks and under tail-coverts—and are boldly streaked in a gorget across the upper breast, beneath a whitish chin and throat. Young Richard's in moult, August to December, have a pale greyish 'shawl' on the nape due to the fading and bleaching of the old feathers in this region (which apparently moults later than the mantle and crown), this 'shawl' contrasting well in skins with the darker brown, blackish-centred feathers of the upper mantle and crown. Although moulting Tawny Pipits show a similar effect, the contrast is not nearly so striking because the general tone of head and mantle plumage is greyer than in Richard's. This 'shawl-effect', coupled with the prominent breast-spotting, may be of use as a field-character in discriminating between examples still in change to first-winter plumage.

Perhaps the best field-character of Richard's *vis-à-vis* either Blyth's or Tawny Pipits is its strikingly long and robust bill. I found this unusually heavy bill the most outstanding character of Richard's Pipits on Fair Isle, and came to rely more on this feature than any other. Peter Davis (*in litt.*) confirms the usefulness of the long, stout bill and stout legs as field-characters, from experience of a dozen or so birds.



PLATE 43. Adult Tawny Pipit (*Anthus campestris*), Sweden, showing the generally
colouring, the narrow streaks only at the sides of the breast and the line of
ish squares formed by the dark centres and pale edges of the median coverts.
pare the hind-claw with plate 45 (pages 292 and 285-292) (photo: P. O. Swanberg)



PLATE 44. Above, adult Richard's Pipit (*Anthus novaeseelandiae*), Malaya, June 1953; note the long legs and tail and the quite heavily marked upper-parts (photo: L. G. H. Allen). Below, adult Tawny Pipit (*A. campestris*), Sweden, with its fairly uniform mantle and again the markings on the median coverts (photo: P. O. Svanberg)





Pl. 45. Adult Richard's Pipit (*Eremophila alpestris* L.), Malaya, June 1953; sparse but bold spots right across the breast and the very long hind-claw can be well seen, but this south-east Asian race lacks the heavy bill which marks the Iberian form (page 288); note the wing-moult (page 202) (photo: G. H. W.)



7 8 9 10 11 12 1



PLATE 46. Three female House Sparrows (*Passer domesticus*), one typical and the other two apparently melanistic but actually just discoloured; these birds are a blackish-grey with a browner tint above, but intensive washing showed the feathers to be normal underneath (pages 296-297) (photo: British Museum, Natural History)

and these features have appealed to other observers too (e.g. Nicholson 1956). Many reports claiming a Richard's Pipit do not mention its character; this might be due simply to uncritical observation or confusion with immature Tawny, but might also be due on rare occasions to confusion with *A. godlewskii*, in which the bill seems likely to be so prominent since it is as small as in *A. campestris*, which has a fine bill by comparison with Richard's.

DIFFERENCES IN THE HAND

Trapping and careful examination in the hand provide the most satisfactory means of identifying juvenile Tawny Pipits, and perhaps the only sure means of discriminating between Richard's and Blyth's Pipits of any age. There are no differences in wing-formula and of course must be had to measurements and the distribution of white on the tail.

Wing and tail measurements

Although the range of wing-length is much the same in the three species, *richardi* has a rather longer tail than the others, as shown by the following examples measured by me:

	No.	Wing ♂♀	Tail ♂♀
<i>A. campestris</i>	30	83-95 (99) mm.	65-75 (77) mm.
<i>A. godlewskii</i>	30	86-95 mm.	62-74 mm.
<i>A. richardi</i>	24	87-99 mm.	68-81 mm.

This raises the possibility that the wing/tail ratio may be a useful guide for the two most closely similar species. Calculating tail-length as a percentage of wing-length in 21 Richard's and 27 Blyth's, I found these ranges: Richard's, 75-88; Blyth's, 68-81. The most that can be said is that any example which gives a value in excess of 80 is probably Richard's, and below 75 is probably Blyth's. (For Tawny Pipits the wing/tail ratio was 75-83.)

Bill and tarsus measurements

As mentioned under the field-characters, Richard's Pipit has a stouter bill and longer tarsus than the other two species:

	No.	Bill ♂♀	Tarsus ♂♀
<i>A. campestris</i>	30	14-17 (18½) mm.	23-27 (29) mm.
<i>A. godlewskii</i>	29	14½-17 mm.	26-28 mm.
<i>A. richardi</i>	28	16-18½ mm.	29-33 mm.

The bill of Richard's is mostly 17-18½ mm. and of Blyth's and Tawny Pipits mostly 15-17 mm.; in the former it is decidedly broader and deeper

than in either of the other two, a difference which is obvious on close examination even though it is too fine for satisfactory measurement. There is practically no overlap between Blyth's and Richard's Pipits in the length of the tarsus, if the series measured provides a good criterion.

(c) *Hind-claw measurements*

The hind-claw is shortest in the Tawny Pipit, and much the longest in Richard's, Blyth's being intermediate with very little overlap:

	No.	Hind-claw ♂♀	Abnormal examples
<i>Anthus campestris</i>	29	7½-10½ mm.	7, 11 mm.
<i>A. godlewskii</i>	29	10½-14 mm.	
<i>A. n. richardi</i>	34	13½-19 mm.	12-13, 21-26 mm.

Occasional specimens of *richardi* have abnormally long hind-claws; in one from Heligoland, dated 22nd October 1909, they measured 22 and 25 mm., and a wintering bird from India gave 21 and 26 mm. Usually the Tawny Pipit has the hind-claw strongly curved (generally more arched than in *The Handbook* illustration, vol. 1, p. 189), while in Richard's it is often straighter and more lark-like; there is, however, considerable variation in shape.

(d) *Pattern of white in the outer tail-feathers*

In the distribution of white in the outermost and penultimate tail feathers, Tawny and Richard's Pipits are much alike; while Richard's and Blyth's show some differences. These have been fully discussed and illustrated by Hall (1957), and typical examples are shown in fig. 1 (also in Hall 1961: plate 60). It will be seen that Blyth's usually has a greater amount of white on the *inner* web of the outermost feather,

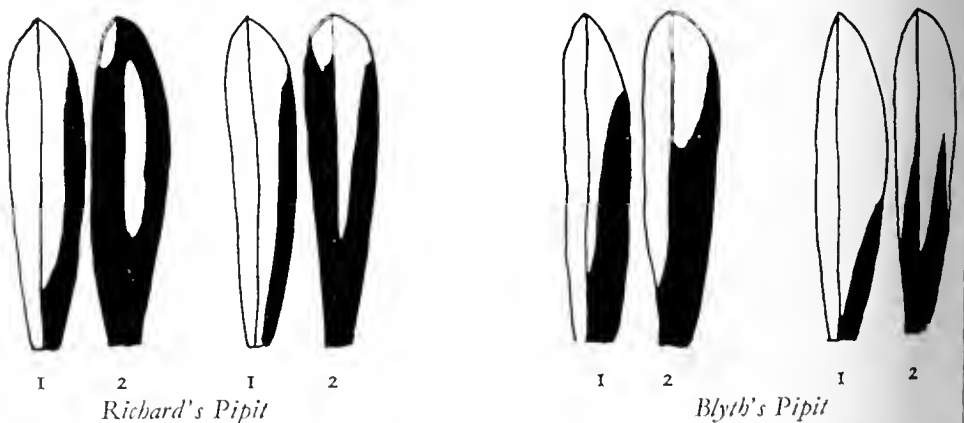


FIG. 1. Differences in the pattern of white on the outermost (1) and penultimate (2) tail-feathers of Richard's Pipit (*Anthus novaeseelandiae richardi*) and Blyth's Pipit (*A. godlewskii*). The white on the outer web of the penultimate feather in Richard's is usually confined to a small area near the tip and is generally much more extensive in Blyth's

While the white on the *outer* web of the penultimate feather is more extensive than in Richard's, in which it is often confined to a small area at the tip. The white on the *inner* web of the penultimate feather is in the form of a wedge tapering to a point close to the shaft from 10-30 mm. in from the tip in Blyth's Pipit, and more in the nature of a band running parallel to the shaft in Richard's and Tawny Pipits. However, I have seen an undoubted *richardi* from Heligoland, dated 17th September, in which the pattern of white on the penultimate feather was typical of Blyth's Pipit.

Needless to say, identification must be founded on a consideration of *all* the above characters, and not on an examination of one alone.

ACKNOWLEDGEMENTS

My thanks are due to Peter Davis, P. A. D. Hollom and Dr. I. C. T. Tibbet for helpful comments.

SUMMARY

(1) An outline is given of the distribution and racial forms of three large pipits, Tawny (*Anthus campestris*), Richard's (*A. novaeseelandiae richardi*), and Blyth's (*A. blythii*), which together present a problem in identification in western Europe.

(2) The adult Tawny Pipit is sufficiently distinct in plumage from both Richard's and Blyth's Pipits to present no difficulty, but Richard's and Blyth's at all ages are almost identical. The juvenile Tawny is not greatly dissimilar from the other two species and, owing to the protracted nature of the moult to first-winter plumage, there is a danger of confusion even into the late autumn. The Tawny has sometimes a distinctive *tzeeep* call-note reminiscent of Yellow Wagtail, but the usual call of migrants of this and Richard's Pipit is described as a sparrow-like *chirrup*. In the absence of a comparative study of their call-notes, the only character which may perhaps serve to distinguish Richard's from Blyth's Pipit in the field is the 'jizz' resulting from differences in the proportions of bill, tarsus and tail.

In field discrimination between juvenile Tawny and the other pipits, the following points should be looked for:

Richard's and Blyth's are a rich warm brown above, boldly streaked, and have under-parts heavily spotted, especially at the sides of the breast. Young may be more greyish-brown in ground-colour, less boldly streaked above, and are sparsely spotted below.

Young Richard's have a greyish 'shawl' on the nape contrasting with the dark brown, blackish-centred feathers of crown and mantle. In young Tawny, owing to the generally greyer tone of the upper-parts, there is no such contrast.

Richard's has a strikingly large, stout bill and long tarsi, which on a critical basis should distinguish it from either Tawny or Blyth's, which have finer bills and less disproportionate legs.

The Tawny has a 'horizontal', wagtail-like bearing, while Richard's (and Blyth's?) have a more 'upright' stance.

With the specimen in the hand, identification rests on an appraisal of several characters: (a) the wing/tail ratio, (b) bill and tarsus measurements, (c) length of claw, and (d) the pattern of white on the outer tail feathers.

REFERENCES

MASON-LEES, I. J., and SWANBERG, P. O. (1953): 'Studies of some species rarely photographed. LIII. Tawny Pipit'. *Brit. Birds*, 46: 439-440, plates 68-71.

- HALL, B. P. (1957): 'Notes on specific identification in the Tawny Pipit (*Anthus campestris*), Blyth's Pipit (*A. godlewskii*) and Richard's Pipit (*A. novaeseelandiae*) in Asia'. *J. Bombay Nat. Hist. Soc.*, 54 (3): 726-731.
- (1961): 'The taxonomy and identification of pipits (genus *Anthus*)'. *Bull. Brit. Mus. (Nat. Hist.)*, 7 (5): 245-289, plates 56-61.
- NICHOLSON, E. M. (1956): 'Richard's Pipit in Co. Donegal'. *Brit. Birds*, 49: 44-45.
- NISBET, I. C. T., and SMOUT, T. C. (1957): 'Field-notes on some birds of south-east Europe'. *Brit. Birds*, 50: 201-204.
- PETERSON, R. T., MOUNTFORT, G. R., and HOLLOW, P. A. D. (1954): *A Field Guide to the Birds of Britain and Europe*. London.
- VAURIE, C. (1959): *The Birds of the Palearctic Fauna*. London.
- WITHERBY, H. F., *et al.* (1940): *The Handbook of British Birds*. London. Vol. I.

Some studies of Richard's and Tawny Pipits

Photographs by F. G. H. Allen and P. O. Swanberg

(Plates 43-45)

PLATES 44A AND 45 show the south-east Asian race of Richard's Pipit (*Anthus novaeseelandiae malayensis*), which is smaller than the Siberian race (*A. n. richardi*) as well as being more rufous and even more boldly marked above. This is a non-migratory form inhabiting Malaysia and peninsular India south of 14°S. These two photographs are part of what we believe to be the only series ever obtained of this species in the field. In addition to the heavily streaked upper-parts, plate 44a shows the characteristic long tail and long stout tarsus, while the long lark-like hind-claw can be seen in plate 45. The broad superciliary and the sparse gorget of bold dark spots are also typical of the species, but the bill does not look strikingly large in this small race (see pages 288-290). It is also interesting to note in plate 45 that, though feeding young in the nest in June, the bird is half-way through its wing-moult, with the inner four primaries new and the next one growing, while the tail and body plumage appear to be old.

Plates 43 and 44b have been published before in this journal (*Brit. Birds*, 46: plates 71 and 68), but that was ten years ago and, as they are still by far the best photographs of the Tawny Pipit (*A. campestris*) we have seen, we feel more than justified in repeating them for comparison with those of Richard's Pipit. In particular, they emphasise the *adult* Tawny Pipit's generally uniform sandy colouring with obscurely marked upper-parts and just a few narrow streaks at the side of the breast (but see pages 287-288), and the striking pattern formed by the blackish centres to the pale-edged median coverts, as well as the long tail and broad superciliary which it shares with Richard's Pipit. Plate 43 shows the shorter hind-claw compared with Richard's and the more horizontal carriage (though still more upright than most of the smaller pipits).

K.W. and I.J.F.-L.

Notes

Four Cattle Egrets in Sussex.—Four Cattle Egrets (*Ardeola ibis*) were present in a field just north of Pagham Harbour, Sussex, from about 2 a.m. to 6 p.m. BST on 27th April 1962. The following day none could be found in that area, but one was observed at Lancing, Sussex, some 20 miles to the east. The day after that, 29th April, there was again one in the original area near Pagham.

The four were first seen on the 27th by John Fleming and Mr. and Mrs. H. R. Hatch, who informed W.W.A.P. He immediately went to the area and, from previous experience abroad, had no difficulty in identifying them. The birds remained in the same field until about 5 p.m. when Mrs. Hatch saw all four leave with some gulls and fly high to the south-west in the direction of Pagham Harbour.

Despite a thorough search by the three of us in the Pagham area on the 28th, the flock was not seen again. However, P. Elston had good views of a single Cattle Egret at Lancing that day, at ranges down to about 300 yards. He noted that it was about half as tall as a Heron (*Ardea cinerea*), with a yellow bill and dark legs. It had a short neck and looked almost round-shouldered as it stood amongst cattle. It had a light buff on top of its head and again on its shoulders and also showed a little buff on its breast. It appeared to be very nervous and flew with slow, Heron-like flaps.

Early on the morning of the 29th, W.W.A.P. was informed that the egret had reappeared in the Pagham area. He watched it for some time with B. Shergold and S. K. Reeves, before going down to Grey Bill to inform members of the Observatory. M. Bryant, M. J. Ward, R. M. Leaney, B.A.E.M., C. J. Mead, R. F. Porter, R. J. Wilson, A.B.S. and others then watched it feeding in close association with sheep and cattle for about an hour. The following detailed description was obtained:

Plumage gleaming white with suffused pinkish-buff areas. Crown and nape distinctly crested, the longest feathers hanging down over upper back; crown suffused at times) pinkish-buff; centre of mantle and lower back also pinkish-buff; plumes covering rump and upper tail at rest. Chin white, feathering extending below lower mandible for about one-third of bill length; suffused pinkish-buff patch on lower neck and upper breast. In flight a distinct pinkish-buff bar across greater wing-coverts. Bill thick, long and pointed, pale pinkish-yellow in colour; bare skin of lores yellowish; iris yellow; legs dark pinkish-grey, or pinkish-flesh; feet darker.

W.W.A.P. confirmed that the four on the 27th had all looked very similar, though two had shown more extensive and deeper-coloured patches of buff than the others. From their actions and this plumage

difference, he suggested that the party had probably consisted of two pairs. On the 29th the single bird was several times mobbed by Rooks (*Corvus frugilegus*) and other species, and it was thought possible that such mobbing might have been the cause of the apparent break-up of the party.

The single bird was reminiscent of a small Heron with long legs. The plumage appeared noticeably white from a distance, but closer views revealed some pinkish-buff. Compared with a Little Egret (*Egretta garzetta*), a species with which several of the observers were familiar, it was stockier and more compact, being distinctly smaller with a shorter and thicker neck. M.B. and W.W.A.P. had both had experience of Squacco Herons (*A. ralloides*) and confirmed it was not that species either. Its gait was usually slow and deliberate, but it made quick darts after insects, or when chased by sheep. On one occasion it settled on the back of a cow and started pecking at something. In flight it looked gleaming white, its neck was held back and formed a considerable bulge, its legs and feet projected beyond its tail, its wing-beats were slow, deep and steady—about the same speed as those of a Barn Owl (*Tyto alba*)—and its wing-tips appeared rounded, not fingered. When mobbed by Rooks it appeared somewhat larger than they and was capable of a surprising turn of speed. On one occasion it flew with neck outstretched.

None of the egrets was reported subsequently. These occurrences constitute the third British and first Sussex records.

B. A. E. MARR, W. W. A. PHILLIPS and A. B. SHELDON

The identification of the Slender-billed Curlew.—Probably few British ornithologists have seen a Slender-billed Curlew (*Numenius tenuirostris*), and published field notes must be hard to trace. Recent sight records in the British Isles have been claimed, I believe, but not accepted. These notes may therefore help in future cases.

On 27th January 1963 I watched three of these birds, sometimes in company with three Curlew (*N. arquata*) and sometimes alone, feeding in *Salicornia* and crops near the edge of the shore of the Mar Chica, east of Melilla, in north-eastern Morocco. On their own they were tame and permitted an approach to within thirty yards, but when with the other birds they flew at three times that distance. The following plumage description applies to one bird compared with a Curlew (here presumed to be *N. a. arquata* on range, and not the paler eastern race *orientalis*), but the others did not differ:

Much smaller and slimmer in body, probably comparable with a Whimbrel (*N. phaeopus*), but with a slightly longer bill than that species. Upper-parts chequered and streaked greyish-brown, but much paler and more uniform and lacking the heavy black striations of the Curlew. Crown finely streaked pale

brown, with almost a capped appearance, and a well indicated superciliary stripe. Rump shining white. Tail barred black and white. Chin to upper breast grey, with fine streaks of a darker colour; lower chest, sides of chest and flanks white, with a clear division between the grey and the white. Lower breast lightly and sides of chest and flanks profusely spotted (the flank spots were best seen in flight when the bird was close, but when it bent over to feed a few of them showed below the primaries; these medium-sized spots are usually described as heart-shaped, but at 30 yards' range through 10 × 40 binoculars they looked circular). Belly to under-tail coverts snowy white. Flight pattern similar, with the barred secondaries paler than the dark primaries and showing a fair amount of white. Bill dark, pale reddish-brown at base; legs (of all three) a nondescript dull colour, but perhaps mud-stained.

The general effect was much cleaner, brighter and more clear-cut than the duller, browner appearance of Curlews. In short, they were very Whimbrel-sized birds, uniformly marked above with no heavy mottlings, but with distinctive, medium-sized, circular-looking spots on the chest and flanks. In flight they were recognisable at once by the combination of the snowy whiteness of the under-parts and rump, the pale tail and the contrast between the pale secondaries and dark primaries.

Their feeding actions were deliberate, but their gait and general air were much brisker. At times they ran very fast through the vegetation like some smaller waders. Short unhurried flights were similar, but when alarmed they flew off at a tremendous pace, with incessant erratic swerves and sudden sideways dashes, one bird performing a complete roll in mid-air. The normal call was very similar to the *lee* of the Curlew, although shorter and without the guttural quality, but the presumed alarm note in flight was very different, something like *kew-ee* or *cue-ee*—sharper, much less drawn-out and unlike any note uttered by Curlews.

The bill is certainly slender, but in proportion. As in the case of the Slender-billed Gull (*Larus genei*), the name is inappropriate, for neither the shape nor the size of the bill is of any particular significance as a field character.

K. D. SMITH

Rock Pipit anting.—On 20th October 1962, at South Gare, Tees-side, Yorkshire, I watched a Rock Pipit (*Anthus spinoletta*) anting in an area of slag covered with a thin layer of sandy soil and turf. The bird was actually performing on an exposed lump of slag, under which it appeared to be a nest of ants. It adopted a typical anting posture and when it had no ant in its bill, it used only one ant at a time and stroked each ant for only one stroke of the underside of wing or tail, starting always from near the base of the feather to the tip. Each ant was afterwards eaten and so were many others which had not been eaten on the feathers. The stroking movement was not a fast

flicking action as described by K. E. L. Simmons (*Brit. Birds*, 50: 405), nor was the ant used the very second it was picked up.

The whole performance lasted about half an hour, with a short interval when I disturbed the bird to make sure that it was really using ants. When I disturbed it, it stayed within a radius of about ten yards, fluttering around and calling excitedly, and then returned to resume its activities immediately I was out of the way. Otherwise it showed very little fear and allowed me to approach to within six yards.

I did not collect any of the ants at the time, though I noted that two species seemed to be involved (one reddish-brown and the other more yellow). In May 1963, however, I returned to the spot and took a number of specimens. Through the kindness of G. R. Gradwell of the Hope Department of Entomology, Oxford, these were identified by Professor Varley as *Myrmica rugenodis* and *Lasius flavus*.

A. BARNARD

[This appears to be the first record of anting by a Rock Pipit and, in fact, there have been very few other observations of this behaviour by any of the Motacillidae. Instances of anting and anting behaviour by Meadow Pipits (*A. pratensis*) have been noted in Somerset and Cornwall (*Brit. Birds*, 53: 313-314), but otherwise the only record of anting by a member of this family concerned a captive Tree Pipit (*A. trivialis*) in Copenhagen Zoo (*Dansk. Orn. Foren. Tidsskr.*, 50: 267-298).—EDS.]

'Industrial' discoloration of House Sparrows and other birds.—In view of the information published in recent years concerning abnormal plumage of genetic origin, it seems advisable to bring to notice some cases of the extent to which superficial plumage discoloration can occur. In the British Museum (Natural History) are skins of two female House Sparrows (*Passer domesticus*) which seem to have previously been considered examples of melanism. One, collected at Kilnsea, Yorkshire, on 23rd December 1909, is a uniform dark blackish-grey on the underside and head, though a little paler on the throat; the dorsal surface is similar but modified by a browner tint, and the flight feathers and dark mantle streaks are black; the bill is a normal yellowish-horn, but the legs and feet appear darker than is usual. The other, collected at Surbiton, Surrey, and presented to the museum in the 1880s, has a similar dark grey suffusion over all the plumage, but is actually a little paler, with a lighter, more normal, brown tint on the margins of the wing-feathers; there is also a faint indication of the pale, post-orbital stripe; the soft parts are normal.

Selected feathers from these specimens were treated to repeated alternate washings in, firstly, detergent and hot water and, secondly, benzine. As a result, it was found that the feathers are really normally

oured. Plate 46 shows the two specimens compared with the skin of a typical female; the pale marks on the bellies of the two dark birds are due to feather disarrangement during the preparation of the skins and would not have been apparent in life.

While it is not surprising that two sparrows should be found to have discoloured plumage, this raises one or two noteworthy points. In particular, really intensive washing may be necessary to remove the discoloration. When feathers of a 'blue-grey' Magpie (*Pica pica*) were sent to the museum by E. Battersby of Church, Lancashire, they were washed before being dispatched. Although they appeared dusky when they were received, the treatment described above showed them actually to be white and it seemed likely that the bird was, in reality, mainly albinistic. This diagnosis was confirmed at its next visit. It seems quite possible that the 'industrial melanism' in House Sparrows found by Eric Hardy and Noble Rollin (quoted by H. S. Gage in *Brit. Birds*, 55: 216) may have been due to similar persistent discoloration which might not have responded to less thorough washing. Secondly, discoloration of this kind appears to be evenly distributed over the whole plumage and differs in this respect from the patchy effect usually produced by oiling. The plumage is glossy when in good condition, and there is nothing to suggest that the colour is not natural.

Such discoloration could appear in any species associating with soot and it would seem advisable to treat any abnormally dark individual with suspicion. A Great Spotted Woodpecker (*Dendrocopos major*) which I saw in a London park was so uniformly black that it compared favourably with neighbouring Starlings (*Sturnus vulgaris*), but closer inspection revealed faint indications of the normal white beneath the black of plumage; it had probably acquired its colour from the soot-stained tree-trunks, although here again there was dorsal as well as ventral discoloration. In the circumstances, it would seem advisable to regard records of melanism as scientifically acceptable only if the bird, or some of its feathers, can be thoroughly examined and found to determine whether the coloration is due to a superficial deposit or to internal pigmentation.

C. J. O. HARRISON

Reviews

Contributions to Young Ornithologists. IV. Sea-Birds. By Mary Gillham. Museum Press, London, 1963. 144 pages; 40 drawings and 17 photographic illustrations. 15s.

Mary Gillham is to be congratulated upon writing a most interesting and readable book which brings a great deal of information together

in a relatively small volume. It is directed mainly at the young, but will act as a source of information to all ornithologists who have an interest in sea-birds; few will fail to find new facts and ideas in it.

Far too many bird-watchers ask but one question of a bird—'What is it?' A well-trained mind should also ask 'How?' and 'Why?' This is essentially a how-and-why book, which deals with many problems of sea-bird biology in a clear and simple way: how do they survive although many have to drink sea-water, why do they nest in colonies, and how do they find their food? It is fitting that such a book should be directed towards the young ornithologist, for few other groups of young people have so insatiable a thirst for knowledge. It should also show the enquiring mind that there are still many problems of bird biology which remain to be solved and thereby stimulate the young (and perhaps the not so young) to attempt to answer some of them.

To the young the book has many advantages: it is cheap, it is exceptionally clearly written, and Dr. Gillham has taken considerable pains to make sure that the information will be understood by the teenager—a policy many other authors could take to heart. Above all, it brings much recent information from scientific journals to the attention of the general reader; the young hate to find that their source of information is out of date.

However, despite the high standard of the book, it is not without its limitations. While I found many of the 40 line-drawings most instructive, some are poorly reproduced and have lost detail; it might have been wiser to have sacrificed the 16 plates in the middle of the book to make room for these text-figures at an increased size. It is unfortunate that one of the worst drawings, that of the head of a Shag in winter and summer plumage, has been selected for the cover; the majority of the sketches are taken from photographs and have been accurately copied, but the proportions of the beak and the position of the crest of the Shag bears little resemblance to that species.

The author makes a mistake on page 53 where she states that 'White *conducts* heat less efficiently than darker colours'; presumably the word 'radiates' is intended in this context. Again, she rather naïvely implies that the Black-headed Gull and the Shag must have two moults in a year *because* they have different appearances in winter and summer. Further, I am somewhat at a loss to understand the comment about the Kittiwake 'winnowing' over the nest—that is, hovering in a vertical position in still air. Surely this is a mistake: the only time I have seen Kittiwakes hovering has been in a considerable updraught near a cliff face.

The map at the end, which marks sea-bird centres around the British Isles, is somewhat incomplete: many of the extensive sea-bird cliffs

Banffshire, Aberdeenshire and Kincardineshire are not shown, nor St. Abb's and St. Bees headlands which surely warrant mention. The index is also rather limited in scope: such terms as 'incubation period', 'hovering' and 'regurgitation' do not appear and are therefore difficult to trace in the text.

J. C. COULSON

The Life of Birds. By Joel Carl Welty. W. B. Saunders Company, Philadelphia and London, 1962. xxiii+546 pages; many maps, diagrams and photographs. 63s.

In this work the author has as his chief aim the simple and straightforward presentation of the basic facts of bird biology and he has clearly directed his book at the general student and not the specialist. Technical terms are not over-employed and most of the chapters can be read and digested without special preparation or a scientific dictionary. No less than 8,000 books and articles were searched to provide the original material and Mr. Welty acknowledges a particular debt to the work of Erwin Stresemann. A detailed bibliography of over 800 references shows the well-balanced range of his investigation.

The book opens with a chapter on birds as flying machines, followed by one dealing with avian relationships and including a systematic list in every known order of birds, living, extinct or fossil. The next six chapters contain various subjects related to the particular biology of birds and their organic functions; the following four are all concerned with general behaviour and voice. The thirteenth to seventeenth chapters cover territory, breeding biology and behaviour, and the eighteenth population dynamics. The last five contain contributions on avian ecology, the distribution of birds throughout the world, flight, migration, orientation and, finally, the origin and evolution of birds.

The treatment within chapters is generally to state a principle of bird biology or behaviour and then discuss it. Unsolved problems are not avoided and many thought-provoking examples from both field and experimental observations are given. The author provides summary paragraphs and helpful reading lists of more detailed work on each subject. The whole text is liberally illustrated by diagrams and drawings, many of them taken from papers previously published elsewhere, and there is no lack of photographs, with notable contributions by G. R. Austing and Eric Hosking.

One might wonder why, therefore, with such an aim, content, treatment and illustration, this book fails to present bird biology in an easily readable fashion. There are three main reasons. Firstly, the layout of the text in two vertical columns on each page, often irregularly broken by illustrations, is constantly distracting and,

particularly where the subject is by nature complicated, the forcing of one's eyes into such old-fashioned confines of print makes it difficult to follow the theme of the discussion. Secondly, while Mr. Welty openly admits and then attempts to justify his use of anthropomorphisms, their occurrence is erratic and, even to a general reader such as myself, his style is therefore worrying. Thirdly, the underlying treatment is that of an encyclopaedia rather than one of progressive discussion. There are other minor irritations, poor reproduction of the photographs and bird drawings below current British standards being the most harmful to the book's appearance.

I had never attempted to read a complete treatment of bird biology before this book and most amateur part-time ornithologists run the risk of playing the role of Autolycus within their subject. While I found something of real interest on practically every page, it does not remove this risk. It is a pity that the poor presentation militates so much against the author's industry in research.

D. I. M. WALLACE

A Sailor's Guide to Ocean Birds: Atlantic and Mediterranean. By Ted Stokes, with illustrations by Keith Shackleton. Bosun Books, No. 18. Adlard Coles, London, 1963. 64 pages; 18 illustrations. 6s.

The identification of sea-birds is difficult: little work has been done away from the breeding-grounds, and what information there is has tended to remain in journals or in private notes. This little book attempts to provide a guide for sailors: with its aid it should certainly be possible for anyone to put a name to any sea-bird seen over the Atlantic or Mediterranean, though I have considerable doubts whether the name will, in fact, be correct.

There are three sections, of which the first is an identification key, the second is descriptive, and the last is merely a species list. The key is based on (1) size, (2) plumage and (3) locality, an arrangement which seems fundamentally unsound. Size is a most difficult criterion, especially at sea, where ranges are not easy to estimate, and where there are unlikely to be familiar objects or birds present to set the scale. Further, Mr. Stokes's geographical areas seem to be completely arbitrary. Why not use V. C. Wynne-Edwards's zones with divisions for North and South Atlantic, east and west coasts? The descriptive section is also very deficient in those characteristic details which clinch identification, and makes no mention of the many pitfalls and difficulties for the unwary. Its treatment of species not found regularly around Britain is exceedingly cursory.

Identification of sea-birds at sea necessarily depends largely on silhouette and mode of flight, with the distribution of light and dark

image taking third place, since conditions of observation (poor light, unsteady watching point, and brief time for observation owing to low vantage point and wave action) frequently preclude the noting of detail. Mr. Stokes would have done better to help his readers to make the initial division into families, aided by sketches of flight silhouettes. Unqualified praise must, however, go to Mr. Shackleton for an excellent series of illustrations which give a good idea of relative sizes (though he might do well to follow Roger Tory Peterson in marking diagnostic features with arrows).

This is not a book for the bird-watcher experienced on land, who has to turn his attention to sea-birds, unless he buys it merely for the pictures. It should provide considerable amusement, however, to the non-ornithologist sailor who wants to attempt to sort out the birds he sees; which was, I think, Mr. Stokes's original intention.

JOHN H. PHILLIPS

Requests for information

Feeding habits of Common and Black-headed Gulls.—As part of a detailed survey being carried out on the distribution of Common and Black-headed Gulls (*Larus canus* and *ridibundus*), information on the feeding areas of these two species is required for a further period from August 1963 to April 1964. Estimates of flock sizes would be most welcome from as many areas as possible, together with locality, grid reference, height above sea level, time of observation and a brief description of the feeding area in each case (e.g. sand or mud shore, grass, cereal, ploughed field, rubbish tip, etc.). Accurate counts are not essential, but proportions of the two species in mixed flocks are required. For further details and questionnaire, please write to J. D. R. Vernon, 22 St. David's Road, Thornbury, Bristol.

Sex ratios of Tufted Ducks.—An enquiry into the sex ratios of Tufted Ducks (*Aythya fuligula*) in Britain and Ireland is being carried out from 1st September 1963 to 31st July 1964. Counts, no matter how small, are requested from all areas—in any case simply the date, locality, grid reference, numbers of males and females, and (if known) whether the species nests in the immediate vicinity. These details should be sent to Clive Hartley, 15 Casserley Road, Colne, Lancashire.

Birds of Ayrshire.—Information is required for a proposed check-list of the birds of Ayrshire. Readers are asked to send any unpublished records for that county to G. F. Richards, 29 Fullarton Road, Prestwick, Ayrshire.

News and comment

Edited by Raymond Cordero

This publication's special number on birds of prey.—The Dutch have always been in the vanguard of bird protection in Europe and they are reacting quickly and effectively to the appalling threat to birds of prey now arising from toxic chemicals and the effects of illegal shooting on reduced populations. For instance, as a

direct result of the attendance at the Cambridge Birds of Prey Conference in March of its energetic secretary, Mr. Ko Zweeres, the Nederlandse Vereniging tot Bescherming van Vogels (roughly the Dutch equivalent of the R.S.P.B.) has devoted almost the entire June issue of its journal *Het Vogeljaar* to the problem of the decrease in birds of prey. It contains quite a full account of the Cambridge meeting; a report by H. J. Slijper, the Dutch falconer, on an enquiry into the status of the Goshawk in the Netherlands; a summary of an article by Dr. M. F. Mörzer Bruijns on severe poisoning in the Netherlands in the spring of 1960, when at least 27,000 birds (possibly as many as 200,000) of 55 species were killed; and a long review of Rachel Carson's *Silent Spring*.

The issue also contains estimates, made by R.I.V.O.N. (State Research Institute), of the numbers of breeding pairs in 1962. These include: Sparrowhawk, 250-350 pairs (but now considered to be far less); Goshawk, 40-80 pairs (against 125-140 pairs between 1945 and 1958, and now thought to be less than 20); and Marsh Harrier, 150-200 pairs (against upwards of 250 on a rough estimate in 1960).

International conference on birds of prey.—The size and urgency of the menace to birds of prey point the need for an approach broader than a purely national one, and therefore it is good news to learn of the proposed international conference on birds of prey (including owls) at Caen, France, from 10th to 14th April 1964. The meeting, jointly sponsored by the International Council for Bird Preservation and the Conseil International de la Chasse, will be on similar lines to the successful Cambridge conference, with ornithological, sporting and falconry interests all being invited to attend.

Fair Isle warden's new post.—Peter Davis, perhaps the most 'travelled' of British bird observatory wardens—Lundy 1951-54, Skokholm 1954-57, Fair Isle 1957-63—will be joining the staff of the British Trust for Ornithology towards the end of this season.

Publications news.—The next issue of the B.T.O.'s *Bird Migration*, which will contain an analysis of movements in the spring of 1963, is to be the last. In future, migration analyses will form a twice-yearly, separate section of the Trust's main journal, *Bird Study*, while general papers on migration will also appear in the body of that publication.

Starting in January 1964, the journal of the Royal Society for the Protection of Birds, *Bird Notes*, will appear six times a year instead of four.

Recent reports

By I. J. Ferguson-Lees

(These are largely unchecked reports, not authenticated records)

This summary is mainly concerned with the last fortnight of June and the first three weeks of July, a period which produces the first trickle of autumn migrants.

SHEARWATERS, HERONS AND DUCKS

It may be remembered that in August 1962 there was an exceptional passage of **Cory's Shearwaters** (*Procellaria diomedea*) off Cape Clear Island (Co. Cork), no less than 157 being counted in a space of 140 minutes during a time when there were also a few **Great Shearwaters** (*P. gravis*) and while **Manx Shearwaters** (*P. puffinus*) were passing at something over 3,000 an hour (*Brit. Birds*, 56: 189-190). These figures

e completely eclipsed at the same place on 14th July this year, however, when en hours 20,000 **Manx Shearwaters** were estimated and with them were no than 200 **Cory's** and 500 **Great Shearwaters**, as well as one **Sooty Shearwater** (*Myristicivora*) and 1,800 **Fulmars** (*Fulmarus glacialis*); film record was obtained of each species. Further evidence of unusual movements of oceanic birds at that time was provided by the identification of an **albatross** (*Diomedea* sp.) off Bardsey Island (Merionethshire) the following day, 15th July.

A **Purple Heron** (*Ardea purpurea*) stayed at Minsmere (Suffolk) from late June into July, a **Night Heron** (*Nycticorax nycticorax*) was seen in Huntingdonshire on 10th July and records of **Spoonbills** (*Platalea leucorodia*) included two in Lancashire on the 9th to the 15th (this species is not often recorded away from the east and south coasts). The **Sacred Ibis** (*Threskiornis aethiopica*) reported in Huntingdonshire and Leicestershire (*Brit. Birds*, 56: 272) appeared at Burton Latimer (Northamptonshire) from 9th to 11th July and then returned to Diddington Reservoir (Huntingdonshire) on the 26th and 27th. Out-of-season ducks included a drake **Goldeneye** (*Myristicivora clangula*) at Lincoln on 29th and 30th June and an immature **Smew** (*Mergus albellus*) at Sunderland (Co. Durham) from 1st to at least 15th July.

WADERS, TERNS AND GULLS

Each year migration often seems to start at the end of June and to be in full swing, though still on a fairly small scale, by the middle of July. The birds involved are usually adults which have failed to breed for one reason or another and it is not until August that the young of the year make up the big numbers. Several counties have commented on the early dispersal of **Lapwings** (*Vanellus vanellus*) and the timing of the first arrivals of Scandinavian waders, and certainly there was an influx of such birds as **Green Sandpipers** (*Tringa ocbropus*) and **Greenshanks** (*T. nebularia*) at the beginning of July. There were also some **Wood Sandpipers** (*T. glareola*) at this time, including two as far west as Devon where this species is never common, and an increase of **Spotted Redshanks** (*T. erythropus*) and **Ruffs** (*Philomachus pinnatus*), as well as some movement of **Redshanks** (*T. totanus*) and **Common Sandpipers** (*T. hypoleucos*). The first **Curlew Sandpiper** (*Calidris testacea*) of the season was reported in Yorkshire on 29th June and the first **Little Stint** (*C. minuta*) in Co. Durham the next day. On 13th July there was an early **Grey Phalarope** (*Phalaropus fulicarius*) in full summer plumage in Blakeney Harbour (Norfolk). In recent years, too, we have come to expect one or two American waders in late June and this year is no exception. What will probably prove to be the first of a series of **Pectoral Sandpipers** (*C. melanotos*) was found at Cowpen Marsh (Co. Durham) on 20th July and stayed there until the 30th. More interesting, however, is a much rarer species which has been recorded only twice before in Britain, and only once in Europe. This was an adult **Stilt Sandpiper** (*Micropalama himantopus*) shot and ringed at Wisbech sewage farm (Lincolnshire/Norfolk border) on 19th July.

Reverting for a moment to the tail-end of the spring migration (how short a time between that and the start of the autumn movements!), the scattering of **Wheatears** (*Recurvirostra avosetta*) at the end of May and in early June was more widespread than it originally appeared. A flock of as many as 17 was seen in Kent on 1st June and the species even got as far north as Yorkshire, while inland there was a party of four near Coventry (Warwickshire) on the 8th in addition to the one in Northamptonshire mentioned last month. Some further records of **Black Terns** (*Sterna nigra*) at this time are also worth mentioning, for it is now clear that more than usual reached Scotland; normally only the odd one gets north of the Forth, even during peak movements. Apart from the one in Shetland referred to last month, there were nine at Lochmaben (Dumfriesshire) on the 2nd and two there

on the 3rd, one at Peppermill (Fife) on the 4th and one near New Pitsligo (Aberdeenshire) on the 8th.

The first suggestion of a return movement of **Black Terns** came when 21 were reported at Queen Mary Reservoir (Middlesex) on 21st July. **Gull-billed Terns** (*Gelochelidon nilotica*) included four at Dungeness (Kent) on 26th June and three there the next day. The first **Mediterranean Black-headed Gull** (*Larus melanocephalus*) of the autumn was seen in Sussex on 8th July, there was an immature at Cley (Norfolk) on the 20th and then the regular one at Hartlepool (Co. Durham) returned on the 31st for the eighth successive autumn. The scattering of **Little Gulls** (*L. minutus*) in eastern counties continued throughout June and July, out-of-season **Iceland Gulls** (*L. glaucooides*) appeared in Shetland and Argyll on 15th and 16th June respectively, and a **Sabine's Gull** (*Xema sabini*) showed up at Swanage (Dorset) on 15th July.

PASSERINES AND OTHER LAND-BIRDS

Few unusual passerines can be expected in late June and July and the only extreme rarity was a **Red-rumped Swallow** (*Hirundo daurica*) at Altrincham sewage-farm (Cheshire) on 10th July. There was a **Rose-coloured Starling** (*Sturnus roseus*) on Bardsey Island (Caernarvonshire) on 8th July and one at Brinkworth (Wiltshire) from the 22nd to at least the 25th, while Bardsey also produced a male **Red-headed Bunting** (*Emberiza bruniceps*) on the 22nd and 23rd and another on the 28th; but both these species are likely escapes from captivity (*Brit. Birds*, 55: 581 and 583). Among several further reports of **Golden Orioles** (*Oriolus oriolus*) were one as far north-west as Bardsey on 6th June and one in Oxfordshire on the 22nd (the first record for that county for over thirty years). Additional **Great Reed Warblers** (*Acrocephalus arundinaceus*) included one on St. Mary's (Isles of Scilly) on 28th May and one at Leighton Moss (Lancashire) on 17th July; the Leicestershire bird mentioned last month stayed until about 6th July, by which time it had been there for some seven weeks. Incidentally, the **Bonelli's Warbler** (*Phylloscopus bonelli*) reported in Delamere Forest (Cheshire) on 19th May (*Brit. Birds*, 56: 231) was last seen on 9th June. Another out-of-season **Firecrest** (*Regulus ignicapillus*) appeared at Slapton (Devon) on 13th July.

Recent reports of **Black Redstarts** (*Pheoenicurus ocbriuos*) in Shropshire, Derbyshire and Nottinghamshire suggest a wider scatter of breeding than usual, but it is still too early to assess the situation; this species is often overlooked, as is illustrated by the fact that a pair in the changing rooms of a Hertfordshire school were not discovered until their three young were well grown. **Redpolls** (*Carduelis flammea*) have been reported as more numerous than usual this summer in several counties (Northumberland, Norfolk, Sussex, Essex and Bedford) and it would be interesting to know if this seems to be the case in other parts of the country. Observations of **Crossbills** (*Loxia curvirostra*) on the move have come from a number of areas, but, although these include some, in, for example, Shetland in mid-July, all the evidence so far suggests post-breeding dispersal within the British Isles rather than a fresh invasion from the Continent.

Among the June records of **Hoopoes** (*Upupa epops*) mentioned last month was one calling in south Bedfordshire on the 16th and it is interesting to note that this bird was still holding the same territory on 7th July. More remarkable still were reports of **Snowy Owls** (*Nyctea scandiaca*) on Ben Maedhui (Aberdeenshire) on 1st June, on Fetlar (Shetland) on the 14th and on Eday (Orkney) on the 20th, and then again on Fetlar on 16th July. An **Alpine Swift** (*Apus melba*) was seen at Cley (Norfolk) on 21st July and a second-summer male **Red-footed Falcon** (*Falco tinnunculus*) near Wareham (Dorset) on the 27th.



Notice to Contributors

Birds publishes material dealing with original observations on the birds of eastern and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcome. Proofs of all contributions are sent to authors before publication.

For publication, 25 separates of papers are sent free to authors (two or more authors of one paper receive 15 copies each); additional copies, for which a charge may be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of publication. Authors of papers in particular, especially of those containing statistical lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital letters for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are as used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the species name. Subspecific names should not be used except where they are essential to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and not '1st Jan.', 'Jan. 1st', or 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise involve much unnecessary work. These should take the following form:

SMITH, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

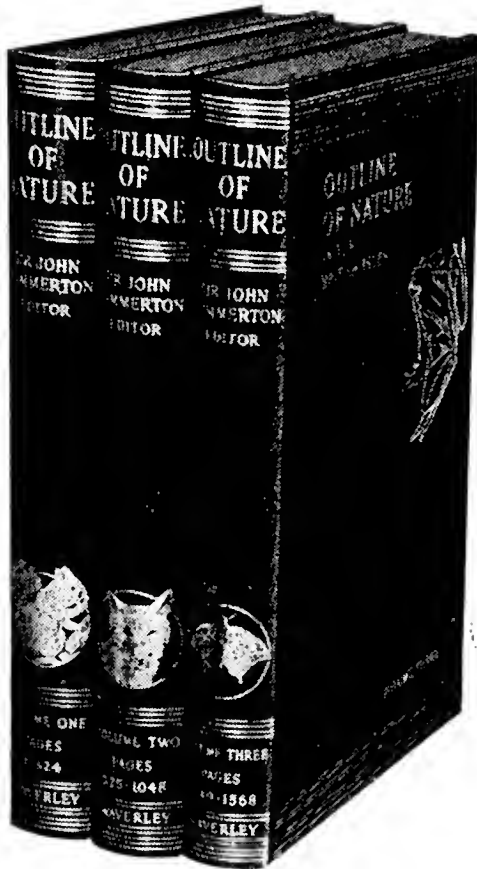
WARREN, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34.

Other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in block capitals as used in this issue. They must either fit into the width of a page, or be arranged to fit a whole page lengthways. All tables should be self-explanatory.

Line-drawings should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this should be light blue or very pale grey. It is always most important to consider how the drawing will fit into the page. The neat insertion of lettering, numbers, etc., is perhaps the most difficult part of indian ink drawing and, unless he has considerable experience of this kind of work, an author should seek the help of a skilled draughtsman.

See for yourself how the countryside springs to life in



OUTLINE OF NATURE

These three volumes will fascinate readers of all ages with the story of the creatures and plants to be found in garden, pool and field and on the seashore. The magnificent collection of over 3,000 pictures by expert photographers of wild life enables you to identify thousands of living creatures great and small

Compiled especially for that vast number of ordinary folk who enjoy wandering outdoors, this work, by giving them a multitude of hints on what to look for, will bring new delights to a stroll in the country or along the seashore

See this work for yourself. Let us send it to you FREE for seven days' approval. You will be under no obligation to purchase - just fill in the coupon and post it to us. No salesman will call

FREE
7 days trial

POST THIS COUPON TODAY

— FREE EXAMINATION FORM —

To: **EVERYBODY'S PUBLICATIONS LTD.,**
34-35 Farringdon Street, London, E.C.4

Please send me, carriage paid, for seven days' FREE examination, "OUTLINE OF NATURE", complete in three volumes. It is understood that I may return the work within eight days with no further obligation. If I keep it I will send you a first payment of 10s. 0d. eight days after delivery, and seven monthly payments of 20s. 0d., thus completing the purchase price of £7 10s. 0d. **CASH PRICE WITHIN 8 DAYS, £7 0s. 0d.**

Name (Mr. Mrs. or Miss)

Address

Nearest Rly. Stn.

Occupation

Signature

(or of Parent if you are under 21) B.B.1

Tick (✓) where applicable

House Owner	<input type="checkbox"/>
Householder	<input type="checkbox"/>
Living with Parents	<input type="checkbox"/>
Lodging Address	<input type="checkbox"/>

British Birds

Principal Contents

Editorial: The important future of population studies

Population changes in a Surrey oakwood
during fifteen years

Geoffrey Beven
(with one plate)

The birds of the Danube delta and their conservation

Stanley Cramp and I. J. Ferguson-Lees
(with seven plates)

Notes

Review

News and comment



SEP 1963
PURCHASED.

Three
millings



September
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

Photographic Editor

Eric Hosking

20 Crouch Hall Road

London, N.8

'News and Comment'

Raymond Cordero

Rohan Lodge, Wadhurst Park

Wadhurst, Sussex

Rarities Committee

D. D. Harber

1 Gorringe Road]

Eastbourne, Sussex

Contents of Volume 56, Number 9, September 1962

	<i>Page</i>
Editorial: The important future of population studies	30
Population changes in a Surrey oakwood during fifteen years. By Dr. Geoffrey Beven (plate 54)	30
The birds of the Danube delta and their conservation. By Stanley Cramp and I. J. Ferguson-Lees. Photographs by I. J. Ferguson-Lees, Eric Hosking and Zoltán Tildy (plates 47-53)	32
Notes:—	
Mallard killing and swallowing House Sparrow (Miss J. M. Stainton) ..	33
Brent Geese pulling weed from the undersides of ice floes (K. R. Crawshaw)	33
Whooper Swans feeding on refuse dump (Major Robert F. Rutledge) ..	34
Woodpigeon nesting in marram (E. Cowieson)	34
Early breeding of Coal Tit (R. H. Charlwood)	34
Yellow Wagtail nesting in tin can (A. C. Morriss)	34
Starlings eating putty (Magnus Sinclair)	34
Chaffinch choked by caterpillar (Mr. and Mrs. D. R. Stansbury and Dr. E. A. R. Ennion)	34
Fledglings incapacitated by encumbrances on the toes (K. G. Spencer)	34
Review:—	
<i>Hummingbirds</i> . By Crawford H. Greenewalt. Reviewed by G. K. Yeates	34
News and comment. Edited by Raymond Cordero	34

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 61/62 Watling Street, London, E.C.4

British Birds

Vol. 56 No. 9

SEPTEMBER 1963



Editorial

The important future of population studies

OF THE MORE disappointing aspects of British ornithology over the past forty years has been the slow and uncertain advance of bird ecology and population studies as compared, for example, with studies on migration, distribution and behaviour. In the early thirties the advance of population ecology seemed to be assured, on the initiative of the Oxford Bird Census and the British Trust for Ornithology, by such successful projects as the censuses of Herons (*Ardea cinerea*), Great Crested Grebes (*Podiceps cristatus*) and Gannets (*Phalacrocorax bassana*), and by such publications as W. B. Alexander's on the population of an Oxfordshire farm (1932), A. W. Boyd's on the Swallow Enquiry (1935), Charles Elton's on woodland bird communities (1935), T. H. Harrison and H. G. Hurrell's on fluctuations in the Great Black-backed Gull (*Larus marinus*) (1933), David Lack's on breeding bird populations of British heaths and moorlands (1935) and George Marples's on winter roosts of Starlings (*Stercorarius vulgaris*) in Great Britain (1934), as well as numerous local studies on islands or other small areas and on rookeries or other specific problems.

The emergence of the bird observatories and the growth of ringing and regular observation at inland points led, however, to a growing concentration on migration studies, and simultaneously the increasing numbers of county reports provided a stimulus and outlet for local distribution records, especially of rarities. Bird behaviour studies and experimental aviary work proved increasingly attractive for professional ornithologists. Without in any way depreciating the value of these and other studies, it now becomes plainly a misfortune that the long and arduous field work required for population and ecology researches had less appeal. Doubts cast on the scientific value of such investigations, and the vanishing of the pre-war nucleus of competent and willing organisers and report writers, reduced still further the number of contributions during the fifties.

Certain projects, however, especially the Wildfowl Trust's work on wildfowl counts and on capture-recapture exercises with rocket nets, led a revival which is now visibly gathering force. The work on the ecology of the Red Grouse (*Lagopus scoticus*) by Aberdeen University and the Nature Conservancy, the I.C.I./Game Research Association studies on Partridges (*Perdix perdix*), the Ministry of Agriculture work on Woodpigeons (*Columba palumbus*), Oystercatchers (*Haematopus ostralegus*) and other species, and the B.T.O./Nature Conservancy investigations on Buzzards (*Buteo buteo*) and Peregrines (*Falco peregrinus*) are now being followed by the B.T.O.'s standing sample censuses for the Nature Conservancy of numbers of common birds. The impact of toxic chemicals and of losses of scarce habitats have created a new and pressing demand for reliable population data, while efforts to develop scientific techniques of conservation and reserve management have made it essential to pay more attention to bird ecology.

These trends are sure to be reinforced by such impending developments as the opening this autumn of the Nature Conservancy's new Monks' Wood Experimental Station near Huntingdon, the conferences in October at Bournemouth of the International Union of Game Biologists and at St. Andrews on European Wildfowl, and the launching in May 1964 of the British Ecological Society's new *Journal of Applied Ecology*, one of the two editors of which will be a leading ornithologist, Professor V. C. Wynne-Edwards, who was a promoter of the 1927 Oxford Bird Census.

Confidence may therefore be felt that we are in sight of the end of the lean years for British studies of bird ecology and population. During those years, perhaps the most comprehensive and sustained contribution for any single site has come from the Bookham Common survey carried out by the Ecology Section of the London Natural History Society. This now has to its credit twenty years of work on plants and animals, in which the ornithological element has been fully represented. We are glad to publish in this issue a paper by one of the Survey's leaders, Dr. Geoffrey Beven, who reviews some of the findings which have emerged from the patient and laborious repetition of standard observations over the years in this wooded area of Surrey.

One point of special timeliness is his review of the effects of hard winters on a few common and vulnerable species. After such a memorable period of severe weather as we have seen this year, ornithologists trying to assess the effects are handicapped by the sketchiness of information on the past and the general lack of firm figures. The Bookham results show the extent of complications arising from a differential rate of movement out of, and subsequently back into, certain habitats which may be more or less favoured for wintering as

ant breeding. Such a movement may mask the trend of general mortality and of the resulting population losses. The pinpointing of a factor is itself a valuable contribution, in addition to the light which a survey throws on population levels after the hard winters of the sixteen years. In this connection, we are particularly indebted to Dr. Beven for having made a special effort to include the highly significant 1963 records after the paper was completed. It is to be hoped that other local bodies in different parts of the country may now be encouraged to follow the example which the London Natural History Society has set so well for so long, by taking part in the Common Bird Census organised by the B.T.O. The value of this work will obviously be increased the more comparisons between widely scattered sites become possible. In addition to advancing knowledge, it will form a most practical means of aiding the conservation of our bird life in face of such growing threats as those of destruction by toxic chemicals on the land.

Population changes in a Surrey oakwood during fifteen years

By *Geoffrey Beven*

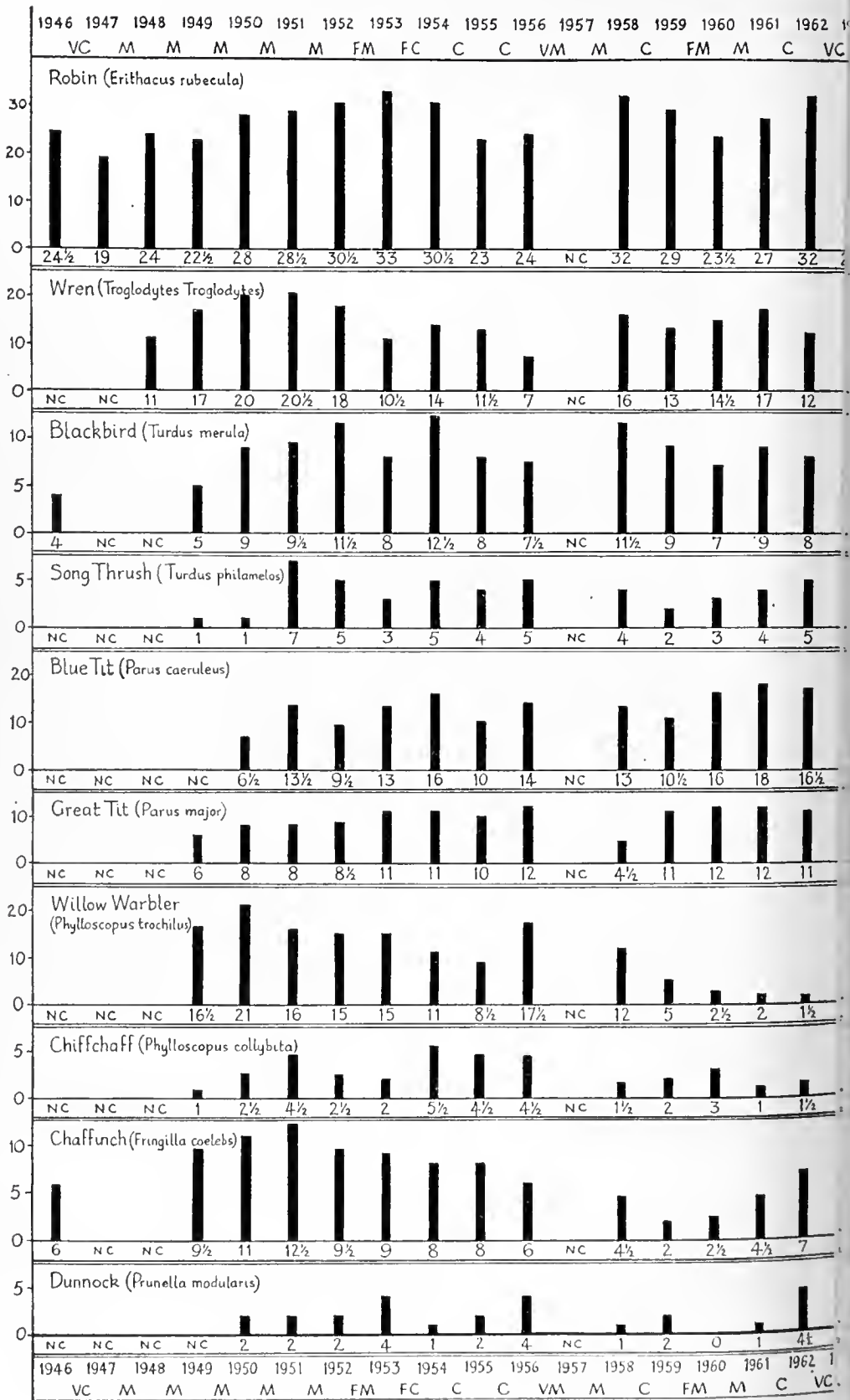
(Plate 54)

BOOKHAM COMMON, SURREY, the bird populations of dense oakwood in the breeding season have been studied by sample censuses of most species every year from 1949 (except 1957) and of the Robin (*Erubiacus rubecula*) from 1946. The censuses have been carried out by the Ornithology Section of the London Natural History Society as part of a long-term survey of the natural history of the Common, which is situated about twenty miles south-west of St. Paul's Cathedral. From the results of this work it is now possible to demonstrate several interesting and important fluctuations in some of the bird populations.

HABITAT

A sample of woodland studied is part of a typical mature pedunculate oakwood on damp clay, which has been named 'Eastern Wood' by the survey team. It is approximately 40 acres in extent, being about 1,000 feet long and 1,100 feet broad, and it ranges in height from 150 to 200 feet above sea level. It is part of a larger area of similar woodland which almost completely surrounds it, but two small ponds lie at the southern boundary, and there are some houses with gardens within a few yards of one corner, at the edge of the Common; about two acres are made up by open rides and spaces. The vegetation has already

BRITISH BIRDS



been described in broad outline (Steel 1947, Beven 1951), but a summary here may be helpful and plate 54 shows two typical sections. The oak (*Quercus robur*) is dominant; there are also scattered birches (*Betula* sp.), but other trees are relatively scarce. The shrub layer is thick in most parts of the wood, although there is some variation in density and species: hawthorn (*Crataegus* sp.) is common and often in dense thickets and there is locally abundant hazel (*Corylus avellana*), as well as occasional blackthorn (*Prunus spinosa*), willow (*Salix* sp.) and holly (*Ilex aquifolium*). Bramble (*Rubus* sp.) and bracken (*Pteridium aquilinum*) comprise the chief ground vegetation, with some rose (*Rosa* sp.) and honeysuckle (*Lonicera periclymenum*). Very few plants grow in the dense shade of the hawthorn. The footpaths are grassy with bare patches.

In the autumn of 1951 an area of three or four acres was thinned by the felling of some oaks and birches and the clearance of some of the shrubs. Further thinning of young oaks and birches with drastic clearance of bramble and other shrubs was carried out in another four acres in the autumn of 1961. In 1955 about three-quarters of an acre of hazel was 'coppiced'. Tracks and paths tend to get overgrown, but have been cleared from time to time. Nevertheless, in spite of human interference in small areas, it is considered that the wood as a whole has changed very little from 1946 to 1963.

METHOD

The method worked out in the early stages of the survey (Beven 1951) has been followed throughout the period, to ensure comparable annual results as far as possible. The wood is visited once in the first half of each month from March to June or July, and the position of each singing male is marked on a large-scale map (1 in 2,500); some extra counts are made at the end of April and May. The census is usually done between 11 a.m. and 2 p.m. GMT. From a study of the constant positions of singing males it is possible to map the distribution of territories for the more numerous and important breeding species and hence to estimate the number of territories in Eastern Wood. A territory partly outside the boundary is recorded as a half; in no case were more than three territories in this category.

Some singing males may be missed because the census is not made at dawn, the time of peak song. Also, as an unknown proportion of the males are unmated, we cannot consider them as breeding pairs. However, it is believed that the census figures do give an indication of

3. 1. The numbers of territories of singing males in Eastern Wood, Bookham Common, Surrey, during the years 1946 to 1963 (except 1957 when there was no census). The figures for each year are given at the foot of each column. Winters classified as very cold (VC), cold (C), fairly cold (FC), fairly mild (FM), mild (M) and very mild (VM)

the breeding season population which can be compared from year to year. This is essentially the method used by other workers (Chapman 1939, B.T.O. Common Bird Census 1961-62). The results are shown in fig. 1 which gives the numbers of singing males with territories for each year for the whole period.

WEATHER

As it is apparent from the results of the census that a severe winter often reduces the population of certain birds in the following spring, an attempt has been made to distinguish between those winters which were mild and those which were cold. Fig. 2 shows the monthly mean night minimum temperatures at Kew, Surrey, for the winters from 1946-47 to 1962-63. From these data and the notes in table 1, the winters have been classified as very mild (VM), mild (M), fairly mild (FM), fairly cold (FC), cold (C) or very cold (VC), though obviously the differences between the categories have at times been somewhat arbitrary. These classifications are also indicated in figs. 1 and 2.

Table 1. Classification of winter conditions in Surrey from 1946-47 to 1962-63. Classifications as VM (very mild), M (mild), FM (fairly mild), FC (fairly cold), C (cold) or VC (very cold) are based on the data in fig. 2 and on the notes given here

46-47	VC	Prolonged cold spell January to March; remained continuously below freezing for two periods of seven and twelve days
47-48	M	
48-49	M	February unusually mild
49-50	M	
50-51	M	
51-52	M	
52-53	FM	November persistently wet and the coldest since 1925
53-54	FC	Severe weather at end of January and in early February
54-55	C	Prolonged cold weather in January and February
55-56	C	Severe weather in February
56-57	VM	Unusually mild
57-58	M	
58-59	C	Two to three weeks of cold weather in January
59-60	FM	Mid-January very cold in south-east England and rainfall exceptionally heavy
60-61	M	January rather cold and stormy but February extremely mild
61-62	C	Long rather cold winter with late spring in south-east England
62-63	VC	Very severe weather throughout January and February with prolonged snow cover

DISCUSSION OF RESULTS

Great and Blue Tits (*Parus major* and *caeruleus*)

The population of the Great Tit has been remarkably constant on the whole, varying from eight to twelve territories in most years and not showing any marked reduction after moderately cold winters (fig. 1). The low figure of six in 1949 may have been due to the remaining

effects of the very severe winter of 1946-47, when both Great Tits and Blue Tits were certainly reduced in numbers, although apparently not so drastically as some species (Ticehurst and Hartley 1948). However in other oakwoods in southern England the breeding Great Tit rose to a peak in 1949 (Lack 1955). Thereafter at Bookham the numbers increased from eight in 1950 to eleven in 1953 with a succession of mild winters and, except in 1958, the population has remained at between ten and twelve territories since; it is unfortunate that no count was made in 1957. The Great Tit population showed more variation in some other deciduous woods in southern England (Lack 1955, 1958), but at Chislehurst also it was remarkably stable from 1950 to 1957 (Hillman 1963). At Bookham the lowest figure ($4\frac{1}{2}$) occurred in 1958 and was about half the 'usual' figure. This reduction was probably due to over-population in the previous winter.

After the 1957 breeding season there were much larger numbers of Blue and Great Tits in Britain than usual and an irruption of these and other birds from the Continent occurred that autumn. This was investigated and discussed by Cramp, Pettet and Sharrock (1960), who gave evidence to show that unusually large numbers had survived the exceptionally mild winter of 1956-57. Gibb (1960) proved from studies in a pinewood that the stock of invertebrate food was sustained during January and February 1957 instead of declining then as in normal years; aphids continued to breed prolifically during these two months. Increased numbers of Blue and Great Tits nested in southern England and in Holland (Lack 1958). Success per pair was actually lower than usual in 1957, but, even so, many more young were reared. Thus the population during the winter of 1957-58 was much larger than normal. In the spring of 1958, however, there were no reports of unusually high nesting populations. On the contrary, in Eastern Wood the Great Tit figures were reduced by half. This reduction was probably due to starvation during the winter: Lack (1954) suggested of certain insectivorous woodland species that fewer might survive from a large than from a moderate population at the start of the winter, as with a large population more of the available insects would be consumed before the spring. By the following season the Great Tit numbers in Eastern Wood had returned to normal.

Thus not only may a bird population be reduced in the spring following a severe winter, but perhaps also in the second spring after an exceptionally mild winter. On the other hand, the Blue Tit population in Eastern Wood was not reduced in the spring of 1958 and it is difficult to understand why. However, it might be that overcrowding during the winter of 1957-58 was less marked among Blue than Great Tits as according to figures given by Lack (1958), the relative increase in breeding Great Tits in the spring of 1958 seems to have been greater than that of Blue Tits in some areas.

Table 2. Breeding season censuses of Blue Tits (*Parus caeruleus*) in various broad-leaved woods in southern England, showing parallel fluctuations in populations, 1948-57

Data for Dean, Alice Holt, Marley and Sway are taken from Lack (1955, 1958), and for Chislehurst from Hillman (1963). The figures for occupied nest-boxes do not, of course, include any pairs nesting in natural holes; in Marley Wood it was estimated that about two-thirds of the Blue Tits nested in the boxes during 1947-51 (Gibb 1954)

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	
Bookham Common, Surrey	—	—	6.5	13.5	9.5	13	16	10	14	—	40 acres of dense oakwood with rich undergrowth
Forest of Dean, Gloucestershire	30	61	44	57	43	37	53	31	53	83	55 acres of mature oakwood with rich undergrowth
Alice Holt, Surrey	32	77	44	54	36	38	—	27	38	88	75 acres of mature oakwood with rich undergrowth
Marley Wood, Wytham, Oxford	19	26	34	34	17	14	18	13	15	32	63 acres of mixed broad-leaved wood chiefly oak and hazel, with rich undergrowth
Sway, Hampshire	11	15	11	20	16	12	15	9	10	8	36 acres of mixed broad-leaved plantation and a large garden
Chislehurst Common, Kent	—	—	—	—	—	—	3.1	2.3	3.8	—	13 acres of rather more open oakwood than at Bookham with some gorse-covered grassy patches

There have usually been more territories of Blue than Great Tits in Eastern Wood and the number has probably been even larger than shown by the figures, as their territorial song is not nearly as conspicuous as that of the Great Tit and it is likely that some are missed. Table 2 gives figures for Blue Tit populations in broad-leaved woods at Bookham and elsewhere in southern England from 1948 to 1956. There were frequent fluctuations and these were remarkably similar in direction (although not always in extent) in all the woods. For instance, peaks at Bookham in 1951 and 1954 tended to be reflected in other woods and there were corresponding decreases in 1952 and 1953, the latter followed by an increase in 1956. Thus the fluctuations shown in the oakwood at Bookham seem to have been of more than local significance, and it would appear that counts of singing male Blue Tits can be a useful index of population changes.

Wren (*Troglodytes troglodytes*)

The numbers of Wren territories since 1948 have varied between one and $20\frac{1}{2}$; the lowest figures have occurred chiefly after the cold winters (fig. 1). In 1948 the Wren population had probably not recovered from the disastrous mortality in the winter of 1946-47 (Tichhurst and Hartley 1948). After a cold and wet autumn in 1952 the numbers decreased from 18 in 1952 to $10\frac{1}{2}$ in 1953. There was partial recovery in 1954, but after three successive cold winters the population was reduced to seven in 1956. In 61 acres of scrub and grass, also at Bookham, the number of singing males was reduced from five in 1954 to four in 1955 and then to one in 1956 after three cold winters (Meluish 1960). However, a rapid recovery was made in both habitats at Bookham. In the scrub the number rose to three by the next spring (1957) and in the wood, after two mild winters, 16 territories were occupied in 1958 (no count in 1957). In the spring of 1962, after a cold winter, the population decreased from 17 to 12. Very similar reductions (30%) were found in farmland in 1962 in the B.T.C. Common Bird Census (*Bird Study*, 9: 263). The winter of 1962-63 was very severe and the Wrens were probably completely exterminated in Eastern Wood. The only singing male present during the spring of 1963 was not found until the middle of May and had probably not spent the winter there.

Armstrong (1955) gave evidence to demonstrate the enormous reduction of Wrens during severe weather and stated that in winter they feed most frequently on or near the ground. He pointed out that, although the Wren eats some seeds in winter, its diet is almost entirely animal (mainly insects and spiders) and he instanced one bird killed in January, with its stomach filled with small beetles. If, therefore, Wrens eat relatively fewer seeds than Robins, this might partly explain why they appear to be the more vulnerable in cold winters.

and perhaps also in cold and wet autumns).

Wrens differ from Robins in another respect. Whereas many Robins leave the wood in mid-winter, we believe that most Wrens remain throughout. The average number of Wrens counted at each monthly visit during the years 1949 to 1955 were: January, 11; February, 7; March, 8; April, 14; May, 10; June, 10; July, 13; August, 14; September, 12; October, 10; November, 11; December, 8 (Beven 1956). Thus the population in January seems much the same as in the autumn and, perhaps, as in the spring. The figure for April is higher than that for January, suggesting that some birds may have entered the wood in that month, perhaps unmated males looking for territories. However, it is unlikely that every Wren was recorded at each visit in such a dense wood, and it may well be that in April, with the greater output of song, more of the Wrens were discovered, especially as leaf cover had not yet become thick. The numbers are lowest in February and March, presumably as a result of winter mortality. Most of the winters between 1949 and 1955 were mild, but even in 1954 and 1955, when January and February were cold, there was no clear evidence of any significant exodus of Wrens from the wood. Thus if a large proportion of the Robins leave the wood in winter because of food scarcity even in mild winters (see below), it seems likely that many Wrens may starve if they remain in severe weather. In addition, it must be remembered that such a small bird as the Wren is liable to excessive heat loss in very cold weather and presumably the danger is increased if the bird is starving. Its well-known habit of communal roosting no doubt reduces the risk during the coldest nights, but its small size and predominantly insect diet must make it particularly vulnerable in severe weather.

Song Thrush (*Turdus philomelos*)

In most years the ratio of Blackbirds to Song Thrushes has been about two or three to one. This corresponds closely to the proportion of about two to one found during the breeding season in a sheltered Surrey estate (Nicholson 1951). Between two and four Blackbirds to one Song Thrush have been reported in various kinds of woodland (Beck and Venables 1939). In Eastern Wood in 1951, however, the Song Thrushes, after a striking increase from one to seven territories, were nearly as numerous as the Blackbirds. The causes of the variations are obscure. Song Thrushes suffer more severely than Blackbirds in cold winters and many died in the winter of 1946-47 (Ticehurst and Hartley 1948). It is thus surprising that the figures for Hookham woodland show little if any reduction after cold winters, but the numbers involved are small.

Blackbird (*Turdus merula*)

The breeding Blackbird population has usually, but not always,

decreased or remained low after cold winters (fig. 1). The numbers were lowest in 1946 and still low in 1949, but they rose after several mild winters to a peak density of $11\frac{1}{2}$ territories in 1952. Then there was a decrease to eight in 1953 after a wet and cold autumn, followed by a quick recovery to $12\frac{1}{2}$ in 1954 in spite of a rather cold winter. In 1955 prolonged cold weather in January and again in February and March gave a total of 40 'hard' days in which the ground was frozen or covered with snow or ice (Seel 1961) and the population subsequently decreased by a third (to eight). In 1956 February was very cold and there were 29 'hard' days (Seel 1961): the Blackbird population remained low ($7\frac{1}{2}$). The winters of 1956-57 and 1957-58 were mild, but, unfortunately, a census was not made in 1957. By 1958 the population had returned to a high figure ($11\frac{1}{2}$). Numbers decreased after a cold spell in early 1959 (to nine) and have remained low since, not being further reduced even after the severe winter of 1962-63.

Table 3. Breeding season censuses of Blackbirds (*Turdus merula*) in various localities southern England, showing parallel fluctuations in populations

Data for Wytham and Botanic Garden are taken from Snow (1958), for Pinner from Seel (1961) and for Chislehurst from Hillman (1963)

		1952	1953	1954	1955	1956	1957	1958	
Bookham Common, Surrey	Singing males	$11\frac{1}{2}$	8	$12\frac{1}{2}$	8	$7\frac{1}{2}$	—	$11\frac{1}{2}$	40 acres of oak
Wytham Wood, Oxford	Nests	—	—	5-6	*	1-2	—	—	Oakwood
Botanic Garden, Oxford	Pairs		11	16	13	13	—	—	6 acres of garden
Pinner Park, Middlesex	Birds		—	—	34	41	59	—	Farmland
Chislehurst, Kent	Singing males per 10 acres	3.8	4.6	6.2	6.2	5.8	—	—	13 acres of oak

*Population described as 'intermediate'

The numbers of Blackbirds in Eastern Wood may be underestimated as this species tends to sing more frequently in the early mornings and evenings. However, it certainly appears as if there is usually a smaller breeding population in the spring following a cold winter. That some of these changes have been general over a wide area in south-east England is indicated in table 3 which shows that, after three cold winters, comparable reduction in breeding populations occurred in Wytham Wood (mixed oakwood) and the Botanic Garden, Oxford, in 1955 and 1956 (Snow 1958) and probably in farmland at Pinner Park, Middlesex, in the same years (Seel 1961). Seel emphasised the importance of the number of 'hard' days in the winter when food becomes inaccessible under snow or in frozen ground. The fall in

numbers was not so drastic in oakwood at Chislehurst, Kent (Hillman 1963), but the figures there do suggest a definite *rise* in the population from 1953 to 1954 after a fairly cold winter, a change also shown at Bookham and at Oxford in these same two years. This increase is curious as it is known that on the Hampshire and Dorset county boundary many Blackbirds died of starvation in the cold spell in early 1954 (Ash 1957); it was also observed, however, that Blackbirds were particularly numerous in that area in the following breeding season, while in the woodland at Bookham their numbers reached the highest peak ($12\frac{1}{2}$) for the whole period from 1949 to 1963! On the other hand, in Hampshire during the cold spell in February 1956, although many other thrushes died in an emaciated condition, Blackbirds seemed to suffer far less by comparison. Nevertheless, the small populations in the following spring in woodland at Bookham and Wytham and elsewhere (table 3) suggest that the cold weather did produce a considerable mortality. As early 1955 was also cold, the three successive cold winters may have produced a cumulative effect on the Blackbird breeding population, and it is perhaps worth noting that the winter months of 1955 and 1956 were colder than those of 1954 (fig. 2).

Up to 1963 we had not found any evidence that Blackbirds leave the woodland at Bookham during the colder months (Beven 1953). However, in the exceptionally severe weather in January 1963 it was considered that some Blackbirds probably did so and these may have fed in gardens at the edge of the Common. In Christ Church meadow, Oxford, Blackbirds were found to feed to an increasing extent in rough grass in January and February and to a decreasing extent in leaf litter at that time (Snow 1958), but there is very little rough grass in the dense woodland at Bookham and there they feed almost entirely in leaf litter in the colder months (Beven 1959). On the ground they feed earthworms, insects and spiders and also the seeds of many plants (Githerby *et al.* 1941). In spite of the abundant hawthorn scrub in the wood the crop of berries is usually poor, presumably because of the dense shade. It is doubtful, therefore, whether this fruit forms an important proportion of the woodland Blackbirds' food, nor does there seem to have been any correlation between the size of the woodland Blackbird population and the very variable hawthorn crop on the adjacent scrub and grassland. The Blackbirds' habit of turning over leaf litter and moss must enable them to find food which is inaccessible to other species. Perhaps this is the reason why they can usually remain in the wood throughout the winter whereas many thrushes and other birds leave.

Robin (*Erithacus rubecula*)

The data indicate a population of between 19 and 33 singing males

in the period 1946 to 1963 (fig. 1). Previously the general increase from 1946 to 1953 was believed to be partly due to an increase in the density of the shrub layer which had occurred locally (Beven 1956). However, now that the results can be studied over a longer period, it is apparent that this is of only minor importance; the shrub layer has not become significantly more dense over the wood as a whole. Instead, there is little doubt that the really important factor influencing the Robin population is the state of the weather during the previous winter. The lowest numbers of Robins occurred in 1947, 1948, 1949, 1955, 1956, 1960 and 1963; that is, chiefly after winters in which there had been colder spells than usual. In fact, reference to fig. 1 will show a remarkably close relationship between the coldness of the winter and the Robin population in the following spring.

The winter of 1946-47 was one of the two most severe during this period and the population in the subsequent spring was the lowest recorded (19). Previously there had been six notably hard winters in the decade from 1938 to 1947, including a short but severe cold spell in early 1945. Then between 1948 and 1953 the winters were mild and the Robin population, after remaining low in 1948 and 1949 steadily increased to a maximum of 33 in 1953. After six weeks of very cold weather in early 1955 there was a marked fall in population (from $30\frac{1}{2}$ to 23). The following winter was also cold and the number of Robins remained reduced (24). Recovery was then rapid and 3 territories were occupied by 1958 (no census in 1957). Not only was it very cold in mid-January 1960, but the rainfall was exceptionally heavy; in the spring following, the Robin numbers had dropped again ($23\frac{1}{2}$), but they reached 32 in 1962 in spite of another cold winter. After the very severe winter in early 1963 the population fell to $21\frac{1}{2}$. The effect of these cold winters was also shown in 61 acres of scrub and grassland at Bookham, where the number of singing male Robins was reduced from six in 1954 to three in 1955 and then to one in 1956 after three cold winters, but in 1957 the numbers had risen to four again (Melluish 1960).

It seems possible, therefore, that the wood will hold about 30 territories when conditions are good. Every winter some Robins must die, but in a cold one the mortality is much greater. Lack (1948) gave figures from various sources showing that the population in the spring following a cold winter may be half or less that found after mild ones. He believed food shortage to be the cause, and observed in oakwood in January 1946 that 'as a result of a frost, the invertebrates of the litter layer had retreated below the surface of the ground which was too hard to be broken by a bird as small as a Robin, so that the latter's normal food seemed unobtainable'. He pointed out that Robins resemble Herons (*Ardea cinerea*) in that both show a marked decrease after a severe winter and a rapid recovery one or two years afterwards.

Thus the Robin population as a whole is much more profoundly affected by cold winters than by other factors such as local changes in the character of the vegetation. Lack also considered that hard winter mortality is greater among woodland than among garden Robins.

It may seem surprising that a population in a dense wood should be so sensitive to climatic conditions which are often less severe there than in the open country outside: for instance, on 12th February 1956 and again on 9th March 1958, snow covered Bookham Common both inside and outside the woodland, but, while the ground and water outside were frozen hard, the ground inside remained soft. However, Lack (1948) pointed out that many Robins leave the oakwood in mid-winter and we have shown that half or more disappeared from Eastern Wood in December and January each year from 1949 to 1955 (Beven 1956, fig. 1). This is presumably because food becomes scarce then, even in mild winters. In this wood 57% of the winter feeding-sites of the Robins were on the ground (Beven 1959) and they doubtless take much of their food from there. Thus it is clear that an extensive covering of snow, even if the ground is unfrozen, must make the finding of food much more difficult and lead to starvation if the conditions persist.

However, in several of the winters here described as cold, which were followed by a reduction in Robin population, it is doubtful if the ground inside the wood was frozen or snow-covered for more than a few days at a time. Would this cause such a high mortality? In fact, it seems likely that food becomes decidedly more scarce or inaccessible before the temperature drops sufficiently to freeze the surface of the ground. In the colder months earthworms retire to the end of their burrows and lie still, well below the surface. Similarly, the activity of insects, spiders and centipedes must be greatly reduced so that they remain hidden and hard to find. Besides this, it seems likely that the actual numbers and weight of invertebrates may be less in cold weather, if the changes in the leaf litter are similar to those in the foliage of pine forest, where Gibb (1960) found that the stock of invertebrate food (chiefly insects and spiders) in late winter was closely correlated with the mean temperature at the time; this stock of food dropped sharply during the winter, especially during severe weather. At this season Robins feed mainly on insects, particularly small beetles (Lack 1948). Thus those Robins which remain in woodland in cold weather presumably depend to an increasing extent on small seeds lying on the surface.

Willow Warbler (*Phylloscopus trochilus*)

The Willow Warbler population has declined very considerably since the peak of 21 territories in 1950 and, except for a temporary increase in 1956 and 1958, the downward trend has been steady and rapid since

1950 to about two territories at the present time (fig. 1). It is interesting to compare these changes with the fluctuations in the population of the same species in 200 acres of predominantly oakwood and orchard in the Severn valley, Gloucestershire (Philips Price 1960). There the Willow Warblers reached a peak in 1939 and then showed a general steady decrease, with the result that the 1960 figures were the lowest ever. The changes have been more gradual than at Bookham, however. Philips Price suggested that this decline might be partly due to a decrease in Rabbits (*Oryctolagus cuniculus*), which allowed the bramble to spread over the floor of the wood and thus restricted suitable nesting sites for the warblers. In Eastern Wood, however, there is little evidence that the Rabbit exerted any marked effect on the bramble, for it has not increased much. In addition, by 1954, when myxomatosis reduced the Rabbit population there, the number of Willow Warblers had already been reduced to half the 1950 total.

A census made in a more open oakwood, with some gorse-covered and grassy patches, at Chislehurst Common, Kent, showed a similar general decrease of Willow Warblers between 1952 and 1957 (Hillman 1963). There was also a slight increase there in 1956, as at Bookham and in the Severn Valley.

On the other hand, outside the woodland at Bookham the situation appears to be different. Counts made between 1948 and 1962 on grassland with scrub do not suggest any significant decrease in the breeding population of this species (Melluish 1960 and *in litt.*). However, attention must be drawn to the great increase in hawthorn and rose scrub on this grassland—perhaps three or four times as much between 1951 and 1956 and possibly six times greater by 1959 (Melluish 1960, Castell 1960). Could it be that the vast increase in scrub on the grassland has enabled the Willow Warbler to maintain its numbers in this habitat at Bookham in spite of its general decrease over a wide area?

Chiffchaff (*Phylloscopus collybita*)

The numbers of Chiffchaffs in Eastern Wood are small, but have shown some variation (fig. 1). They increased from one in 1949 to 5½ in 1954 and have since decreased again. Until 1958, Willow Warblers considerably outnumbered Chiffchaffs in this oakwood and this was apparently true also amongst the mature oaks in Wyre Forest (Yapp 1962).

Dunnock (*Prinella modularis*)

The Dunnock has been present in small numbers throughout the period from 1950 to 1963, the figure usually being one or two territories. Every three or four years, however, there has been a small increase (fig. 1). The reason for this is unknown, but there is some

evidence to suggest that numbers increase locally after felling and thinning of parts of the wood. Yapp (1962) confirmed that this species is relatively scarce in pedunculate oakwood.

Chaffinch (*Fringilla coelebs*)

Chaffinches were rather scarce (six territories) in 1946. Unfortunately, they were not counted in the next two years. From 1949 to 1951, however, they showed a steady rise to 12½. After that, a gradual decline occurred (no census in 1957) until a minimum was reached in 1959 (two). Then the numbers began to increase again, up to seven in 1962. This waxing and waning over the whole period (1946 to 1963) seems to indicate natural fluctuations in the population (fig. 1). The breeding season census in grassland with hawthorn scrub at Bookham suggests that the Chaffinches there also decreased between 1954 and 1962 by about a quarter and perhaps by even more since 1949 (Melluish 1960 and *in litt.*). This is surprising in view of the great increase of scrub which has occurred on the grassland in that period (Castell 1960) when it might have been expected that the numbers would have increased or at least have been maintained.

However, there is little doubt that in the last few years there has been a general decrease of the Chaffinch in large areas of the country (Moore 1962). Whether this is due to an increasing use of toxic chemicals in agriculture or to the destruction of habitats is unknown, but some Chaffinches have certainly been poisoned by chemicals (Cramp *et al.* 1962, Macdonald 1962). Although these substances are not likely to have been used in the woodland at Bookham, most of the Chaffinches leave after the breeding season and presumably spend much of the rest of the year on farmland (Beven 1956). They may then eat seeds or plants contaminated by toxic chemicals. If, however, this is the cause of the decrease in Eastern Wood from 1951 to 1959, it is surprising that there should have been definite signs of revival subsequently, especially as mortality from toxic chemicals seems to have been greater in 1961 than in 1960 (Cramp *et al.* 1962). It must, of course, be emphasised that the number of birds counted in Eastern Wood is small and the changes may not have general significance. Future work should produce interesting results.

ACKNOWLEDGEMENTS

It is a pleasure to thank all those members of the London Natural History Society who have assisted in this survey; without their help nothing could have been achieved. Many people have taken part and space prevents individual mention. Special thanks are due, however, to Miss E. M. Hillman for much valuable advice and help in the field, to C. P. Castell, Stanley Cramp and W. D. Melluish for helpful suggestions, and to P. W. E. Currie who organised the survey.

during some of the earlier years. Regular field work and many extra counts have been done by S. H. Chalke, Miss E. M. Hillman, Miss M. E. Kennedy, F. C. Reeves and Miss D. A. Rook. The writer is also indebted to A. Keith Mellenfield, F.R.Met.S., and the Meteorological Office for the data on the winter weather.

SUMMARY

(1) A breeding-season census has been made annually since 1949 in a dense oakwood known as Eastern Wood and forming part of Bookham Common, Surrey. The results are discussed.

(2) The population of Great Tits (*Parus major*) has remained remarkably constant, except in 1958 when it was reduced by half; this occurred in the spring after a winter in which the population was far greater than normal and presumably many died of starvation. The population of Blue Tits (*P. caeruleus*) has shown more variation; some very similar fluctuations have taken place in other oakwoods in southern England in the same years.

(3) Populations of Robins (*Erithacus rubecula*) and Wrens (*Troglodytes troglodytes*) have usually been reduced in the springs following cold winters, even when these have not been especially severe. The Wren has been the more vulnerable in this respect. The recovery of numbers has, however, been rapid in both species, the return to normal taking only one or two years. Although a smaller breeding population of Blackbirds (*Turdus merula*) has usually followed a cold winter, there has sometimes been no marked reduction and occasionally an increase. Whereas many Robins are absent from the wood in mid-winter, most of the Wrens and Blackbirds seem to remain there throughout the year.

(4) Willow Warblers (*Phylloscopus trochilus*) have drastically declined in numbers since 1950. The reason is unknown, but similar decreases have been noted elsewhere in southern England.

(5) The population of Chaffinches (*Fringilla coelebs*) has waxed and waned. Possible reasons for the recent reduction are considered.

REFERENCES

- ARMSTRONG, E. A. (1955): *The Wren*. London.
- ASH, J. S. (1957): 'Post-mortem examinations of birds found dead during the cold spells of 1954 and 1956'. *Bird Study*, 4: 159-166.
- BEVEN, G. (1951): 'The bird population of an oakwood in Surrey (Eastern Wood, Bookham Common)'. *London Naturalist*, 30: 57-72.
- (1953): 'Further observations on the bird population of an oakwood in Surrey (Eastern Wood, Bookham Common)'. *London Naturalist*, 32: 51-77.
- (1956): 'Further observations on the bird population of an oakwood in Surrey (Eastern Wood, Bookham Common)—II'. *London Naturalist*, 35: 21-32.
- (1959): 'The feeding sites of birds in dense oakwood'. *London Naturalist*, 38: 64-73.
- CASTELL, C. P. (1960): 'The survey of Bookham Common. Progress report. Vegetation'. *London Naturalist*, 39: 64.
- CHAPMAN, W. M. M. (1939): 'Bird population of an Oxfordshire farm'. *J. Anim. Ecol.*, 8: 286-299.
- CRAMP, S., PETTET, A., and SHARROCK, J. T. R. (1960): 'The irruption of tits in autumn 1957'. *Brit. Birds*, 53: 49-77, 99-117, 176-192.
- CRAMP, S., CONDER, P. J., and ASH, J. S. (1962): *Deaths of Birds and Mammals from Toxic Chemicals*. Second Report of the Joint Committee of the British Trust for Ornithology and the Royal Society for the Protection of Birds on Toxic Chemicals, in collaboration with the Game Research Association.

- GIBB, JOHN (1954): 'Population changes in titmice, 1947-1951'. *Bird Study*, 1: 40-48.
 — (1960): 'Populations of tits and Goldcrests and their food supply in pine plantations'. *Ibis*, 102: 163-208.
 HILLMAN, E. M. (1963): 'Notes on the bird life of Chislehurst Common'. *London Naturalist*, 42: 71-73.
 JACK, D. (1948): 'Notes on the ecology of the Robin'. *Ibis*, 90: 252-79.
 — (1954): *The Natural Regulation of Animal Numbers*. London.
 — (1955): 'British tits (*Parus* spp.) in nesting boxes'. *Ardea*, 43: 50-84.
 — (1958): 'A quantitative breeding study of British tits'. *Ardea*, 46: 91-124.
 — and VENABLES, L. S. V. (1939): 'Habitat distribution of British woodland birds'. *J. Anim. Ecol.*, 8: 39-71 (p. 49).
 MACDONALD, J. W. (1962): 'Mortality in wild birds with some observations on weights'. *Bird Study*, 9: 147-167.
 MELLISHAM, W. D. (1960): 'Recent changes in the bird population of grassland with encroaching scrub at Bookham Common'. *London Naturalist*, 39: 93.
 MOORE, N. W. (1962): 'Toxic chemicals and birds: the ecological background to conservation problems'. *Brit. Birds*, 55: 428.
 NICHOLSON, E. M. (1951): *Birds and Men*. London.
 PHILIPS PRICE, M. (1961): 'Warbler fluctuations in oak woodland in the Severn Valley'. *Brit. Birds*, 54: 100-106.
 REEL, D. C. (1961): 'Seasonal fluctuations in numbers of Blackbirds and House Sparrows on a Middlesex farm, 1954-57'. *London Bird Report for 1959*: 60-70.
 SNOW, D. W. (1958): *A Study of Blackbirds*. London.
 STEELE, B. (1947): 'Woodland vegetation of Bookham Common'. *London Naturalist*, 26: 82-83.
 TICEHURST, N. F., and HARTLEY, P. H. T. (1948): 'Report on the effect of the severe winter of 1946-1947 on bird-life'. *Brit. Birds*, 41: 322-334.
 WITHERBY, H. F. *et al.* (1941): *The Handbook of British Birds*. London.
 YAPP, W. B. (1962): *Birds and Woods*. London.

The birds of the Danube delta and their conservation

By Stanley Cramp and I. J. Ferguson-Lees

(Plates 47-53)

INTRODUCTION

THE DELTA OF THE DANUBE ranks with those of the Rhône, Guadalquivir and Volga as one of the major wetland areas in Europe. As well as being a breeding area for some species of birds rare or absent in the two western deltas (and for others more widely represented) it is an important passage and winter refuge for many geese, ducks and waders which nest further north. Its avifauna suffered a marked decline in the late nineteenth and early twentieth centuries, but fairly vigorous protective measures, mainly in the last fifteen years, have halted this and already led to some improvement.

This paper attempts a brief account of the present status of the more important species and groups of birds, and discusses the adequacy of

existing methods of conservation to meet possible threats in the future. It is based on a visit of seventeen days in May 1961, mainly in the area of Lake Uzlina and at the north end of Lake Razelm. Such a short period is clearly quite inadequate for any complete appreciation of so large an area, but as recent published studies are very few (and apparently not entirely reliable) we hope that our observations will still be of value, especially as, where the major species are concerned, they were greatly strengthened by the knowledge and experience of Mr. Gheorghe Andone, who has been in charge of scientific and conservation studies in the delta for the past eight years and who accompanied us throughout our stay.

THE CHARACTER OF THE DELTA

The Danube has the largest outflow of any river in Europe and only the Volga is longer. In its journey of 1,750 miles eastwards across Europe from the Black Forest it is fed by more than 300 tributaries and every year it brings down a hundred million tons of silt to the Black Sea. About fifty miles from the mouth it splits into three separate arms, the Chilia, Sulina and St. Gheorghe channels, which between them enclose some 1,100 square miles (2,850 sq. km.) of reed-beds and freshwater lakes. To the south, between the St. Gheorghe channel and Lake Razelm, lie another 580 square miles (1,500 sq. km.) of similar terrain, bringing the total area of the delta proper to nearly 1,700 square miles (over 4,350 sq. km.). This is smaller than the delta of the Volga, but more than twice as large as those of the Rhône and Guadalquivir. In addition, Lakes Razelm and Sinoe, which are adjacent to the delta and both salt, combine to give yet another 580 square miles (1,500 sq. km.) which must be considered at the same time (see fig. 1).

In any comparison of the Danube with the much more fully studied deltas of the Rhône and Guadalquivir it is necessary to start by noting some important climatic differences. The Danube is the most northerly of the three, lying around 45°N, while the Rhône is just north of 43°N and the much more southerly Guadalquivir only 37°N. The Guadalquivir has the highest summer and winter temperatures; the maximum mean monthly temperature at Seville, on the edge of the delta, is 83°F (28°C) in August and the minimum 50°F (10°C) in January, a range of 33°F. The Rhône, with a similar range, has its maximum and minimum mean temperatures about 9°F (5°C) lower at Avignon, just north of the delta, the maximum is 74°F (23°C) in July and the minimum 41°F (5°C) in January. But, whereas the mean maximum summer temperatures in the Danube delta almost reach the Rhône level (at Sulina the maximum of 72°F or 22°C is reached in July), the winters are much more severe, with the months of December, January and February all having mean temperatures



PLATE 47. Glossy Ibis (*Plegadis falcinellus*), Hungary, in a wooden pose that seems to symbolise this almost 'prehistoric' bird which has a wide but very patchy range in every continent. In most of Europe it is extremely local, but the Danube delta area holds literally tens of thousands (pages 323-339) (photo: Zoltan Tildy)



PLATE 48. Above, much of the Danube delta consists of dense reeds growing on a floating layer of decaying vegetation, and penetration is possible only by poling a narrow boat. Below, the huge colonies of ibises and herons occur where tangled willows make thick jungles in the reed beds (page 326) (*photos: I. J. Ferguson-Lees*)





PLATE 49. Above, a typical wood on a Danube island, with little ground cover; birds are scarce, but include Redstarts, Chaffinches, Starlings, tits, woodpeckers and Red-breasted Flycatchers. Below, an island edge on the St. Gheorghe arm, with overhanging willows and little exposed mud for waders (photos: J. J. Ferguson-Lewis)





PLATE 50A
Pelicans (*Pelecanus
onocrotalus*)
Bulgaria, 1961. The
most majestic
which in Europe
now be seen
parts of the
and southern



PLATE 50B
Spoonbill
*Pelecanus
leucorodia*, 1961. This
nests in the
delta with the
but usually
numbers (p. 10)
(photos: Eric



PLATE 51. Above, non-breeding White Pelicans (*Pelecanus onocrotalus*) cooling themselves in the water, Bulgaria, 1960 (photo: Eric Hosking). Below, four typical White Pelican nests at Lake Uzlina, in 1961 the largest colony in the Danube delta; the touching platforms often form solid masses like this (photo: I. J. Ferguson-Lees).







TE 53. Great White Herons (*Egretta alba*), Hungary, 1961— not uncommon in Danube delta, with colonies of up to fifty pairs (page 329) *photo Eric Hosking*

(*opposite*). Top, islands of short grass, mud and sand on Lake Sinoe
tes of Kentish Plovers, Pratincoles, Avocets and terns. Centre, sedges
red willows in a Danube backwater, the haunt of Grey Lag Geese and
morants. Bottom, salt lakes on the Dobrogea north of Lake Razelm:
nd ducks nest, and waders and herons feed *photos I. J. Levenson-Lane*



PLATE 54. Parts of Bookham Common, Surrey. Above, mature oaks and saplings with a dense shrub layer of hawthorn, blackthorn, hazel and holly, also bramble, bracken and rose, February 1959. Below, a footpath among young oaks and birches, with hawthorn scrub and bramble, March 1963 (pages 307-323) (*photos: Geoffrey Beren*)



well below the Avignon minimum of 41°F (5°C), falling as low as 31°F (-1°C) in January and 32°F (0°C) in February. This effect of the eastern continental climate (the Danube delta lies 30°E , on the longitude of Minsk and Leningrad) leads to the frequent freezing over of the river near its mouth. In fifty-one years it has remained open in only ten winters and the many shallow lakes must be more severely affected. The western shores of the Black Sea are covered



G. 1. The lower reaches of the Danube and the delta proper, also showing lakes Razelm and Sinoe and the intervening tongue of land known as the Dobrogea (drawn by Robert Gillmor)

with snow for a few weeks in most years, whereas snow is extremely rare in the *marismas* of the Guadalquivir, and the winters are generally mild in the Rhône Camargue (though spells of frost, sometimes severe, do occur). In rainfall, too, there is a marked difference. The Camargue has over 50 cm. (20 inches), most of it falling in October and November, when the heavy rains cause winter flooding; in the Guadalquivir delta the rainfall is variable, but it probably averages around 25 to 30 cm. (10 to 20 inches) and is concentrated mainly in October and November and from February to April. The Danube delta does not have much more rain than the Guadalquivir (40 cm. or 16 inches annually at Brăila), but very little falls in the winter months and most of it is precipitated by thunderstorms between May and August, when the high temperatures lead to very rapid evaporation. For fuller discussion of temperature and rainfall, see Kendrew (1961) and Nicholson, Ferguson-Lees and Hollom (1957).

Ecologically, the most striking feature of the Danube delta is the broad uniformity of habitat, well over 95% consisting of freshwater lakes and vast areas of reeds (*Phragmites communis*) (plate 48a). The lakes are connected by a complicated network of narrow channels. As most of the reeds grow on a floating platform of decaying vegetation (known as the *plaur*), storms can alter the shape of the open water and the courses of the channels. Navigation thus becomes a matter only for the experienced fishermen of the region. Along the banks of the main channels of the Danube and scattered as islands throughout the delta are small areas of firm land, rarely rising to more than ten feet (three metres) above sea level, with willows (*Salix*), poplars (*Populus*), alders (*Alnus*) and some oaks (*Quercus*) (plate 49); in such places fishing villages are located. In some areas, too, one finds patches of willows growing in the swamps and these are often the sites of the mixed heronries (plate 48b), but there are only two sections of real woodland in the delta proper. They are on the low ridges of Cara-Orman in the centre and Pas Letea in the north. Although the current in the main channels is still strong enough to make rowing upstream difficult, the Danube has lost much of its force long before it reaches the delta. At Budapest, some 800 miles (1,300 km.) from the mouth, it is already less than 300 feet (under 90 metres) above sea level, and in the last 150 miles it falls less than 30 feet (9 metres); as a result, there are extensive marshy areas well inland from the delta proper and these were once important breeding areas for birds. The low rate of fall means that the Danube brings only fine silt to the Black Sea; stones and pebbles, so common on the adjoining dry ridges of the Dobrogea, are infrequent in the delta itself.

Secondly, in striking contrast to the highly saline lagoons of the Rhône and Guadalquivir, the more numerous and extensive lakes of the Danube delta are fresh. They teem with fish of many kinds,

including Carp (*Cyprinus carpio*), Pike (*Esox lucius*), Catfish (*Silurus glanis*) and Zander (*Sanderus lucioperca*). Others—among them the valuable sturgeon (*Acipenser* sp.)—enter the fresh water to spawn. So, apart from the commercial craft going down from central Europe to the Black Sea, and the new cellulose industry based on reeds, the economy of the Danube delta is dominated by fishing and fishermen. The sparse human population also uses the limited areas of firm land for crops and the herding of pigs and sheep, but there is nothing to compare with the large rice-growing regions of the Camargue, or the extensive herds of wild bulls and horses of both the western deltas. There are, however, extensive saline areas, with a distinctive avifauna, along the shores of Lakes Razelm and Sinoe (plate 52a) which both have a narrow exit to the Black Sea, as well as a few salt-lakes on the narrow strip of the Dobrogea between Lake Razelm and the St. Gheorghe channel (plate 52c). There is little information about the Black Sea shore of the delta, which we did not visit, but the reed-beds of the delta are separated from the sea by only a narrow strip of sand and in most places and offshore islands for sea-birds are few.

THE BIRDS OF THE DELTA

The delta of the Danube being mainly a region of *Phragmites* and open water, with little marsh or exposed mud, the dominant birds are large and either long-legged or swimming. There are few waders and insignificant numbers of most Passerines, but the whole area abounds with pelicans and cormorants, ibises, herons, egrets and bitterns, grebes, ducks and geese, and marsh terns.

Easily the commonest bird of all is the Glossy Ibis (*Plegadis falcinellus*) (plate 47). In one colony of about ten thousand pairs of each species of herons and cormorants, which we visited on 18th May, there were more Glossy Ibises than all the other birds combined. In the delta as a whole, according to Gheorghe Andone, there are at least twenty mixed colonies (mostly smaller than the one we visited) and in nearly every one of these this is the dominant species. Throughout the day, wherever we were, it was possible to see parties of Glossy Ibises flying between the colonies and feeding grounds. Some such parties consisted of only four or five birds, but there were many bigger flocks of thirty, forty or even more.

Two examples from our observations will perhaps illustrate, even better than the size of the actual breeding colonies, the abundance of the Glossy Ibis in the delta of the Danube. On 19th May we spent two hours counting all the birds which passed over a grassy field surrounded by willows and poplars (this was part of the island on which we were based). No reeds, marsh or open water were in sight and there were nowhere near a colony, so it was not surprising that during this period we saw less than five of any species of egret, heron or

cormorant. Yet the total number of Glossy Ibises counted flying over was 267. This watch was carried out in the middle of the day when flighting was at its lowest. Three evenings earlier, in an equally unpromising area, flocks totalling 624 passed by in less than half an hour. It would, in fact, be almost true to say that during our time in the delta proper there was hardly ever a period of more than ten minutes in which this species was not seen. As the Glossy Ibis has declined to such an alarming extent over the whole of the rest of Europe, except in Greece (Evros delta) and probably south Russia (Volga delta), these considerable concentrations in the Danube are one of the primary reasons why the area must not be allowed to be destroyed.

But of even greater import are the pelicans (plates 50 and 51). Two species nest in the delta—the White (*Pelecanus onocrotalus*), which does not breed anywhere else in Europe outside Russia, and the Dalmatian (*P. crispus*), which is more widely distributed in the Balkans. The latter is now much reduced in Rumania. Munteanu (1960) quoted E. Hodek to show that a century ago (1867-68) the numbers of Dalmatian Pelicans in the marshes and delta of the Danube were in the region of 'several millions'. This seems likely to be an exaggerated impression since even a population of one million would necessitate an average of 600 pelicans to every square mile, but there is no doubt that there has been an enormous decrease and today the Dalmatian Pelicans probably number less than a thousand birds. On the other hand, the White Pelican, which was formerly nowhere near as numerous as the Dalmatian, is now much the commoner.

There are three colonies of pelicans in the delta proper today and two others further up the Danube valley, in Balta Brăila and Balta Ialomitza, though these last are apparently composed mainly of non-breeding birds. The total number of White and Dalmatian combined is something over five thousand. In 1961 four-fifths of these were in the largest colony at Uzlina, while the smaller delta colonies at Buhăiova and Zadoane had only two or three hundred nests each. There is some shift from year to year and in 1960 Buhăiova was the large one and there were only five nests at Uzlina, whereas in 1959 there were about a thousand nests at each. Protection of the pelicans has now been in force for ten years. Before that they were much persecuted and often even shot at the nesting places; during the 1939-45 war they were almost exterminated. As a result of protection they seem now to be steadily on the increase. In 1952, for example, the population stood at less than two-fifths of what it does today.

Apart from prevention of shooting, it is important to make sure that there is little disturbance of the colonies during the breeding season, particularly while the birds have eggs. In 1959 one of the keepers allowed some thoughtless visitors into a colony at Somova

between Tulcea and Galati; as a result of the disturbance they caused, all the birds deserted and none returned in either of the next two years. This problem of disturbance is further complicated by the fact that the White Pelicans do not lay until four weeks after the Dalmatians. The period of danger in mixed colonies is thus increased by an extra month. Another aspect affecting the future of these birds is the shooting of them on passage and in their winter quarters. No pelicans winter in the Danube delta and the majority of them leave in October and early November; they travel to the Nile delta and come back in the second half of March. It is significant that most of the two hundred or so Danube-ringed pelicans recovered by 1960 had been reported from Bulgaria where they had presumably been shot on passage.

The next most important species in terms of general scarcity in Europe is the Great White Heron (*Egretta alba*) (plate 53). This bird breeds in several parts of the delta—for example, we were told of concentrations of fifty and thirty nests at Somova and Cara-Orman—did, though we did not visit any of the colonies (which are often separate from those of the other herons), we saw the species quite commonly wherever we were.

Of the other herons, the Night Heron (*Nycticorax nycticorax*) and Squacco Heron (*Ardeola ralloides*) are easily the most numerous. For instance, in the mixed colony we visited there were thought to be about 2,500 nests of Night Heron and 2,000 of Squacco (compared with 4,000-5,000 of Glossy Ibis). Little Egrets (*Egretta garzetta*) are fairly common, though possibly not as numerous as in, say, the delta of the Guadalquivir: there were 500-600 nests in our mixed colony, where the last two of the six breeding species were Spoonbill (*Platalea leucorodia*) (100 nests) and Pygmy Cormorant (*Phalacrocorax pygmaeus*) (200 nests). A few Spoonbills (plate 50b) were seen in most areas, but the Pygmy Cormorants appeared to be restricted to places where there were both open water and sizeable trees (plate 52b). Cormorants (*Pb. carbo*)—a few hundred in all—nest with the pelicans, a recognised partnership. Herons (*Ardea cinerea*), White Storks (*Ciconia alba*), Purple Herons (*A. purpurea*), Bitterns (*Botaurus stellaris*) and Little Bitterns (*Ixobrychus minutus*) all breed in the delta, but the first two are rather local and the more solitary breeding of the other three makes their status difficult to determine.

Next in significance to the pelicans, ibises, herons and cormorants are geese and ducks, and the grebes. Grey Lag Geese (*Anser anser*) are widespread and in good numbers, breeding both among the reeds and in areas where willows grow out of the water. Of the ducks, Mallard (*Anas platyrhynchos*) and Ferruginous (*Aythya nyroca*) are the most common. The other species are listed in the appendix, but it should be noted that the Danube delta is, like the Guadalquivir, one

of the few places in Europe where the White-headed Duck (*Oxyura leucocephala*) is considered to breed. The area is also one of the last refuges of the Ruddy Shelduck (*Casarca ferruginea*) which has now so much decreased everywhere, but even here there are only a handful of pairs on the island of Popina in Lake Razelm and these have been regularly robbed ever since sheep and shepherds began to spend the summer months on the island in about 1960. There are few other places in Europe where the Shelduck (*Tadorna tadorna*) is found so far south. Mute Swans (*Cygnus olor*) are very local in the Danube delta. Four species of grebes nest, but only the Great Crested (*Podiceps cristatus*) and Red-necked (*P. griseigena*) can be described as really common.

Of the gulls and terns, Munteanu (1960) stated that Black Terns (*Chlidonias niger*), White-winged Black Terns (*Ch. leucopterus*) and Whiskered Terns (*Ch. hybrida*) could be found everywhere and we certainly came across numbers of the first two, but we did not see a single Whiskered Tern during the whole of our stay. Nevertheless, it would be unwise to lay too much emphasis on this, as the parts of the delta we visited were not necessarily the best for terns and gulls. We saw Black-headed Gulls (*Larus ridibundus*), but most of them were not in breeding condition and we were told that this species could be found nesting near the sea. Similarly, among the birds which Munteanu listed as characteristic of the coastal lagoons were the Gull-billed Tern (*Gelichelidon nilotica*), Caspian Tern (*Hydroprogne caspia*), Slender-billed Gull (*L. genei*) and Mediterranean Black-headed Gull (*L. melanocephalus*), whereas in the parts we visited we saw only odd individuals of the first three of these and none at all of the last.

Waders, as already stated, are generally rather scarce in the delta proper because of the lack of marshland. However, where there are areas of mud and short grass on the edges of the big saline lagoons, Avocets (*Recurvirostra avosetta*), Black-winged Stilts (*Himantopus himantopus*), Pratincoles (*Glareola pratincola*), Redshanks (*Tringa totanus*) and Lapwings (*Vanellus vanellus*) are to be found in some numbers, while the sandbanks and shell beaches hold Kentish Plovers (*Charadrius alexandrinus*), Little Ringed Plovers (*Ch. dubius*) and Oystercatchers (*Haematopus ostralegus*).

After reading Munteanu (1960) and Swann (1925), we were surprised at the general scarcity of birds of prey. We ourselves saw no vultures and only two species of eagles. The White-tailed Eagle (*Haliaeetus albicilla*) is protected, but was not particularly numerous in the areas we visited; all those we observed were immature birds scavenging along the edges of the lagoons and so breeding evidently takes place in other parts of the delta. Several Lesser Spotted Eagles (*Aquila pomarina*) were seen and a number of Marsh Harriers (*Circus aeruginosus*) and Black Kites (*Milvus migrans*), but we came across only a few indivi-

uals of most of the other raptors listed in the appendix. We understood that most birds of prey are not protected and some of those that are—such as the vultures—have suffered from the poisoning of carcasses put out in the mountains to destroy Wolves (*Canis lupus*). There is urgent need for an enlightened policy towards birds of prey in Rumania.

Passerines play a comparatively small part in the broad ecology of the delta and we do not propose to discuss these here at any length, particularly as a complete list can be found in the appendix. However, it is worth just drawing attention to one or two. The island of Popina, already mentioned, has sand cliffs of a type commonly found on other parts of the coasts of Rumania and Bulgaria, and these are the only places in Europe where the Pied Wheatear (*Oenanthe isomela*) nests. Other species which do not breed in either of the western deltas include the Thrush Nightingale (*Luscinia luscinia*), here replacing the Nightingale (*L. megarhynchos*) which is found not far to the west and south, and the River Warbler (*Locustella fluviatilis*), Marsh Warbler (*Acrocephalus palustris*), Icterine Warbler (*Hippolais icterina*), Red-breasted Flycatcher (*Muscicapa parva*) and Hawfinch (*Coccothraustes coccothraustes*). In an area where reeds are so dominant it is not surprising to find that the commonest Passerines are such birds as Penduline Tits (*Remiz pendulinus*), Bearded Tits (*Panurus biarmicus*), Reed Buntings (*Emberiza schoeniclus*) and the various warblers which nest in aquatic vegetation, especially Savi's (*Locustella luscinioides*), Great Reed (*Acrocephalus arundinaceus*) and Reed (*A. scirpaceus*).

THE PROBLEMS OF CONSERVATION

Although the numbers of some of the birds in the delta may have been exaggerated in the past, there seems little doubt that a very serious decline of several of the more important species took place in the latter half of the nineteenth century and the early years of the twentieth, leading to the abandonment of the colonies in the marshes further inland and in some instances even to a real danger of extinction in the delta itself. This may have been partly due to disturbance and the reclamation of certain marshy areas, but in many cases it followed deliberate destruction by fishermen, who saw the birds as competitors. Protection, first attempted some thirty years ago and placed on a much firmer basis in the last decade, has more than arrested the decline. Since about 1950 conservation of the delta and its animals has been directed by the Ministry of Sylviculture and the Academy of Sciences which have set up two large natural reserves (covering some 140,000 acres or 55,000 hectares) and six refuges. The latter are smaller areas chosen because they are the nesting sites of the rarer species or because they are used extensively by migrating birds. Two of the refuges, for example, are Uzlina for the pelicans and Popina for the Ruddy

Shelduck. The Ministry also employs a full-time scientist, with a staff of guards and boatmen; he is responsible for regular surveys and counts of the main breeding species, the prevention of interference by fishermen and others, and the preservation of suitable habitats. Shooting is under strict government control. Eleven of the rarer species (including White and Dalmatian Pelicans, Little Egret, Great White Heron, Spoonbill, Shelduck, Ruddy Shelduck and Black-winged Stilt) have been designated as 'Monuments of Nature' and cannot be shot, except on permit for urgent scientific reasons and even then only outside the breeding season. Special publicity is given to these by postage stamps and posters. The shooting of swans, eagles, owls, storks and many Passerines is also forbidden, and close seasons and licences are in operation for ducks, geese and game-birds. With some exceptions, the success of these protective measures so far is not in doubt, but what are the problems of the future?

As already described, the delta is at present thinly populated and, outside the main channels, little visited except by the fishermen. Any major rise in the population seems unlikely, but there are possible dangers in the increased use of the area as a result of new economic developments and the growth of tourism. Already the value of the reed-beds as a source of cellulose has been realised, and the Second Five-Year Plan provides for a processing plant with an annual capacity of 100,000 metric tons. Even this quantity, however, represents a minute proportion of the vast reed-beds of the delta and, if due care continues to be taken to avoid the known nesting sites of the more sensitive species, no serious threat should develop. The existing regulations provide other safeguards such as the limitation of the cutting to the winter months, the withdrawal of the great majority of the workers in the nesting season, the rotation of cutting, and the control of waste disposal. The depth of water would appear to make any considerable development of rice-growing unlikely.

Tourism could be a more serious danger, as the authorities are now making strenuous efforts to encourage visitors to Rumania, not only to such areas as the Black Sea coast and the Carpathians, but to the delta itself. The ordinary tourist, however, is offered only trips by boat along the main channels, which, while affording ample opportunity to see the larger and more spectacular birds, offer no threat to their nesting colonies. Naturalists wishing to explore further could be a more serious menace, but at the moment their numbers are limited by the shortage of accommodation in the delta. We understand, however, that plans are being made to erect a further twenty or thirty hunting lodges (compared with only two at present) and, if these materialise, it will clearly be necessary to regulate visits to the colonies very carefully (and preferably have a complete ban on excursions to the pelicans until the young are well-grown).

Shooting is significant in the autumn and winter when there is a great influx of geese, ducks and waders from further north. If the control measures already described are properly exercised the toll could be kept to reasonable proportions. There appears to be one weakness, however. We have already remarked on the relative scarcity of raptors in the delta and though their main haunts were probably always outside the delta proper, in the wooded hills of the adjacent Dobrogea—where Swann (1925) found nests of such species as Griffon Vulture (*Gyps fulvus*), Black Vulture (*Aegypius monachus*), Imperial Eagle (*Aquila heliaca*), Lesser Spotted Eagle (*Aquila pomarina*), Buzzard (*Buteo buteo*), Goshawk (*Accipiter gentilis*), Pallid Harrier (*ircus macrourus*) and Short-toed Eagle (*Circaetus gallicus*)—it seems likely that raptorial birds have been reduced in the delta and elsewhere by misguided official policy. In the villages and hunting lodges we saw posters, in both Russian and Rumanian, encouraging sportsmen to spare certain 'good' animals and shoot the 'bad', the latter including nearly all the diurnal birds of prey. Finally, a more specialised problem concerns the Ruddy Shelduck: if the remnant on the island of Pinna is to be preserved, it would seem essential to forbid visits of sportsmen during the nesting-season.

To sum up, the outlook for the Danube delta, one of the four key areas of Europe for water-birds, seems favourable if present enlightened policies are continued. It is desirable that those responsible in Rumania should be supported by the naturalists of other countries in their efforts to maintain adequate measures for the conservation of birds and mammals, and the preservation of suitable habitats, in view of the potential dangers from economic development, tourism, fishing, shooting and other interests. The valuable studies they are making and presenting into the numbers and status of the key species deserve to be continued, and almost equally desirable is the full and regular publication of the results being obtained.

ACKNOWLEDGEMENTS

We should like to take this opportunity of acknowledging our great debt to Mr. Gheorghe Andone, of the Exp. Statiunea de Cercetări în Zoologia Vînatului at Brăila, for much information and help in the field (as he who is standing in the bows of the boat on plate 48a). Carpati, the official Rumanian travel organisation, made all the excellent arrangements for our stay in the delta. For the first ten days we enjoyed the stimulating company of Mr. P. A. D. Hollom, but he then had to return to England; we are grateful for his criticisms of an early draft of this paper and our thanks are also due to Dr. Kai Curry-dahl for his comments in the light of his own visit to the delta in the summer of 1963.

SUMMARY

The delta of the Danube, more than twice as large as those of the Rhône and Guadalquivir, ranks with them and the still bigger Volga delta as one of the major wetland areas of Europe, both as a breeding ground and as a passage and winter refuge for birds. The main climatic and ecological characteristics are discussed and an account given of the more important species and groups of birds to be found there. The list of breeding-season birds on pages 334-339 shows a total of 162 species (compared with 138 in the Guadalquivir and 134 in the Rhône) and includes some of particular interest, such as White and Dalmatian Pelicans (*Pelecanus onocrotalus* and *crispus*), Glossy Ibis (*Plegadis falcinellus*), Great White Heron (*Egretta alba*) and Ruddy Shelduck (*Casarca ferruginea*). A serious decline in the numbers of several of the more important species took place in the latter half of the nineteenth and the early twentieth centuries, but since then, and especially in the last decade, the protective measures which are described and discussed have led to a marked improvement in many cases—apart from the birds of prey.

REFERENCES

- KENDREW, W. G. (1961): *The Climates of Continents*. London.
 MUNTEANU, D. (1960): 'La situation actuelle de l'avifaune dans la Delta du Danube'. *Nos Oiseaux*, 25: 209-223.
 NICHOLSON, E. M., FERGUSON-LEES, I. J., and HOLLUM, P. A. D. (1957): 'The Camargue and the Coto Doñana'. *Brit. Birds*, 50: 497-519.
 SWANN, H. K. (1925): *Two Ornithologists on the Lower Danube*. London.

Appendix—Birds composing the main breeding-season populations of the deltas of the Danube (Rumania), Guadalquivir (Spain) and Rhone (France)

This table lists the species which are known to breed commonly (B) or more locally and in small numbers (L), or which are regularly present (P) throughout the nesting-season as parties of immatures and non-breeding birds or for feeding purposes. Where there is some doubt about the status, the most probable category is shown in brackets. The Guadalquivir and Rhône lists have been taken in their entirety from Nicholson, Ferguson-Lees and Hollum (1957), even though later knowledge might have justified some changes.

Except in the cases of interesting remnant species (X), isolated or irregular occurrences, non-breeders found in minute numbers, winterers staying casually into the breeding-season and all passage-migrants are omitted. This means that a number of species commonly seen in the deltas during April and May are ignored—notably many northern waders, warblers, flycatchers and so on.

For the purpose of this list, the Danube includes not only the delta proper but also the huge Lakes Razelm and Sinoe to the south and the intervening tip of the Dobrogea south-east of Tulcea; the Rhône is taken as the whole of the delta area, i.e. the Camargue proper between the Grand Rhône and the Petit Rhône, plus the Petite Camargue on the west side and the Crau desert and scrub on the east; the Guadalquivir covers the whole delta, including the vast sand-ridge between the main river and the Rio Tinto. Casting the boundaries as wide as this results in the inclusion (as L) of a few species in each case which are not really typical of the area, but we think it simpler and more helpful to follow broad geographical boundaries rather than to adhere strictly to the ecological ones.

			Danube	Guadalquivir	Rhône
Great Crested Grebe (<i>Podiceps cristatus</i>)	..	..	B	L	B
Red-necked Grebe (<i>Podiceps griseigena</i>)	..	..	B		
Black-necked Grebe (<i>Podiceps nigricollis</i>)	..	..	L	L	
Little Grebe (<i>Podiceps ruficollis</i>)	..	..	L	B	B
Cormorant (<i>Phalacrocorax carbo</i>)	..	..	L		

THE BIRDS OF THE DANUBE DELTA

	Danube	Guadalquivir	Rhône
gmy Cormorant (<i>Phalacrocorax pygmaeus</i>)	.. B		
hite Pelican (<i>Pelecanus onocrotalus</i>)	.. B		
lmatian Pelican (<i>Pelecanus crispus</i>)	.. L		
eron (<i>Ardea cinerea</i>)	.. L	L	P
rple Heron (<i>Ardea purpurea</i>)	.. B	B	B
tle Egret (<i>Egretta garzetta</i>)	.. B	B	B
eat White Heron (<i>Egretta alba</i>)	.. L		
uacco Heron (<i>Ardeola ralloides</i>)	.. B	B	L
ttle Egret (<i>Ardeola ibis</i>)	.. B	B	
ght Heron (<i>Nycticorax nycticorax</i>)	.. B	B	B
tle Bittern (<i>Ixobrychus minutus</i>)	.. B	L	B
tern (<i>Botaurus stellaris</i>)	.. B	B	B
hite Stork (<i>Ciconia ciconia</i>)	.. B	B	X
ck Stork (<i>Ciconia nigra</i>)	.. X		
onbill (<i>Platalea leucorodia</i>)	.. L	L	
ossy Ibis (<i>Plegadis falcinellus</i>)	.. B	X	X
mingo (<i>Phoenicopterus ruber</i>)	.. P	P	B
llard (<i>Anas platyrhynchos</i>)	.. B	B	B
il (<i>Anas crecca</i>)	.. (L)	(L)	
rbled Duck (<i>Anas angustirostris</i>)	.. L	L	X
ergancy (<i>Anas querquedula</i>)	.. B	L	B
dwall (<i>Anas strepera</i>)	.. B	B	B
tail (<i>Anas acuta</i>)	.. L	L	L
veler (<i>Spatula clypeata</i>)	.. B	(L)	L
l-crested Pochard (<i>Netta rufina</i>)	.. (B)	B	B
cted Duck (<i>Aythya fuligula</i>)	.. L		
hard (<i>Aythya ferina</i>)	.. B	(L)	P
ruginous Duck (<i>Aythya nyroca</i>)	.. B	B	
er (<i>Somateria mollissima</i>)	.. P		P
ite-headed Duck (<i>Oxyura leucocephala</i>)	.. (L)	L	
lduck (<i>Tadorna tadorna</i>)	.. L		B
ldy Shelduck (<i>Casarca ferruginea</i>)	.. L		
y Lag Goose (<i>Anser anser</i>)	.. B		
ce Swan (<i>Cygnus olor</i>)	.. L		
ptian Vulture (<i>Neophron percnopterus</i>)	.. P	P	P
fon Vulture (<i>Gyps fulvus</i>)	.. P	P	
ck Vulture (<i>Aegyptus monachus</i>)	.. P	P	
den Eagle (<i>Aquila chrysaetos</i>)	.. P	P	
erial Eagle (<i>Aquila heliaca</i>)	.. L	B	
er Spotted Eagle (<i>Aquila pomarina</i>)	.. L		
elli's Eagle (<i>Hieraetus fasciatus</i>)	.. P		P
cted Eagle (<i>Hieraetus pennatus</i>)	.. L	L	
zard (<i>Buteo buteo</i>)	.. (L)	L	
rowhawk (<i>Accipiter nisus</i>)	.. (L)		(L)
hawk (<i>Accipiter gentilis</i>)	.. L		
(<i>Milvus milvus</i>)	.. B	B	
k Kite (<i>Milvus migrans</i>)	.. L	B	B
te-tailed Eagle (<i>Haliaetus albicilla</i>)	.. L		
sh Harrier (<i>Circus aeruginosus</i>)	.. B	B	B
d Harrier (<i>Circus macrorous</i>)	.. L		
tagu's Harrier (<i>Circus pygargus</i>)	.. L	L	B
t-toed Eagle (<i>Circus gallicus</i>)	.. L	L	P
rey (<i>Pandion haliaetus</i>)	.. L		
by (<i>Falco subbuteo</i>)	.. L	L	L

BRITISH BIRDS

	Danube	Guadalquivir	Rhône
Peregrine (<i>Falco peregrinus</i>)		L	
Saker (<i>Falco cherrug</i>)	L		
Red-footed Falcon (<i>Falco vespertinus</i>)	L		
Lesser Kestrel (<i>Falco naumanni</i>)		P	L
Kestrel (<i>Falco tinnunculus</i>)	L	B	B
Red-legged Partridge (<i>Alectoris rufa</i>)		B	B
Quail (<i>Coturnix coturnix</i>)	L	B	(L)
Crane (<i>Megalornis grus</i>)	L		
Water Rail (<i>Rallus aquaticus</i>)	B	B	B
Spotted Crake (<i>Porzana porzana</i>)	(L)	(L)	L
Baillon's Crake (<i>Porzana pusilla</i>)	(L)	L	L
Little Crake (<i>Porzana parva</i>)	B	(L)	(L)
Corncrake (<i>Crex crex</i>)	(L)		
Purple Gallinule (<i>Porphyrio porphyrio</i>)		L	
Moorhen (<i>Gallinula chloropus</i>)	B	B	B
Coot (<i>Fulica atra</i>)	B	B	B
Crested Coot (<i>Fulica cristata</i>)		L	
Great Bustard (<i>Otis tarda</i>)		P	
Little Bustard (<i>Otis tetrax</i>)		(L)	L
Oystercatcher (<i>Haematopus ostralegus</i>)	L	P	B
Lapwing (<i>Vanellus vanellus</i>)	B	B	B
Little Ringed Plover (<i>Charadrius dubius</i>)	B		
Kentish Plover (<i>Charadrius alexandrinus</i>)	B	B	B
Curlew (<i>Numenius arquata</i>)	(L)		
Black-tailed Godwit (<i>Limosa limosa</i>)	(L)		
Redshank (<i>Tringa totanus</i>)	B	B	B
Marsh Sandpiper (<i>Tringa stagnatilis</i>)	(L)		
Avocet (<i>Recurvirostra avosetta</i>)	L	B	B
Black-winged Stilt (<i>Himantopus himantopus</i>)	L	B	B
Stone Curlew (<i>Burhinus oedipnemus</i>)	L	B	B
Pratincole (<i>Glareola pratincola</i>)	L	B	L
Herring Gull (<i>Larus argentatus</i>)	L	P	B
Slender-billed Gull (<i>Larus genei</i>)	L	L	L
Mediterranean Gull (<i>Larus melanocephalus</i>)	L		
Little Gull (<i>Larus minutus</i>)	L		
Black-headed Gull (<i>Larus ridibundus</i>)	B	P	B
Black Tern (<i>Cblidonias niger</i>)	B	B	P
White-winged Black Tern (<i>Cblidonias leucopterus</i>)	B		
Whiskered Tern (<i>Cblidonias hybrida</i>)	L	B	B
Gull-billed Tern (<i>Gelochelidon nilotica</i>)	L	L	B
Caspian Tern (<i>Hydroprogne caspia</i>)	L	(L)	
Common Tern (<i>Sterna hirundo</i>)	B		B
Roseate Tern (<i>Sterna dougallii</i>)			L
Little Tern (<i>Sterna albifrons</i>)	L	L	B
Sandwich Tern (<i>Sterna sandvicensis</i>)	L	P	L
Black-bellied Sandgrouse (<i>Pterocles orientalis</i>)		P	
Pin-tailed Sandgrouse (<i>Pterocles albata</i>)		L	L
Stock Dove (<i>Columba oenas</i>)	L		
Woodpigeon (<i>Columba palumbus</i>)		B	P
Turtle Dove (<i>Streptopelia turtur</i>)	L	B	B
Collared Dove (<i>Streptopelia decaocto</i>)	L		
Cuckoo (<i>Cuculus canorus</i>)	B	(L)	B
Great Spotted Cuckoo (<i>Clamator glandarius</i>)		B	(L)
Barn Owl (<i>Tyto alba</i>)	(L)	B	B

THE BIRDS OF THE DANUBE DELTA

	Danube	Guadalquivir	Rhône
Scops Owl (<i>Otus scops</i>)		(L)	B
Bald Eagle Owl (<i>Bubo bubo</i>)	(L)		
Little Owl (<i>Athene noctua</i>)	L	B	B
Hairy Woodpecker (<i>Strix aluco</i>)	L		L
Short-eared Owl (<i>Asio flammens</i>)	(L)		
Long-eared Owl (<i>Asio otus</i>)			L
Nightjar (<i>Caprimulgus europaeus</i>)		(L)	(L)
Red-necked Nightjar (<i>Caprimulgus ruficollis</i>)		B	
Swift (<i>Apus apus</i>)	B	B	B
Pallid Swift (<i>Apus pallidus</i>)		(L)	P
Kingfisher (<i>Alcedo atthis</i>)	B		(L)
Tree-eater (<i>Merops apiaster</i>)	B	B	B
Chiffchaff (<i>Coracias garrulus</i>)	B	(L)	B
Hoopoe (<i>Upupa epops</i>)	B	L	B
Green Woodpecker (<i>Picus viridis</i>)		B	B
Grey-headed Woodpecker (<i>Picus canus</i>)	L		
Great Spotted Woodpecker (<i>Dendrocopos major</i>)	B	L	L
Syrian Woodpecker (<i>Dendrocopos syriacus</i>)	L		
Lesser Spotted Woodpecker (<i>Dendrocopos minor</i>)	(L)		L
Middle Spotted Woodpecker (<i>Dendrocopos medius</i>)	(L)		
Grey-neck (<i>Jynx torquilla</i>)	(L)		
Calandra Lark (<i>Melanocorypha calandra</i>)	B	L	L
Port-toed Lark (<i>Calandrella cinerea</i>)	L	B	B
Lesser Short-toed Lark (<i>Calandrella rufescens</i>)		B	
Rested Lark (<i>Galerida cristata</i>)	B	(L)	B
Beckla Lark (<i>Galerida theklae</i>)		B	
Woodlark (<i>Lullula arborea</i>)		L	(L)
Field Lark (<i>Alauda arvensis</i>)	L		B
Swallow (<i>Hirundo rustica</i>)	B	B	B
House Martin (<i>Delichon urbica</i>)	L		B
Bank Martin (<i>Riparia riparia</i>)	B		
Golden Oriole (<i>Oriolus oriolus</i>)	B	B	B
Raven (<i>Corvus corax</i>)	(L)	B	
Grassquit/Hooded Crow (<i>Corvus corone</i>)	B	P	L
Jackdaw (<i>Corvus frugilegus</i>)	(L)		
Magpie (<i>Corvus monedula</i>)	B	B	B
Magpie (<i>Pica pica</i>)	B	B	B
Blue-winged Magpie (<i>Cyanopica cyanus</i>)		B	
Yellow-billed Cuckoo (<i>Garrulus glandarius</i>)			(L)
Great Tit (<i>Parus major</i>)	B	B	B
Blue Tit (<i>Parus caeruleus</i>)	B	L	(L)
Rested Tit (<i>Parus cristatus</i>)		(L)	
Long-tailed Tit (<i>Aegithalos caudatus</i>)			L
Penduline Tit (<i>Remiz pendulinus</i>)	B		B
Red-breasted Tit (<i>Panurus biarmicus</i>)	B		B
Port-toed Trecerecper (<i>Certhia brachydactyla</i>)			L
Green Nuthatch (<i>Troglodytes troglodytes</i>)	(L)	L	
Field Thrush (<i>Turdus viscivorus</i>)			(L)
Blackbird (<i>Turdus merula</i>)	B	L	L
Wheatear (<i>Oenanthe oenanthe</i>)	(L)		
Black-capped Wheatear (<i>Oenanthe hispanica</i>)			L
Field Wheatear (<i>Oenanthe leucomela</i>)	L		
Parula (<i>Saxicola torquata</i>)	L	L	L
Chimney Swift (<i>Saxicola rubetra</i>)	L		

BRITISH BIRDS

	Danube	Guadalquivir	Rhône
Redstart (<i>Phoenicurus phoenicurus</i>)	B		
Nightingale (<i>Luscinia megarhynchos</i>)		B	B
Thrush Nightingale (<i>Luscinia luscinia</i>)	L		
Cetti's Warbler (<i>Cettia cetti</i>)		L	B
River Warbler (<i>Locustella fluviatilis</i>)	L		
Savi's Warbler (<i>Locustella luscinioides</i>)	B	L	L
Moustached Warbler (<i>Lusciniola melanopogon</i>)	L	(L)	B
Great Reed Warbler (<i>Acrocephalus arundinaceus</i>)	B	L	B
Reed Warbler (<i>Acrocephalus scirpaceus</i>)	B	(L)	B
Marsh Warbler (<i>Acrocephalus palustris</i>)	L		
Sedge Warbler (<i>Acrocephalus schoenobaenus</i>)	L		
Melodious Warbler (<i>Hippolais polyglotta</i>)		B	B
Icterine Warbler (<i>Hippolais icterina</i>)	L		
Olivaceous Warbler (<i>Hippolais pallida</i>)	L	(L)	
Blackcap (<i>Sylvia atricapilla</i>)	L	(L)	B
Barred Warbler (<i>Sylvia nisoria</i>)	(L)		
Orphean Warbler (<i>Sylvia hortensis</i>)		L	L
Garden Warbler (<i>Sylvia borin</i>)	(L)		
Whitethroat (<i>Sylvia communis</i>)	(L)	L	B
Lesser Whitethroat (<i>Sylvia curruca</i>)	(L)		
Sardinian Warbler (<i>Sylvia melanocephala</i>)		B	L
Subalpine Warbler (<i>Sylvia cantillans</i>)		L	L
Spectacled Warbler (<i>Sylvia conspicillata</i>)		L	B
Dartford Warbler (<i>Sylvia undata</i>)		B	(L)
Rufous Warbler (<i>Agrobates galactotes</i>)		(L)	
Fan-tailed Warbler (<i>Cisticola juncidis</i>)		B	B
Wood Warbler (<i>Phylloscopus sibilatrix</i>)	(L)		
Bonelli's Warbler (<i>Phylloscopus bonelli</i>)		(L)	
Spotted Flycatcher (<i>Muscicapa striata</i>)	B	(L)	L
Collared Flycatcher (<i>Muscicapa albicollis</i>)	(L)		
Red-breasted Flycatcher (<i>Muscicapa parva</i>)	L		
Tawny Pipit (<i>Anthus campestris</i>)	L	L	B
White Wagtail (<i>Motacilla alba</i>)	L		
Yellow Wagtail (<i>Motacilla flava</i>)	B	B	B
Great Grey Shrike (<i>Lanius excubitor</i>)		B	L
Lesser Grey Shrike (<i>Lanius minor</i>)	B		L
Red-backed Shrike (<i>Lanius cristatus</i>)	B		
Woodchat Shrike (<i>Lanius senator</i>)		L	L
Starling (<i>Sturnus vulgaris</i>)	B		L
Spotless Starling (<i>Sturnus unicolor</i>)		B	
Rose-coloured Starling (<i>Sturnus roseus</i>)	(L)		
Hawfinch (<i>Coccothraustes coccothraustes</i>)	L		
Greenfinch (<i>Chloris chloris</i>)	L		L
Goldfinch (<i>Carduelis carduelis</i>)	B	B	B
Linnet (<i>Carduelis cannabina</i>)			B
Serlin (<i>Serinus canarius</i>)		L	L
Chaffinch (<i>Fringilla coelebs</i>)	B	L	L
Yellowhammer (<i>Emberiza citrinella</i>)	L		
Corn Bunting (<i>Emberiza calandra</i>)	L	L	B
Quail Bunting (<i>Emberiza cirlus</i>)			(L)
Ortolan Bunting (<i>Emberiza hortulana</i>)	L		(L)
Reed Bunting (<i>Emberiza schoeniclus</i>)	B	(L)	B
House Sparrow (<i>Passer domesticus</i>)	B	B	B
Tree Sparrow (<i>Passer montanus</i>)	B		B

<i>Analysis:</i> Common to Danube, Guadalquivir and Rhône	81
Common to Danube and Guadalquivir (but not Rhône)	10
Common to Danube and Rhône (but not Guadalquivir)	14
Common to Guadalquivir and Rhône (but not Danube)	27
Peculiar to Danube	57
Peculiar to Guadalquivir	20
Peculiar to Rhône	12

ough migrants have been excluded from the lists, it would be misleading not to point out that, for example, several of the birds which are shown as peculiar to the Danube occur regularly on passage in the Guadalquivir or the Rhône (and vice versa), in some cases in considerable numbers. It must also be emphasised that there is much less information on the Danube than the other two deltas, particularly where the Passerines are concerned; such species as Long-tailed Tit and Mistle Thrush may well be local nesters there.

Notes

Mallard killing and swallowing House Sparrow.—At about 6 p.m. on 29th June 1963, in St. James's Park, London, a number of Feral Pigeons (*Columba livia*), House Sparrows (*Passer domesticus*) and Mallard Ducks (*Anas platyrhynchos*) were eating bread which had been thrown down. A single Mallard was suddenly seen to be carrying a House Sparrow towards the lake about fifteen yards away. It was nipping the sparrow's nape with the end of its beak and it paused two or three times, dropping its head to the ground, possibly to renew its grip on its struggling victim. Reaching the lake, the Mallard swam out and dropped the sparrow in the water, perhaps six times in half a minute or so. It turned parallel to the shore and I could see that it now had the sparrow crosswise in its beak. For two or three minutes, still with its mandibles protruding from each side of its beak, it tried unsuccessfully to dislodge the sparrow with upward jerks of its head. Finally it dipped its head in the water and seemed to get the body endways on. Then with its neck erect it swallowed it, gulping heavily afterwards and jerking its head.

J. M. STANTON

This is actually not so uncommon for Mallard to kill and eat House Sparrows in the London parks, but we are publishing this observation because few descriptions seem to have appeared in print. *The Birds of the London Area since 1900* (1957, p. 133) records Mallard killing House Sparrows and on at least two occasions the victims were swallowed (*Royal Parks Report 1929: 4*). More recently, E. H. B. Bram summarised a total of 40 observations of Mallard feeding on small birds in St. James's Park (*Brit. Birds*, 54: 357-359): these included a few cases of actual killing of House Sparrows and small downy Woodpeckers (*Aythya fuligula*).—EDS.]

Great Geese pulling weed from the undersides of ice floes.—On 10th January 1963 I was watching a flock of Brent Geese (*Branta*

bernicla) swimming at high tide just below the Geedon Bay Hide on the Essex Naturalists' Trust Reserve at Fingringhoe. The river was full of large ice floes which were being carried slowly out to sea. The Brent Geese split up into small parties and each 'attached' itself to a floe. I could see that the birds were pulling weed from the underside of the floes, though unfortunately, even through binoculars, I could not identify it. I cannot remember ever having seen Brent Geese feed in this way before, even in the days when eel grass (*Zostera*) was plentiful in the Blackwater and Colne estuaries and great quantities of it were torn up by the lifting ice at the end of one very hard winter.

K. R. CRAWSHAW

[We are glad to publish this note as a reminder that all records of unusual behaviour during the severe winter of 1962-63 are of interest in connection with the enquiry now being made into its effects (*Brit. Birds*, 56: 228-229). Questionnaires have been sent to several hundred people and anybody else who has information on population changes, numbers of birds found dead, hard weather movements between 15th November 1962 and 20th March 1963 or other relevant data is asked to contact one or other of the organisers—H. M. Dobinson, The Old Barn, Sonning Common, Nr. Reading, Berkshire, and A. J. Richards, 120a Hamilton Road, Reading, Berkshire.—Eds.]

Whooper Swans feeding on refuse dump.—On 15th February 1963 I saw 24 Whooper Swans (*Cygnus cygnus*) on Drogheda town rubbish dump, at the head of the River Boyne estuary, Co. Meath. Some were just standing about, others were sitting down on the dump, and some were actually rummaging in and presumably eating the refuse. The severe weather was over and normal feeding places were available.

ROBERT F. RUTLEDGE

Woodpigeon nesting in marram.—On 6th May 1963 E. Pickard and I flushed a Woodpigeon (*Columba palumbus*) from a stretch of marram grass on Forvie Sands, Aberdeenshire. On reaching the spot, we were very surprised to find that it had been incubating two eggs. The nest, built of dried marram stalks, was about two miles from the nearest wood or trees.

E. COWIESON

[Mr. Cowieson has kindly supplied a colour photograph of the nest and eggs in support of the identification, though unfortunately it is not suitable for reproduction. The most interesting features of this record are the very open site and the great distance from the nearest cover. A previous case involved a nest with young in oat-stubble 300 yards from trees (*Brit. Birds*, 53: 404). R. K. Murton, who has made a special study of this species, commented then that ground nests are not unusual, particularly in areas where the Woodpigeon population is high, but that there is normally plenty of bramble or

ner cover immediately overhead; he had never seen such a nest
ht out in the open.—EDS.]

Early breeding of Coal Tit.—On 14th April 1962, in Gildredge Park,
Westbourne, Sussex, I found the nest of a pair of Coal Tits (*Parus ater*)
about three feet up in a hole in the side of a low brick wall among
rubbery and pine trees. My attention was drawn to the hole by one
of the adults entering it with food. When I approached, the bird flew
off and I heard the twittering of young calling for food. From a
suitable point a little distance away I then watched both parents take
food into the hole several times during the next hour.

Even if the eggs had only just hatched, the first must have been laid
the last week of March at the very latest—one month earlier than
normal.

R. H. CHARLWOOD

Yellow Wagtail nesting in tin can.—On 22nd May 1963, at Stanford
Wivel pit, Bedfordshire, I came across what proved to be the nest of
a pair of Yellow Wagtails (*Motacilla flava*) built inside an old tin can
which was lying on its side out in the open on dried-up mud. The nest
contained eggs. The identification was confirmed the following
morning when I watched the female enter the can. A. C. MORRIS

Starlings eating putty.—With regard to B. E. Slade's recent record
of Starlings (*Sturnus vulgaris*) eating putty in Somerset (*Brit. Birds*, 56:
196), these birds do the same thing in Shetland. In autumn 1953 a
pane of glass was blown out of a window and it was found that
the putty had been removed; a second pane was put in and the next
morning a Starling was seen eating the putty. On 14th July 1962 a
Starling was again seen eating putty from a newly glazed window; it
was chased away several times, but always returned for more. The
reaction may be the linseed oil in the putty. MAGNUS SINCLAIR

Chaffinch choked by caterpillar.—On 15th June 1963, at Urchfont,
Wiltshire, we found an adult female Chaffinch (*Fringilla coelebs*) freshly
killed on a woodland track. From its bill hung the tail end of a
caterpillar which, on removal, proved to be a smooth, pale greenish
cuticular larva about 40 mm. in length but too macerated to be identi-
fied with certainty. The head end of the caterpillar was wedged firmly
in the Chaffinch's congested throat. The bird had presumably
died choked in the act of bringing it to its brood.

D. R. and MRS. STANSBURY and E. A. R. ENNION

Starlings incapacitated by encumbrances on the toes.—Recent
records (*Brit. Birds*, 55: 482; and 56: 113) of passerine chicks becoming
incapacitated in the nest-lining, though interesting, are by no means with-

out precedent (cf., for example, *Brit. Birds*, 24: 103, 125 and 156). Perhaps more noteworthy, in that it seems never to have been recorded, is the occurrence of fledgling House Sparrows (*Passer domesticus*) incapacitated through having their toes clotted with hard balls of excreta and nest-litter. Careful work with one's finger nails easily removes these encumbrances and, relieved of the weight, the bird can then fly. I handle about eight or ten in this condition every year, which indicates its frequency and suggests that it may well be a significant factor in mortality. I also have one record of a Feral Pigeon (*Columba livia*) in a similar state.

K. G. SPENCER

Review

Hummingbirds. By Crawford H. Greenewalt. Doubleday, New York, for the American Museum of Natural History, 1960; distributed in England by W. H. Allen, London, 1963. 250 pages; 70 colour plates and many line drawings. 10 gns.

At first glance a portfolio of photographs, this beautifully produced book is in reality much more. It is a labour of love and a witness to true enthusiasm. By his own confession, the author was ten years ago neither ornithologist nor photographer. Yet in one decade he has dedicated much of his innate and obvious ability to the pursuit of one sub-order of birds, the hummingbirds, and in that time has photographed about a hundred of the more than three hundred known species—a project which has involved him in extensive travel, for only twelve species are found in the United States itself. But Mr. Greenewalt is clearly no ordinary man. One of America's leading industrialists, he is a chemist with a distinguished record, including a major role in the 'Manhattan Project' which first harnessed the atom. It is little wonder that he took in his stride the problems of harnessing his cameras to the speed of a hummingbird's wing-beats. He has perhaps been more intrigued by the optical phenomena of plumage, by aerodynamics and by high speed photography than he has by hummingbird habits and ecology—though an opening chapter surveys this last subject in wide terms, adequately enough for the purpose of the book. Yet his training and interest really reveal themselves in his examination of iridescence, of flight and of feather structure. If the chapters devoted to those subjects will be above many heads, they are conspicuously the product of a vigorous, thorough and enquiring mind. A final chapter is devoted to his photographic methods.

The photographs are quite remarkable. Because the male hummingbird plays no part in life at the nest, most of the plates depict the bird in flight, taken either by attracting the subject to food or under controlled conditions in an aviary. An obvious criticism is that too many

show the bird in a vacuum, against an artificial, but always unobtrusive, blackcloth, with, in many cases, neither twig nor leaf to give substance. The purist bird photographer cannot help regretting this, and remembering other photographs of humming birds taken in natural surroundings (the plate of *Selasphorus rufus* by Eliot Porter in E. T. Gilliard's *Living Birds of the World* springs to mind). Yet with such subjects a natural background can so easily 'lose' the bird. Thus portrayed, they are perfect in every feather and, if nothing else, a very great technical achievement.

Finally, praise must be given to the numerous pencil drawings, lightfully delicate, by Dale Astle, which further illustrate many points in the text; and to the publishers for a beautiful production which it is a pleasure to possess.

G. K. YEATES

News and comment

Edited by Raymond Cordero

Research and the R.S.P.B.—The Royal Society for the Protection of Birds will shortly be appointing a staff biologist to carry out research into ecological problems of a long-term nature, particularly on its reserves at Havergate and Minsmere. One of the chief reasons for this move has been the decline in the number of surviving young among the Avocets nesting at Havergate, but the scope for studying the factors affecting the breeding success of this species has been broadened by the sighting for the first time since 1947 of a pair at Minsmere, an event largely due to the efforts of the R.S.P.B. in creating suitable conditions under the direction of the warden, H. E. Axell.

The R.S.P.B. has also formed a Research Committee, on which the following have been asked to serve: Dr. Bruce Campbell, Stanley Cramp, I. J. Ferguson-Lees, Dr. Barbara Gilchrist, Rev. P. H. T. Hartley, Dr. David Lack and E. R. Parrinder.

E.G.I.'s role on Skokholm.—The news in a recent issue that the new warden of Skokholm had been a joint appointment of the Field Studies Council and the Edward Innes Institute gave rise to some speculation. However, the functioning of Skokholm as a bird observatory for the study of migration remains quite unchanged and senior ornithologists will be as welcome on the island as in the past. This is made clear in the report of the E.G.I. in the June issue of *Bird Study*, which also sets the background to the new arrangement whereby the E.G.I. will collaborate with the F.S.C. on research on animals in the field. The opportunity to work on Skokholm 'fits in extremely well with the Institute's work, since there could be a greater contrast in life history and population turnover between the fast-breeding short-lived tits in Wytham and the slow-breeding but long-lived sea-birds of Skokholm'.

New Lancashire nature reserve.—At the kind invitation of the new owner, Mrs. O. Cavendish, the south end of Walney Island, near Barrow-in-Furness, Lancashire, has been established as a nature reserve by the Lancashire Naturalists' Club and the Lake District Naturalists' Trust, both of which are in their first year of existence. The area, scheduled as a Site of Special Scientific Interest by the Nature Conservancy in 1951, contains the largest mixed ground-nesting colony of Herring and Lesser Black-backed Gulls in Europe (about 2,500 pairs of each) and

the most southerly Eider breeding colony in Britain (30-50 pairs). It is also excellent for wintering waders, ducks and divers. A full-time warden, W. W. Shepherd has been appointed, and a field station established with sleeping accommodation for eight. The field station will be also used as a bird ringing station and observatory. Wheatears, Redstarts and some of the warblers occur in considerable number during migration.

Forthcoming B.O.U. meetings.—The autumn scientific meeting of the British Ornithologists' Union will take place at the British Museum (Natural History) on 22nd October. The two speakers will be Prof. William H. Marshall, Institute of Agriculture, University of Minnesota, on 'The use of radios to track Ruffed Grouse' and Dr. Luc Hoffman, Station Biologique de la Tour du Valat, on the Camargue and the Coto Doñana.

The B.O.U.'s Annual Meeting and Conference in 1964 will take place from 17th to 19th April at the University of Southampton. The theme is planned to be 'Distribution and ecology, with particular reference to conservation'.

Meanwhile, it has been announced that C. J. O. Harrison, of the Bird Room, British Museum (Natural History), is to act as assistant honorary secretary of the B.O.U. in view of the frequent absences abroad of the honorary secretary, Sir Hugh Elliott, who is acting secretary-general of the International Union for Conservation of Nature.

A new Indian journal.—India is a vast country with a rich, varied and colourful avifauna, yet until March of this year it did not possess a single journal devoted entirely to the study of birds. That gap has now been filled by the half-yearly *Pavo* written in English, edited by Dr. J. C. George, M.S. University Dept. of Zoology, Faculty of Science, Baroda 2, and published for the Society of Animal Morphologists and Physiologists. The cover emblem is India's national bird, the Indian Peacock (*Pavo cristatus*). We welcome this newcomer to ornithological literature and wish it every success.

Honours for B.O.U. President.—The Zoological Society of London has presented R. E. Moreau, President of the British Ornithologists' Union, with the Stamford Raffles Award in recognition of his contribution, as an amateur zoologist, to zoology. Mr. Moreau has also received, from the Australian Academy of Sciences, a senior fellowship to enable him to visit Australia at the invitation of the Division of Wildlife Research.

A tape-recorded scarecrow.—Tape-recordings of the cries of birds of prey are being used 'highly successfully' to scare off song-birds which attack silkworms being bred experimentally in trees at the Tihany biological research institute, Lake Balaton, Hungary.

'Recent reports'

As the 'Recent reports' in August covered most of July and as the present issue is going to press only ten days later, we are holding this feature over to October. In any case, at this time of year many new observations are received daily, some of them not so promptly as others, and the picture is constantly changing. We propose, therefore, to give in October a full summary of the six weeks from late July to early September and we shall be glad to receive any interesting reports by 7th September at the latest.

Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions are sent to authors before publication.

After publication, 25 separates of papers are sent free to authors (two or more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet only. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of any publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital initials for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are those used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the English name. Subspecific names should not be used except where they are relevant to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and no other, except in tables where they may be abbreviated to '1st Jan.', 'Jan. 1st', or even 'Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise cause much unnecessary work. These should take the following form:

BUCKER, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

WITHERBY, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34.

Various other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in the style used in this issue. They must either fit into the width of a page, or be designed to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this must be light blue or very pale grey. It is always most important to consider how such drawing will fit into the page. The neat insertion of lettering, numbers, arrows, etc., is perhaps the most difficult part of indian ink drawing and, unless he has had considerable experience of this kind of work, an author should seek the aid of a skilled draughtsman.



The unique

Hensoldt

Diasport

smallest in the world

The Hensoldt Diasport is the smallest 8 x 20 prism binocular made—a veritable jewel of a binocular—which can be carried in the pocket and yet gives full 8 x magnification with the brilliant clarity for which Hensoldt—makers of the world's largest range of binoculars—are renowned.

An illustrated booklet on the unique Hensoldt range and name of your nearest stockist is available from the sole British importers:

First binocular in orbit

The Hensoldt Diasport was carried into space by the American astronauts Glenn and Scott-Carpenter.

Degenhardt
AND COMPANY LIMITED

Carl Zeiss House · 20/22 Mortimer St · London · W1
LANgham 6097/9

British Birds

Principal Contents

The feeding ecology of the Woodpigeon

R. K. Murton, A. J. Isaacson and N. J. Westwood

Studies of less familiar birds: 124—Crane

M. D. England

(with five plates)

Notes

Reviews

Letters

News and comment

Recent reports

Obituary: Stuart Smith, D.Sc., Ph.D. (1906-1963)

Three
Shillings



October
1963

200 1963
PURCHASED

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

<i>Photographic Editor</i>	<i>'News and Comment'</i>	<i>Rarities Committee</i>
Eric Hosking	Raymond Cordero	D. D. Harber
20 Crouch Hall Road	Rohan Lodge, Wadhurst Park	1 Gorringe Road
London, N.8	Wadhurst, Sussex	Eastbourne, Sussex

Contents of Volume 56, Number 10, October 1963

	<i>Page</i>
The feeding ecology of the Woodpigeon. By Dr. R. K. Murton, A. J. Isaacson and N. J. Westwood	345
Studies of less familiar birds: 124—Crane. Text and photographs by M. D. England (plates 55-59)	375
Notes:—	
Black-headed Gulls apparently inciting Smews to dive (R. J. Hume) ..	377
Sand Martin entangled with feather (Ian F. Stewart)	378
Death of male Blackbird during display (Andrew Paterson)	378
House Sparrows dust-bathing in sugar (C. Goodwin)	378
Reviews:—	
<i>Birds from Britannia.</i> By H.R.H. the Duke of Edinburgh. Reviewed by E. M. Nicholson	379
<i>A Guide to the Birds of Sussex.</i> By G. des Forges and D. D. Harber. Reviewed by P. A. D. Hollom	379
<i>The Birds of Monmouthshire.</i> By G. C. S. Ingram and H. Morrey Salmon, revised by P. N. Humphreys. Reviewed by Dr. Bruce Campbell ..	381
Letters:—	
Should the Western Sandpiper have been admitted to the British List? (S. Marchant; Dr. I. C. T. Nisbet)	382
The need for definitive English names of birds (O. M. Ashford) ..	383
Photography and sound-recording to reinforce sight records of unusual birds (R. E. Scott)	384
Request for information: Status and distribution of the Chough (Martin Richards)	384
News and comment. Edited by Raymond Cordero	384
Recent reports. By I. J. Ferguson-Lees	386
Obituary: Stuart Smith, D.Sc., Ph.D. (1906-1963) (plate 60)	391

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 61/62 Watling Street, London, E.C.4





British Birds

Vol. 56 No. 10
OCTOBER 1963



The feeding ecology of the Woodpigeon

R. K. Murton, A. J. Isaacson and N. J. Westwood

Ministry of Agriculture, Fisheries & Food, Infestation
Control Laboratory, Tangley Place, Worplesdon, Surrey

INTRODUCTION

THE WORK DESCRIBED here was done at Carlton, a Cambridgeshire village five miles south-east of Newmarket, Suffolk. The area is devoted entirely to arable farming and represents an environment mainly preferred by Woodpigeons (*Columba palumbus*). The study is concerned with the time required by Woodpigeons to find and eat their food in various circumstances. From the information presented it is possible to understand how changes in food availability and the length of the feeding day enable pigeons to devote time to other activities, such as display, incubation and nestling care.

METHODS

Indication of the ease, or otherwise, with which Woodpigeons can find their food should be apparent from field observations which measure the proportions of time devoted to feeding and other activities. The ideal method of investigation would be to watch marked individuals continuously, timing these various activities. In winter, when pigeons roost for long periods in one place, this method was possible and was employed to a small extent. But during much of the year they move from field to field or from roost to field and, although limited, their wanderings are extensive enough to foil attempts to keep one individual continuously under observation.

The second method involves random sampling of a population, the identity of all individuals being noted for a unit period, whenever and

female Crane (*Megalornis grus*) standing on her nest with the typical clutch of two eggs, Norway, June 1962. The brown on the back and wings which are usually grey (pages 375-377) (photo: M. D. England)

wherever they are located. Gibb (1954) used this when studying the feeding ecology of tits in deciduous woodland. However, for this method to provide valid results it is essential that all the population being studied should be at equal risk of observation. In a uniform habitat this condition is largely fulfilled, but Gibb experienced difficulties during the breeding season when observations on the feeding adults did not allow for birds engaged in incubation or brooding. There are additional difficulties in applying this method to Wood-pigeons. In winter they all leave the woods during the day to feed on arable crops, under which conditions the chances of seeing every individual are equal. At other times, however, some remain in the woods whilst others feed in the open fields. Observations made on the feeding birds do not allow for those still in the woods and it is not possible to sample the two habitats in the same way. This problem can be overcome if it is known what proportion of the day Wood-pigeons actually spend in the woods, and what they do when they are there. Roost observations were made to answer these questions, and these are described in the first section of this paper.

Feeding activity

The procedure adopted was to watch favoured feeding grounds, to record what individuals were doing when first observed, and to make such observations at frequent intervals. Counts were usually made every five or ten minutes throughout the day. It was assumed that if a flock of 100 birds was examined and 98% were feeding and 2% were resting, then each individual on average spent 2% of its time on the feeding ground in activities other than feeding. The shorter the interval between observations, the less likely were variations in feeding activity to affect the validity of these assumptions. When the same flock was watched all day the same individuals were examined each time, but each separate count has been considered as an independent observation. All records collected for different days and for different flocks, or for the same birds on separate occasions, have been added and grouped into half-hour periods of observation.

Feeding rates

The amount of any food which can be collected per unit time obviously depends on its availability and this term embraces the location, distribution, density and size of the food. For example, there may be many more grains of wheat on a standing crop than on the stubble following harvest; but it might be easier for the birds to collect grain from a stubble, a factor which could compensate for the smaller quantity present. Hence to present data on the food in an area without considering such factors would give a false impression of true availability. The only satisfactory method of obtaining this kind of

Information is by field observation of birds feeding on a variety of woods and feeding grounds. When possible a motor van was used to facilitate observation, as this provided a most satisfactory 'hide' and could be driven fairly close; often pigeons would approach to within distances of 25 yards or less. At other times portable hides were erected at strategic points. A 60× telescope and 10×50 binoculars were used for detailed watching. Individuals from a feeding flock were selected, as randomly as viewing conditions permitted, and their feeding pecks and number of paces counted per unit time. It was not feasible to standardise the time of watching because sooner or later the birds invariably moved out of range or were obscured by others, but individual watches usually lasted at least one minute.

The distance covered by a pigeon searching for food proved impossible to estimate visually from a distance, especially as a feeding bird rarely travelled on a straight line for long. However, the length of a pace remained fairly constant for a given feeding situation so the number of paces was used as an index of the area searched. In general, a pigeon moving quickly took slightly longer paces so that any associated increase in paces per unit time, while indicating an increased search area, underestimated the actual area searched; and the opposite is also true. In spite of these drawbacks the results obtained showed quite clearly the trends prevailing under different conditions. The average length of a pace was measured in January 1959 when some pigeons were feeding on an old bean field covered with a thin layer of snow and their speed of movement was about the same as that on livings of grain. It was possible to see the footprints in the snow and the average distance of a pace, based on 28 readings, was 4.2 inches. The number of pecks per unit time was an index of the amount of food taken. Some observations were made at very close range (e.g. about 10 yards) and the actual food items picked up could then be identified. An indication of the number of wasted pecks was thus obtained in a variety of feeding situations, and the circumstances in which several pecks were directed at the same object were noted.

All individual counts made under a given condition were totalled and an average feeding rate calculated. The original data are deposited in the Ministry of Agriculture Library at Tangle Place, Worplesdon, Surrey.

ROOST OBSERVATIONS

Day watches were kept on Carlton Wood once a month, but in the summer they were divided into two sessions (i.e. daybreak to mid-day and mid-day to dusk) on consecutive days because of the fatigue involved. Watches were made from one corner of the wood, a position being selected which enabled all birds entering or leaving on two sides to be seen. It was assumed that the flight activity would be the

BRITISH BIRDS

Table 1. Numbers of Woodpigeons (*Columba palumbus*) counted leaving and entering two sides of Carlton Wood, Cambridgeshire, throughout the day

The lines enclose the periods of continuous watching. The times for January, February, March are GMT, and those for April, May and June are BST (one hour later). The figures below the bottom line in April are ones obtained on the 28th (and not included in the total because rain caused the birds to return rather early on the 27th. In June the afternoon watch was kept on the 22nd and the morning one on the 23rd

Half hour periods	12 Jan		16 Feb		23 Mar		27 Apr		25 May		23/22
	out	in	out	in	out	in	out	in	out	in	out
04.00 2									0	0	12
05.00 1									20	8	90
2					0	0	178	1	141	29	31
06.00 1					211	32	87	15	15	7	8
2					129	110	95	92	10	8	12
07.00 1			0	0	50	157	127	116	8	6	14
2	3	0	567	200	223	16	141	10	133	44	9
08.00 1	146	0	107	164	26	18	8	48	122	3	28
2	2	3	106	210	49	8	4	31	36	5	50
09.00 1	3	0	304	1	8	11	33	13	17	46	102
2	1	2	0	0	14	1	162	10	38	51	37
10.00 1	0	6	0	1	95	31	118	23	27	15	30
2	3	7	1	0	18	72	149	86	1	1	54
11.00 1	20	1	12	4	0	1	139	211	11	0	41
2	0	1	1	8	2	145	795	11	24	15	30
12.00 1	0	0	0	2	32	28	359	184	26	4	
2	0	5	0	0	63	111	96	23	17	1	
13.00 1	0	0	0	0	14	8	16	484	7	4	14
2	0	4	0	2	20	46	13	285	20	4	40
14.00 1	2	1	2	16	46	17	121	15	12	2	11
2	22	0	0	8	28	6	25	86	15	72	6
15.00 1	0	8	0	2	6	82	8	37	3	7	6
2	1	9	0	2	12	35	7	404	5	39	49
16.00 1	1	5	0	45	193	26	14	0	23	0	13
2	0	10	55	48	6	2	121	76	32	25	19
17.00 1			634	467	1	27	123	613	24	55	28
2			0	261	5	35	0	6	3	5	51
18.00 1					6	91	1	6	0	2	37
2							0	40	0	333	20
19.00 1							0	737	0	2	10
2									0	13	18
20.00 1									3	23	25
2									0	0	9
Totals	204	62	1,789	1,441	1,257	1,116	2,939	2,880	793	829	904

FEEDING ECOLOGY OF THE WOODPIGEON

2. Numbers of Woodpigeons (*Columba palumbus*) counted leaving and entering two sides of Carlton Wood, Cambridgeshire, throughout the day

Tables enclose the periods of continuous watching. The times for July, August and September are BST, and those for October and November are GMT (one hour later). In August and September the morning watch was kept on the first day and the afternoon one on the second

	27/28 Jul		24/25 Aug		28/29 Sep		26 Oct		23 Nov		30 Nov	
	out	in	out	in	out	in	out	in	out	in	out	in
1	5	0	0	0								
2	83	13	7	0								
3	72	22	89	5								
4	30	15	57	37	5	0						
5	18	12	29	60	126	10	0	0	20	0	0	0
6	13	13	27	44	85	70	20	2	232	114	100	0
7	7	23	6	15	45	66	49	26	148	6	15	51
8	42	13	14	12	38	41	30	26	15	3	96	103
9	17	20	9	6	28	42	9	18	3	2	29	37
10	21	19	2	7	24	20	56	19	1	0	41	34
11	26	12	13	15	13	14	33	19	14	1	33	27
12	22	11	19	13	8	11	9	13	0	0	18	37
13	41	18	26	25	15	14	9	5	0	0	37	1
14	46	13	25	29	16	12	22	12	0	0	0	1
15	35	14	16	19	6	7	4	2	0	0	8	19
16	34	35	24	11	11	6	3	13	0	0	52	30
17	9	3			21	18	72	6	1	0	5	1
18	13	5	15	15	6	14	2	4	0	0	0	0
19	28	8	22	51			2	11	5	163	0	5
20	21	8	26	73	29	21	2	12	2	1	1	0
21	32	12	37	23	38	29	4	10	3	2	0	3
22	30	26	26	40	29	40	6	24	63	2	2	1
23	41	34	23	25	38	111	4	28	7	6	7	41
24	36	34	45	68	30	64	9	25				
25	38	36	42	35	17	57	5	17				
26	50	29	47	44	10	63	4	4				
27	54	20	12	31	22	46						
28	29	24	27	22	5	23						
29	16	23	20	33	0	3						
30	7	38	25	33								
31	7	11	1	11								
32	10	12										
33	933	576	731	802	665	802	354	296	514	300	444	391

same on the two sides not watched. This was not altogether true because in winter large flocks could leave and return by different routes in the morning and evening, having shifted their feeding ground in the meantime. This was seen to happen very rarely, however, and such effects should not have detracted from the general results.

It is known that in November Woodpigeons leaving their roosts in the morning show a preference for southerly flights (Murton and Ridpath 1962), but it is also known that many of the birds behaving in this way return again at night. At other times pigeons fly from their roosts (or nesting woods) directly to their feeding grounds and these are usually scattered in all directions. The monthly roost observations are summarised in tables 1 and 2 where the numbers counted entering or leaving Carlton Wood are given for half-hour periods. These observations will now be discussed for the various seasons.

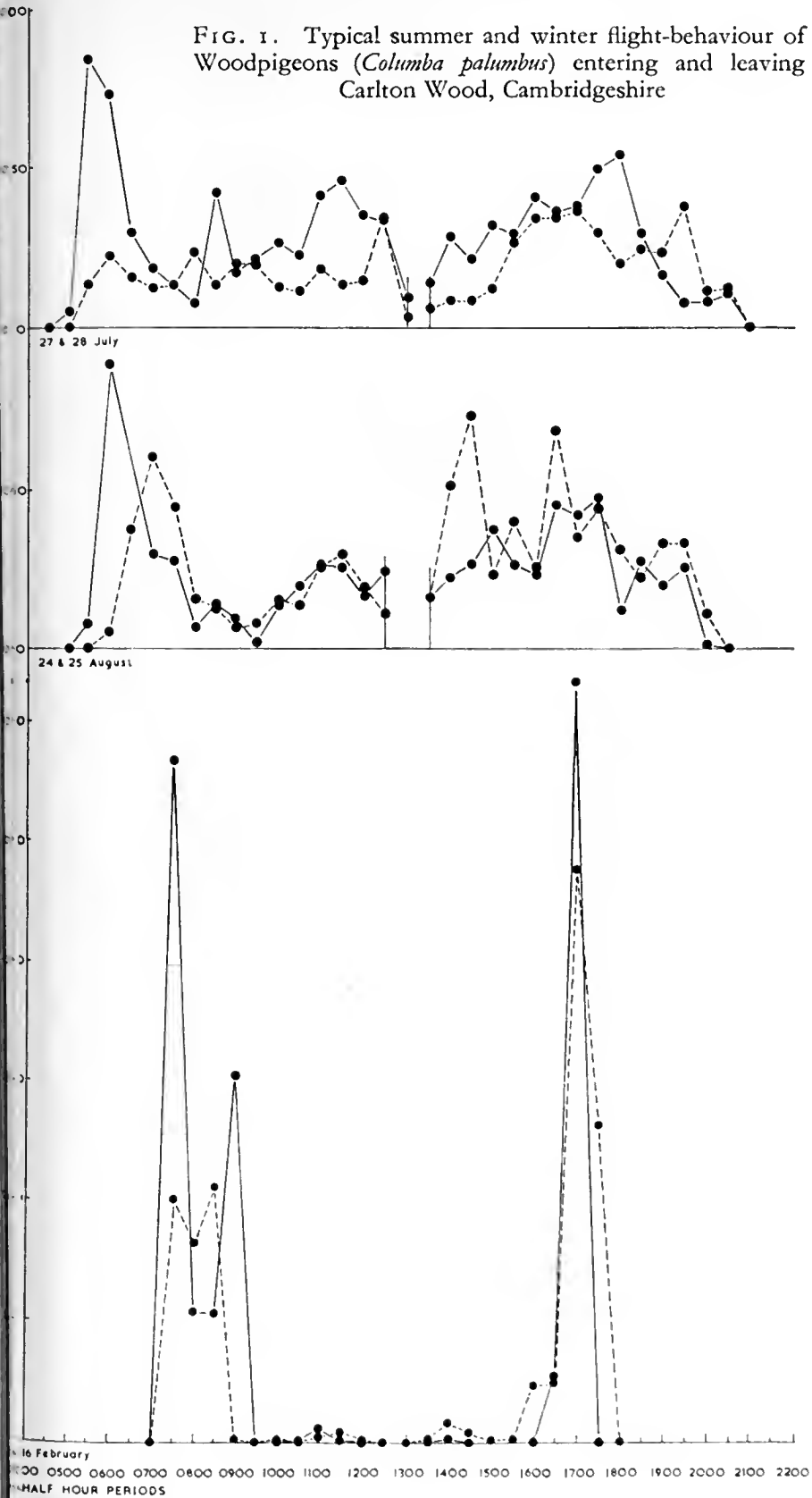
Winter

Typical winter flight behaviour is usually first noticeable in early November and ceases with the sowing of spring corn in about early March. The results given in table 1 and fig. 1 show that during this period pigeons used to leave Carlton Wood roost soon after daybreak and that no activity was noticed near the wood throughout most of the day. They were seen returning only at dusk. Walks through the roost area during the day confirmed that none was present. It was clear that at this time of year nearly all the Woodpigeons were to be found on the fields away from the woods, and that any observations made under field conditions should have sampled the population adequately. The length of the feeding day could also be measured by timing the arrivals and departures at the feeding grounds. During this period many flocks could be kept under continuous observation from the time they left the roost until they settled on or near the feeding places, and the distances involved were usually less than one mile.

In January 1961 birds returned at night on a side of the wood where counting was not feasible. As a result the arrival and departure totals showed a discrepancy, but the results obtained did confirm the lack of woodland activity during the day. These difficulties did not arise on 16th February 1961, however, and the results in fig. 1 and table 1 show quite clearly that there was a big morning departure, no activity during the day and an evening return. The total seen leaving throughout the day on two sides of the wood was 1,789 and returning 1,441. These totals are reasonably consistent, allowing for observational failure and the possibility of error when counting large flocks. Allowing for birds leaving, entering and leaving again in the early morning, the number of different birds actually using the roost was estimated at about 500. If a similar total left on the other two sides of the wood, about 1,000 birds were using the roost. Counts by two observers

FEEDING ECOLOGY OF THE WOODPIGEON

FIG. 1. Typical summer and winter flight-behaviour of Woodpigeons (*Columba palumbus*) entering and leaving Carlton Wood, Cambridgeshire



showed that the roosting population at this time was nearer to 850 birds, however, and that fewer did in fact depart on the opposite sides of the wood. Nevertheless, it follows that at this time of year counts of morning departures can yield reasonable estimates of population size.

Early spring

When the March observations (table 1) were made, the birds were feeding on spring sowings of barley and were continually flying to and fro between the roost and feeding grounds. A tendency was still apparent for a mass departure at daybreak and a return in the late afternoon. The totals seen leaving and entering the wood, 1,257 and 1,116 respectively, are reasonably consistent and suggest that the same birds were involved.

Assuming all the pigeons were in the roost before the start of observation, then the total 'out' up until 09.00 hours minus the total 'in' was 347. Between 09.00 and 10.30 hours the comparable number of departures minus returns was 75. This implies that some birds remained in the wood until this time, because returning numbers could not account for the total departures. Other work has shown that in late March Woodpigeons in this area begin to acquire territories and that a proportion do spend the first part of the morning in the breeding places, where they sing and defend territories (Murton and Isaacson 1962). A second period of feeding occurred in the afternoon and fig. 1 suggests that individuals spent about two hours on the feeding ground. When they were feeding on grain, the likelihood was that every bird had a maximum of six hours feeding time and that the rest of the day was spent within the woods.

The April results were more confusing as rather larger numbers were seen and it appeared that the whole population was leaving on one side of the wood, to feed on pastures near-by. It was apparent that only a proportion of the day was spent at the feeding grounds and that, as in March, many remained in the wood until the latter part of the morning. Although some returned in the early afternoon, most finally entered the wood in the early evening. On 27th April rain caused the birds to return rather early, but a second watch on the following day suggested that in good weather the main return occurred around 18.30 hours (table 1).

Late spring

In May the pigeons were again feeding mainly on clovers from pastures and leys. Examination of table 1 shows that 449 birds were counted leaving and 85 entering between dawn and 08.30 hours, so that a minimum of 364 birds left the roost during that time. Again this total could have accounted for half the probable roosting population.

May (i.e. about 728). After 08.30 hours there was a certain amount of coming and going, perhaps involving birds which had stayed in the wood from daybreak. Returns to the roost started at 14.30 hours and reached a peak at 18.30 hours.

Summer

Throughout the period June-August a continuous flight activity in and out of the wood was noticeable (fig. 1). During the long summer days the wood was watched in two separate periods, usually an afternoon in the evening and the following morning. There was no indication that flight activity varied between days, so the results have been added for both of the two watches. For the three summer months it is seen that the numbers of pigeons leaving the wood were between 731 and 953 (table 1 and fig. 1). If it is accepted that the breeding population comprised about 7700 adults (this figure was confirmed by counts of occupied nests) then that approximately half of these should have been seen, it is apparent that some were counted leaving the wood on more than one occasion. It is known that, when incubating eggs or brooding small young, the males attend from around 10.00 to about 17.00 hours and the females are present for the rest of the 24 hours (Murton and Isaacson 1962). Later, when both adults are feeding larger young, their feeding visits correspond to these times.

In late July there is a peak in the number of nests with eggs (Murton 1962) and relatively few have young at this time. Watches of roosts usually showed flight tendencies which could be most easily explained in terms of the above situation. Soon after daybreak (05.30 hours) many birds left the wood to feed but started to return in numbers from 10.00 hours onwards. As these returned, others, presumably different individuals, left the roost and departures reached a peak around 11.00 hours. It is possible that the early peak was due mainly to males which left to feed for one or two hours, after which they returned to the wood and indulged in territorial activities before relieving the egg females which then may have constituted the departing peak around 11.00-11.30 hours. The males must have incubated for the morning and early afternoon while the females fed and it was possibly mainly the females which started returning in numbers from 15.00 hours after feeding for two to four hours. As they returned others left again: these were possibly the males and they apparently fed for about 1½ hours before coming back at 19.30 hours. If this is the correct interpretation of the results, and it appears to be the only one which would make allowance for the known nest routine, then it is clear that some individual variation caused the peaks to be less well differentiated than might have been expected.

Birds shot at random on their feeding grounds throughout the day were sexed and the results are given in table 3. Although somewhat

Table 3. Sexes of adult Woodpigeons (*Columba palumbus*) shot on their feeding grounds near Carlton Wood, Cambridgeshire, during July-September

Colquhoun's (1951) data in winter, when the samples should be unbiased, suggest that the male to female ratio is then approximately 1:1. This is confirmed by other work in progress. Accepting that the differences below did not arise through an unequal sex ratio, it is assumed that the results indicate a difference in behaviour between the two sexes. Thus more males than females are shot in the early morning and late evening

Time shot (hours)	Total shot	No. of males	No. of females
Before 08.00	26	20	6
08.00-10.00	21	8	13
10.00-12.00	49	19	30
12.00-14.00	7	3	4
14.00-16.00	31	10	21
16.00-18.00	10	6	4
After 18.00	16	12	4
Totals	160	78	82

inconclusive, these are consistent with the above arguments in showing that excesses of either sex occur at different times.

From this it seems likely that the males have two short feeding periods at either end of the day, these totalling two to four hours, and that the females have a longer continuous period in the middle of the day, again amounting to two to four hours. Field counts at this time of year will therefore sample different birds during the day, so that the total time devoted to feeding by one individual will not be apparent.

The situation in August was essentially similar to that in July and is open to the same interpretation. In June, however, an early peak of departures was followed by a return $2\frac{1}{2}$ hours later, this corresponding with a second peak of departures. Again there was a slight tendency for an afternoon departure peak, but fewer were seen returning at this time; instead, many came back to the wood between 19.00 and 20.00 hours. During late June territorial and pre-nesting displays are much in evidence; most activity involving the pair occurs around 08.00-10.00 hours and the flight activity was consistent with this. However, in the afternoon the woods can be relatively empty of calling birds as they then apparently devote more time to feeding (Murton and Isaacson 1962). The results for late June, therefore, indicate a situation intermediate between the fairly well-defined peaks of activity during the main breeding season and the ill-defined situation of the late spring when birds move back and forth between their feeding grounds and the woods.

FEEDING HABITS ON CLOVER SITES

The clover feeding sites in the study area were divided into four broad categories with differing amounts of clover. The most could be

and on one specially planted field (field 12) of clover and sainfoin sown for fodder; this field was preferred by the birds for feeding. Much clover was also available on leys, following under-sowings of cereal crops; on these a large-leaved, red variety, *Trifolium pratense*, was growing. There were as many clover leaves per square foot on semi-permanent pastures as on leys, but on these pastures the white variety, *Trifolium repens*, was mainly found; its leaves have about a quarter of the surface area of those of the red variety, so that the total cover on pastures was actually relatively low. The smallest amount of clover was found in the category 'clover and grass'; these fields were either in their second or third year or specially planted mixtures of grass and clover, which served as stock feeding areas and were characterised by the dominance of lush grass. Such fields were ecologically unstable whereas the semi-permanent pastures represented an almost complete vegetation climax most nearly resembling natural grassland. The average number of pecks per minute (number of food items collected) was highest on field 12 (73) and pastures (average 74 over several fields) and lowest on 'clover and grass' (41). Understandably, the total numbers of pigeons recorded feeding on these last sites were also low.

Feeding activity

The results obtained on pastures are set out in table 4. In mid-winter observations during 9th December 1959-1st January 1960) the birds typically devoted most of their time to searching for and eating their food. A tendency was apparent for feeding to be most intensive during the early and later parts of the day and for more resting to occur during the mid-day period. In these conditions, resting took place on the feeding ground, the bird pausing and standing motionless or preening.

During the first half-hour period 08.00-08.30 hours 98% of the birds' time was spent feeding, on average each bird fed for 29.4 minutes and rested for only 0.6 minutes. Applying this technique to all the half-hour periods when birds were feeding, it is apparent that in a feeding day of about 8 hours (08.00-16.00 hours) 7.6 hours were spent feeding and only 0.4 hours in other activities (a figure of 95% was used for the percentage feeding for the period when no observations were made). Such a high feeding intensity infers that at this time of year there is little margin between subsistence and starvation on such feeding sites.

Compared with January there were more daylight hours in February and the birds had a longer feeding day extending over 10 hours. The data in table 4 suggest that feeding was not so intense in these conditions, because during many half-hour periods a higher proportion of them were engaged in activities other than feeding. However,

in totalling the time spent in feeding, it is found that 9.7 hours out of the 10 available were utilised (though some error occurs in this figure because it is known that not all the birds arrived to feed at the same time, and similarly departures to the roost at night were staggered; consequently most of them were not on the feeding grounds for the whole ten-hour period). These results may appear surprising, but continuous observation of marked individuals on these same fields confirmed that feeding was the main activity.

The clover leaves on leys being larger than those on pastures, the pigeons could obtain more food with a single peck (see below). As a result, they were able to devote more time to activities other than feeding (table 4). Whereas in an eight-hour day 7.6 hours were devoted to feeding on pasture, only 5.4 hours were so employed on the leys.

The total amount of food collected in these two different feeding situations will be discussed below.

One of the difficulties attendant on achieving reliable estimates of the intensity of feeding were considerable, because many birds remained in their roosts for long periods, but the figures in table 4 show that there was less urgency for feeding on pastures than in November and February, a much higher proportion of the time being devoted to other activities. In May many pigeons left the wood up to 06.00 hours and returns did not account for the total departures until 18.00 hours. Those which left the roost at 08.00 hours in May could have had February's minimal feeding time of 7.6 hours by 13.00 hours, allowing for the appropriate resting figures which can be calculated from table 4. The feeding rates on pastures (number of pecks per minute) were similar in February and May (see below) and this is thus in close agreement between the maximum time the pigeons appeared to spend on pastures in May and the time calculated as being necessary for them to obtain sufficient food.

Feeding rates

Feeding on pasture was investigated in detail to determine the total amount of food collected, and feeding counts were made throughout the day in February 1960 on a field where viewing conditions were good.

The results are presented in fig. 2 and show that, after the first feeding in the early morning, the area searched increased and the number of pecks taken decreased. From mid-morning onwards the birds tended to take more pecks from a small area and this tendency reached a peak just before their return to the roost. As the availability of clover remained roughly constant throughout the day (i.e. essentially, ten sample squares on this field gave an average clover density of 109 leaves per square foot), this suggests that they were less selective towards evening. The composition of the food collected from this pasture is given in appendix 1 which shows that clover

made up 90% of the food items consumed.

Considering that the birds were feeding at a rate of 60-100 pecks per minute throughout the day, their consistent selection of clover leaves seems remarkable. However, such high feeding rates in mid-winter appear to be typical of some other species; for example Gibb (1960) estimated that tits (*Parus* sp.) in pine plantations in winter had to collect 2 mg. of dry food every 24 seconds, or one average-sized insect every $2\frac{1}{2}$ seconds, and he obtained comparable results for the Rock Pipit (*Anthus spinoletta*) taking Periwinkles (*Littorina neritoides*) (Gibb 1956). There can be little doubt that in these conditions birds adapt themselves to searching for one kind of food and develop a feeding image of it.

The total number of pecks taken throughout the day by each bird on pasture was calculated (appendix 1) and amounted to approximately 34,900. Close observation showed that virtually every peck represented a food item taken, although on some occasions, when the birds were feeding very rapidly, they moved on to the next item so quickly that they dropped the one taken before (this has not been allowed for). Food samples collected from pigeons shot on a similar pasture were sorted and counted when fresh and were then dry weighed. From the calculations made in appendix 1 it is seen that the dry weight equivalent of all the clover collected throughout the day in February was about 44 gm. Allowing for the other food collected, the total intake was around 47 gm. dry.

Table 5. Average weights of food in the crops of Woodpigeons (*Columba palumbus*) shot at different times of the day during December 1959-February 1960 at Carlton Wood, Cambridgeshire

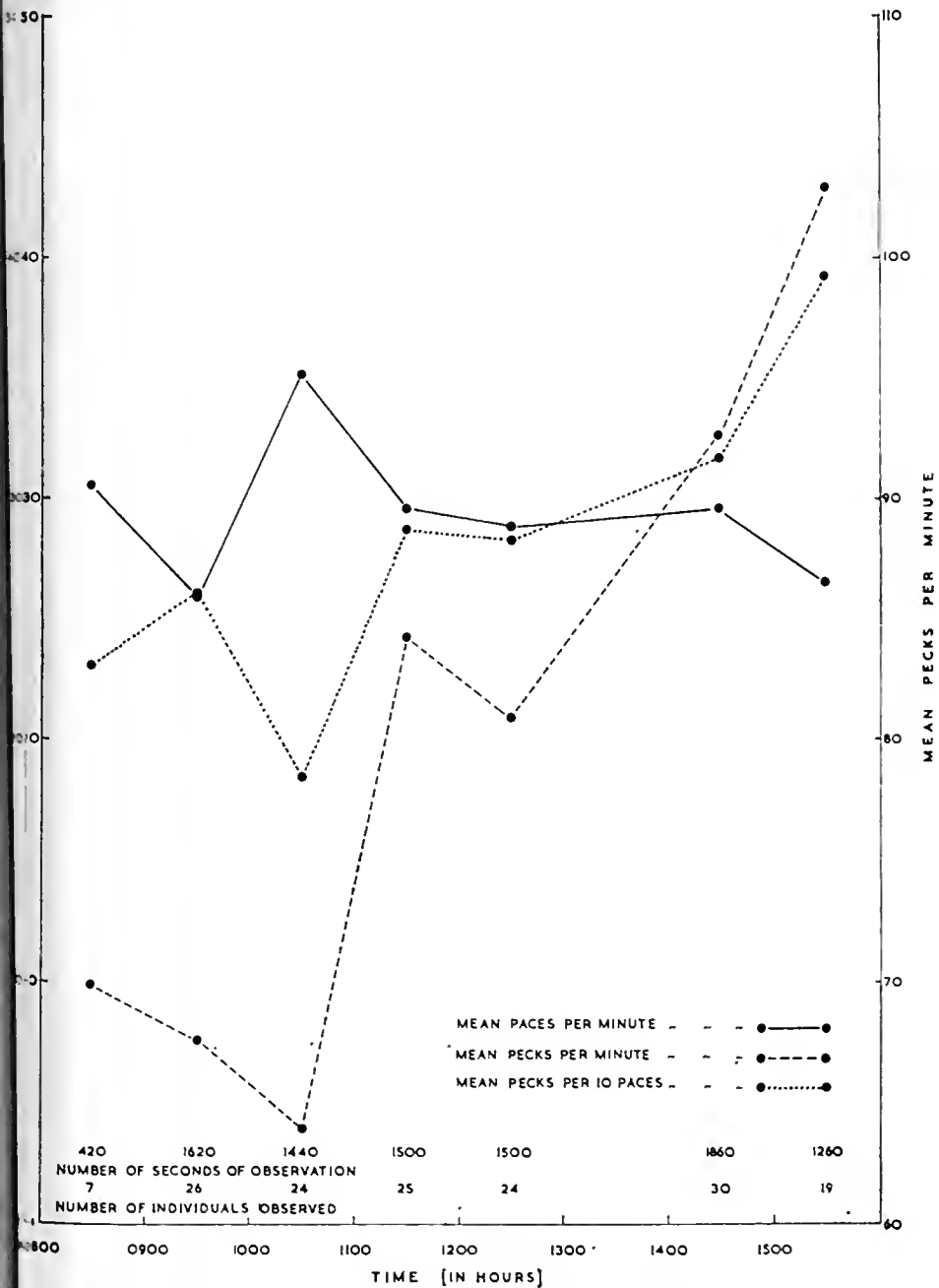
The first figure shows the mean fresh weight of the crop contents in grams, the one in brackets the number of birds examined and the last the number which had empty crops

Food	07.00-09.00	09.00-11.00	11.00-13.00	13.00-15.00	15.00-17.00
Clover	0 (4) 4	1.6 (6) 1	2.7 (5) 0	-	43.2 (16) 0
Wheat	0.7 (15) 11	6.0 (19) 12	19.6 (2) 0	-	37.3 (4) 0
Kale	2.2 (25) 18	1.0 (8) 4	4.5 (5) 2	12.0 (2) 0	31.8 (7) 0

During the early morning in winter the crops of Woodpigeons are empty, or at most they contain a trace of the previous day's food. Food gradually accumulates in the crop throughout the day, but completely full crops are rarely found until the late afternoon. The trends are shown in table 5 for three kinds of feeding situation, the information having been separated because the weights of the various foods are not comparable. A similar trend has been noted for the Barred Dove (*Geopelia striata*) in Hawaii (Schwartz and Schwartz 1951). Woodpigeons with around 40-50 gm. (fresh weight) of clover in their crops had anything from 3,500 to 5,000 individual leaf fragments

FEEDING ECOLOGY OF THE WOODPIGEON

depending on the type and size of clover eaten. Thus, roughly 14% of the total food collected throughout the day was stored in the crop and was ingested during the night after the return to the roost. There seems little doubt that the possession of a storage organ which effectively lengthens the feeding day enables Woodpigeons to exploit a feeding niche which would probably otherwise be inadequate. The increase in pecking rate noted on pasture from around mid-day was



2. Feeding rates of Woodpigeons (*Columba palumbus*) on pasture near Carlton Wood, Cambridgeshire, in February 1960

sufficient to account for the accumulation of 3,000-5,000 items in the crop.

Samples of clover collected from pigeons shot on another pasture (field 211) were analysed by the Animal Nutrition Department of the National Agricultural Advisory Service at Cambridge and had the composition shown in appendix 2. From these data the nutritive value of the average intake of clover per day per Woodpigeon from pasture can be calculated and the results are also given in the same appendix.

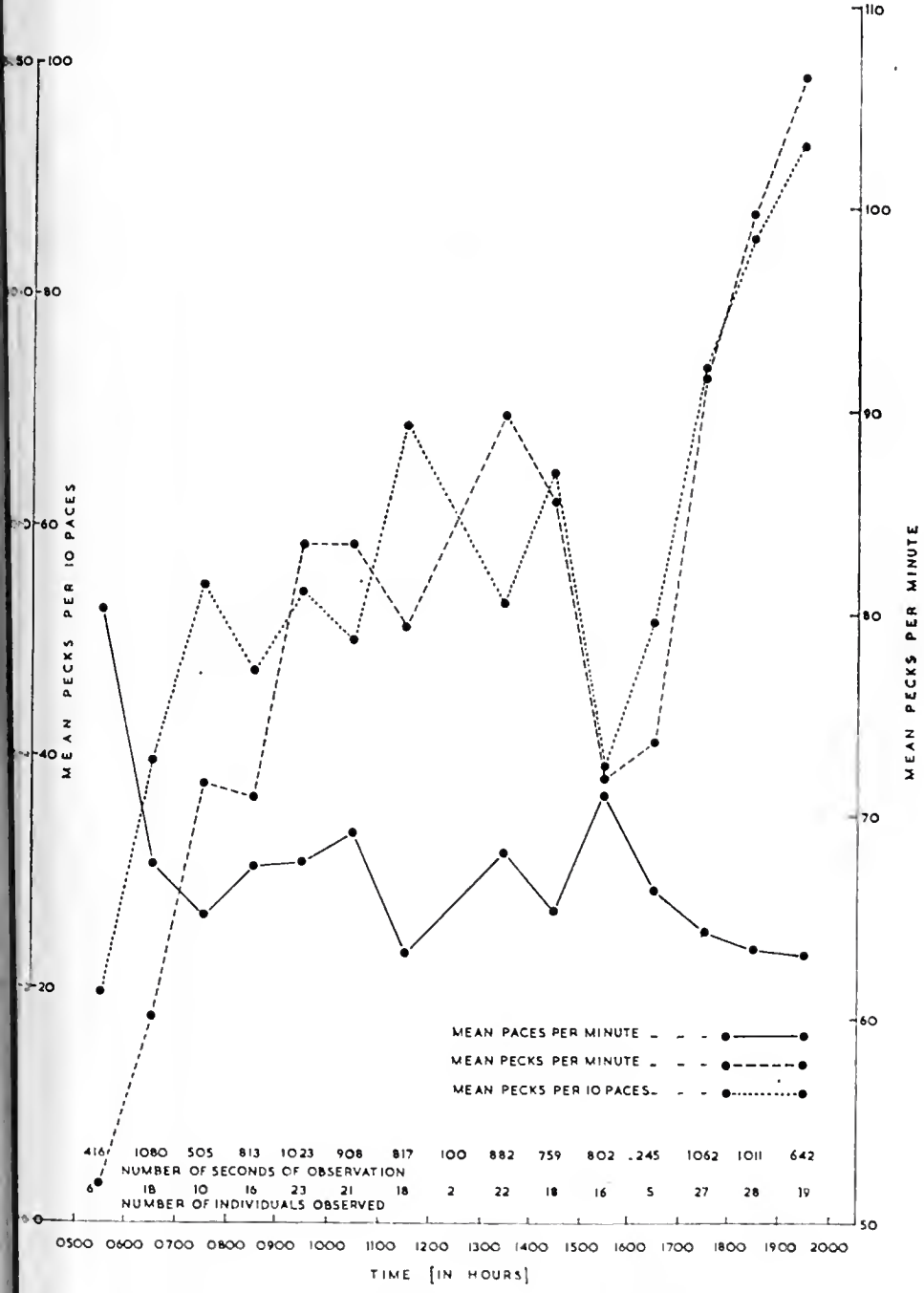
The daily food consumption was also investigated on clover leys, where larger leaf fragments were taken. The pecking rates of many individuals were measured throughout the day and the results are likewise given in appendix 1. These figures combine field observations on two leys. It proved difficult to find feeding flocks in the required circumstances where it was possible to ensure that all individuals could be seen, and at the same time to study isolated sites where there was no risk of the birds transferring back and forth between ley and pasture feeding—a situation common in actual practice. As the proportion of the day which the pigeons devoted to feeding on these leys is known (table 4), it is again possible to estimate the total food intake and this has also been done in appendix 1. Totalling the number of pecks per hour throughout the day, we arrive at a figure of 24,469. Again field observations suggested that each peck represented a food item and the percentage composition by food items was determined by shooting birds feeding on these leys (appendix 1). Knowing the average dry weight of freshly collected food, we can again calculate the total dry weight consumed. This has been done in the appendix and the results indicate that, although a similar dry weight of vegetation was eaten, the birds actually obtained more per day from the leys (47 gm. dry on pasture, 60 gm. dry on leys).

However, it is unlikely that some pigeons were exploiting pastures when better feeding situations existed on leys near-by and it may be that the difference in the above results was due to observational failure. It is felt that the pasture data are reasonably reliable, but there is a possibility that the time spent feeding on leys was over-estimated because some individuals began feeding earlier and left for the roosts earlier than others (see under ROOST OBSERVATIONS). This could not be allowed for, but a similar discrepancy did not arise on pastures where it was certain that all the pigeons were under observation all the time, a fact confirmed by watching marked individuals.

In spite of these faults it is evident that more food could be obtained per unit time from leys with less effort and, as a result, the birds were able to spend more time in resting (table 4). This being the case, it is to be wondered why any pigeons fed on pasture sites. The following explanations seem likely answers. Firstly, the conditions during wet

FEEDING ECOLOGY OF THE WOODPIGEON

frosty weather often prevent pigeons from feeding on leys until late in the morning, and these do not affect pastures to the same extent. Secondly, if all birds fed in the same places, clover stocks might drop while other feeding sites near-by remained unexploited; to maintain the highest population densities all feeding grounds must be utilised. Thirdly, the apparent preference for pasture feeding might be due to



3. Feeding rates of Woodpigeons (*Columba palumbus*) on pasture near Carlton Wood, Cambridgeshire, in May 1960

the pigeons being more attracted to ancestral feeding grounds than such habitats as leys which are more recent in origin. Recent work has shown that leys are exploited first in late autumn and early winter, and that Woodpigeons then transfer to pasture feeding when stocks of clover become depleted on the leys.

In May the pigeons on the pasture had a much longer feeding day and a greater proportion of their time was devoted to resting (table 4). More time was also spent in the woods and evidence produced earlier shows that not all the birds were on the feeding grounds at the same time. Even so, numbers leaving the roost reached a peak around 08.00 hours and returns to the wood did not balance the departures until around 18.00 hours, suggesting that a large proportion of the day was spent on the feeding grounds. When the pigeons were feeding, similar pecking rates to those recorded in February were noted. In February the number of pecks per minute increased throughout the day from 70 in the early morning to 103 just before the birds returned to roost. In May, in the early morning, pecking rates of 52 and 60 were noted, increasing to 90 in the early afternoon and reaching 107 just before dusk (fig. 3).

As a different pasture was examined in May and considerable clover growth had occurred by this time, it is remarkable how close these feeding rates are to those in February. To obtain this number of pecks per minute in May the pigeons searched a considerably smaller area than in February, this being reflected in the number of paces taken per minute. Following from this, more pecks were taken per ten paces than in February and these differences were almost certainly the result of a higher clover density. These data are summarised in fig. 3 and they indicate the greater ease with which food can be found at this time. Also noticeable in May was an increase in feeding rate throughout the day, more pecks being taken per minute towards nightfall, but associated with this was a corresponding reduction in the area searched, as in February. The situation in May was complicated by a mid-afternoon peak in the feeding rate, which may have been due to some birds starting and ending their feeding day earlier than others. This situation probably does occur, as was suggested by the roost records already discussed.

FEEDING HABITS ON GRAIN SITES

When spring barley or wheat is sown, a very good food situation is available for the pigeons compared with their normal clover sites and in these circumstances practically all transfer to cereal feeding (Murton, Westwood and Isaacson in press). Later in the year ripe standing corn is utilised and after the harvest the birds exploit the stubbles, later returning to ley and pasture feeding when grain stocks are exhausted.

Feeding activity

In March 1960 the flocks under observation stayed on or near the spring sowings throughout the day. Periods of feeding alternated with long periods of resting when the pigeons flew to and perched in trees near-by. The activity figures (table 4) adequately sampled all the population and show that in a potential day of about 11.5 hours the birds spent only 4.3 hours in actual feeding.

In 1961 the pigeons did not stay near the feeding grounds throughout the day. Instead, movement in and out of the roosts was noted (table 1) and it was apparent that, to some extent, different individuals were being watched. Associated with the fact that birds spent less time on the fields, their feeding intensity was higher than in 1960 (table 4). It was estimated from the roost watches that they had a maximum of six hours on their feeding grounds and this would have been more than adequate. The short day required for feeding most certainly allowed the frequent returns to the woods noted in table 1, but it is not clear why the behaviour differed in 1960 and 1961.

Pigeons watched feeding on autumn grain sowings in October 1961 also spent some time in the woods, where considerable activity was noted throughout the day (table 2), so that again the field counts did not adequately sample all their time. As in March 1961, those on the feeding grounds were mostly actually feeding (table 4). The autumn sowing programme was early in 1961 and much grain was still present on stubbles which thus provided a good alternative feeding site. In years when the autumn sowings are later in the season, for example in November and early December, such sites would be more useful and the feeding conditions would be considerably better than those on clover leys.

The roost observations showed that during the summer months Woodpigeons flew to and fro throughout the day and that proportionately little time was spent on the feeding grounds. It proved difficult to obtain counts when they were feeding in ripe standing corn because of the impossibility of seeing them all when they settled. Some observations were made on stooked wheat, however, where conditions seemed to approximate most closely to those in the ripe corn. It can be seen in table 4 that much time was devoted to activities other than feeding, while there is some suggestion that feeding was intensive only in the early morning and late evening. This confirms the good feeding situations to be found in ripe corn. The data in table 4 also show the ease with which food can be obtained on grass and bean stubbles.

Feeding rates

On average, similar pecking rates were noted on autumn wheat sowings and spring barley sowings. As these two sites provided similar

feeding conditions, the feeding rate counts from both were combined to examine the effect of variations in food density.

Fig. 4 shows that with increase in grain density more was taken per unit area searched, but that the increase in feeding rate was not in proportion to the food increase, resulting in an apparent curvilinear relationship between the two variables. The ability of the Wood-

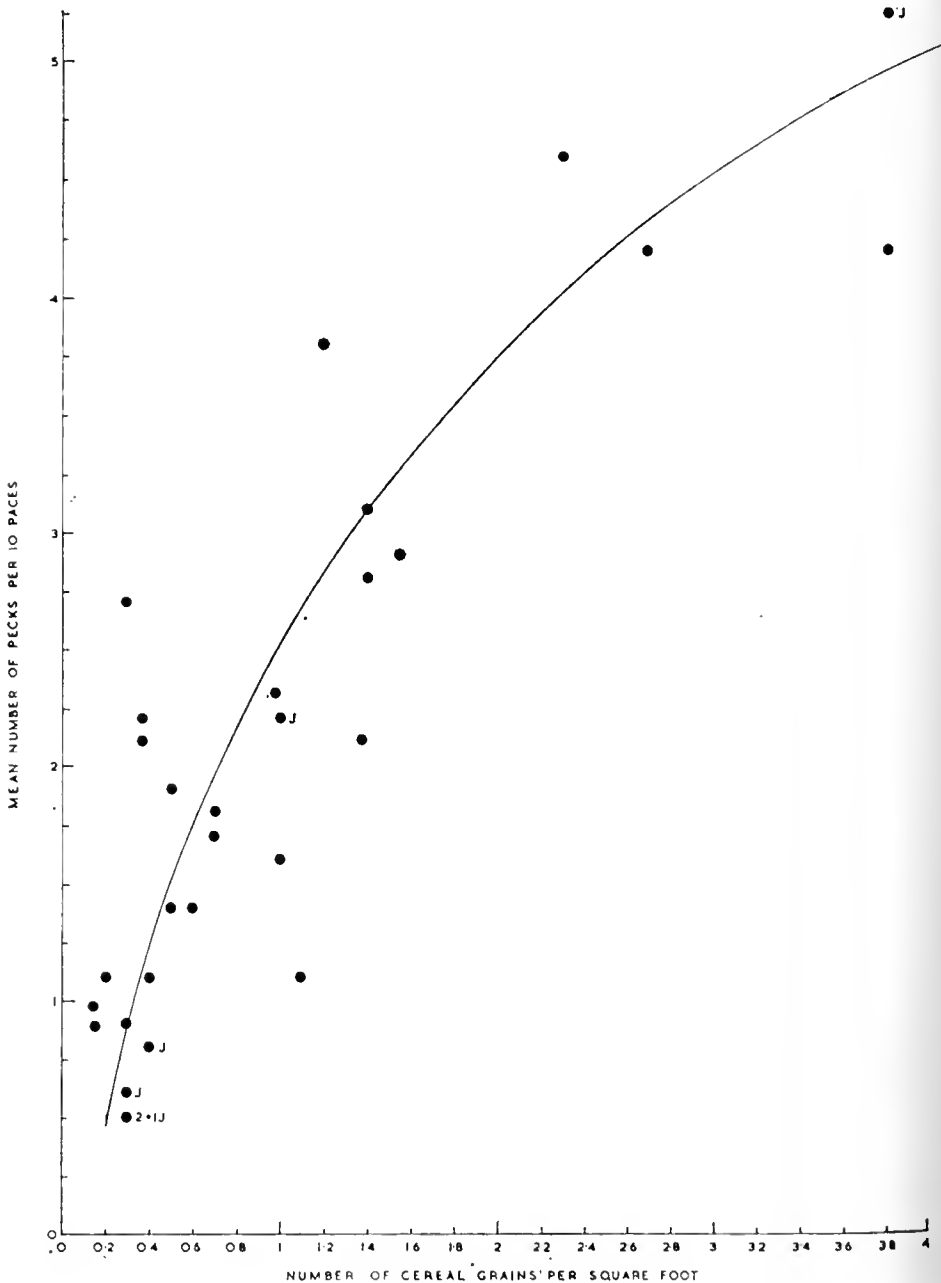


FIG. 4. The amount of food found by Woodpigeons (*Columba palumbus*) per area of ground searched, depending on the grain density on autumn and spring cereal sowings (J=juvenile). The curve has been fitted visually

FEEDING ECOLOGY OF THE WOODPIGEON

Woodpigeons to exploit a particular food supply was clearly influenced by a density-dependent factor, or factors. In fig. 5 it is seen that the number of pecks per minute rose with increase in food density but not proportionately, while the area searched per minute decreased, again in a density-dependent way. A Woodpigeon feeds by running or walking forward to a grain, stopping while it picks up the food and then moving on again. It follows that the number of grains picked up must depend

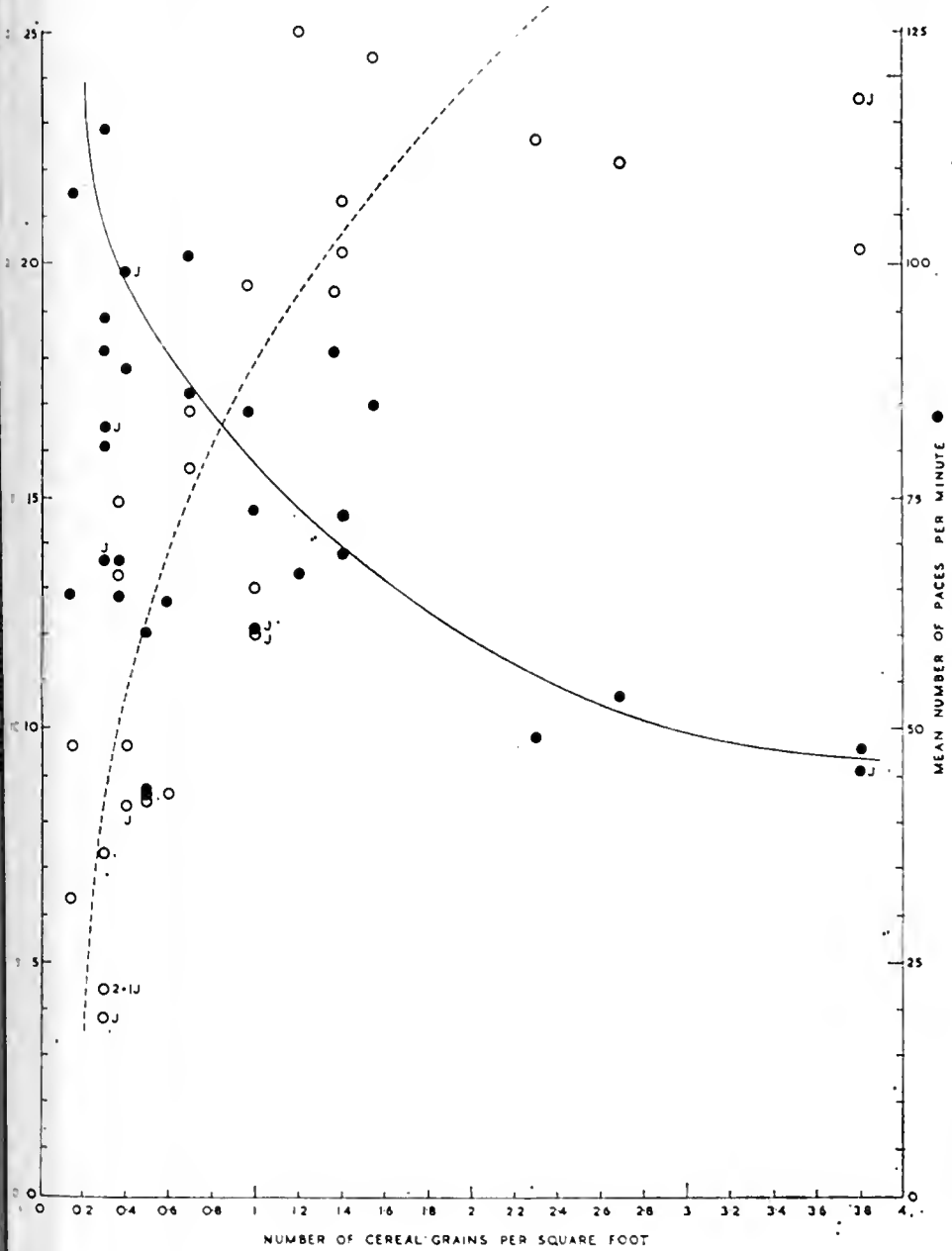


FIG. 5. The effect of changes in grain density on cereal sowings on the feeding rates of Woodpigeons (*Columba palumbus*), based on the area searched and the food found and eaten per minute (J=juvenile). The curves have been fitted visually

mainly on the speed with which it can cover the ground, leaving aside the considerations of its ability actually to see the grain and the effect of density on visual responses. The data set out in fig. 5 suggest that at food densities of around 0.2 grains per square foot, the birds searched the ground at the maximum speed of which they were physically capable. In such conditions they could find and eat less than ten grains per minute. It can be assumed that further decreases in food density could not be compensated for by increases in the speed of food searching. In fact Woodpigeons were not recorded feeding on grain densities much below this figure. It might be further assumed that at these low food densities the physiological effort involved in searching for food would not be proportionately compensated by the amount found.

With increasing food density a Woodpigeon could theoretically reduce the area searched until eventually it stood still in one place to feed. However, the information in fig. 5 suggests that this did not happen. On sowings, food densities higher than four grains per square foot were not experienced, so the effect of very high food concentrations was not observed. However, stubbles had much higher grain densities and feeding rates were measured on these. The grain stalks imposed a physical limitation on the birds' movements and, because the observations were not directly comparable with those made on sowings, they have been separated in fig. 6. These feeding rate curves are really continuations of those in fig. 5. The area searched per minute apparently became constant at grain densities around four per square foot on sowings and a similar result was obtained on stubbles. It is clear that with further increases in grain density the birds ceased to reduce the area searched for food and, as a result, the amount picked up per minute also seemed to remain constant. These results indicate that there is some advantage in not reducing the searching rate beyond a certain point. It is probable that a bird which continually moves around a feeding area containing a uniformly distributed food is able to feed at a constant rate. It is easy to demonstrate that such an individual will get more food per unit time than a bird which over-exploits one area and causes the density of its food to be so reduced that, in turn, its own feeding rate is forced to drop before it moves to a new area. Similar observations applied to the clover feeding grounds.

It would appear that the optimum grain density was around 15 per square foot and that the birds derived no benefit from feeding on sources where higher densities were present. Densities of this order were frequent just after harvest and the characteristic pecking rates of 30 per minute differed little from those noted for birds feeding on standing or stooked wheat (31 and 26, based on 15 and 26 observations respectively). On standing wheat the birds expended time in moving from one stand to the next so that the high pecking rates could be

FEEDING ECOLOGY OF THE WOODPIGEON

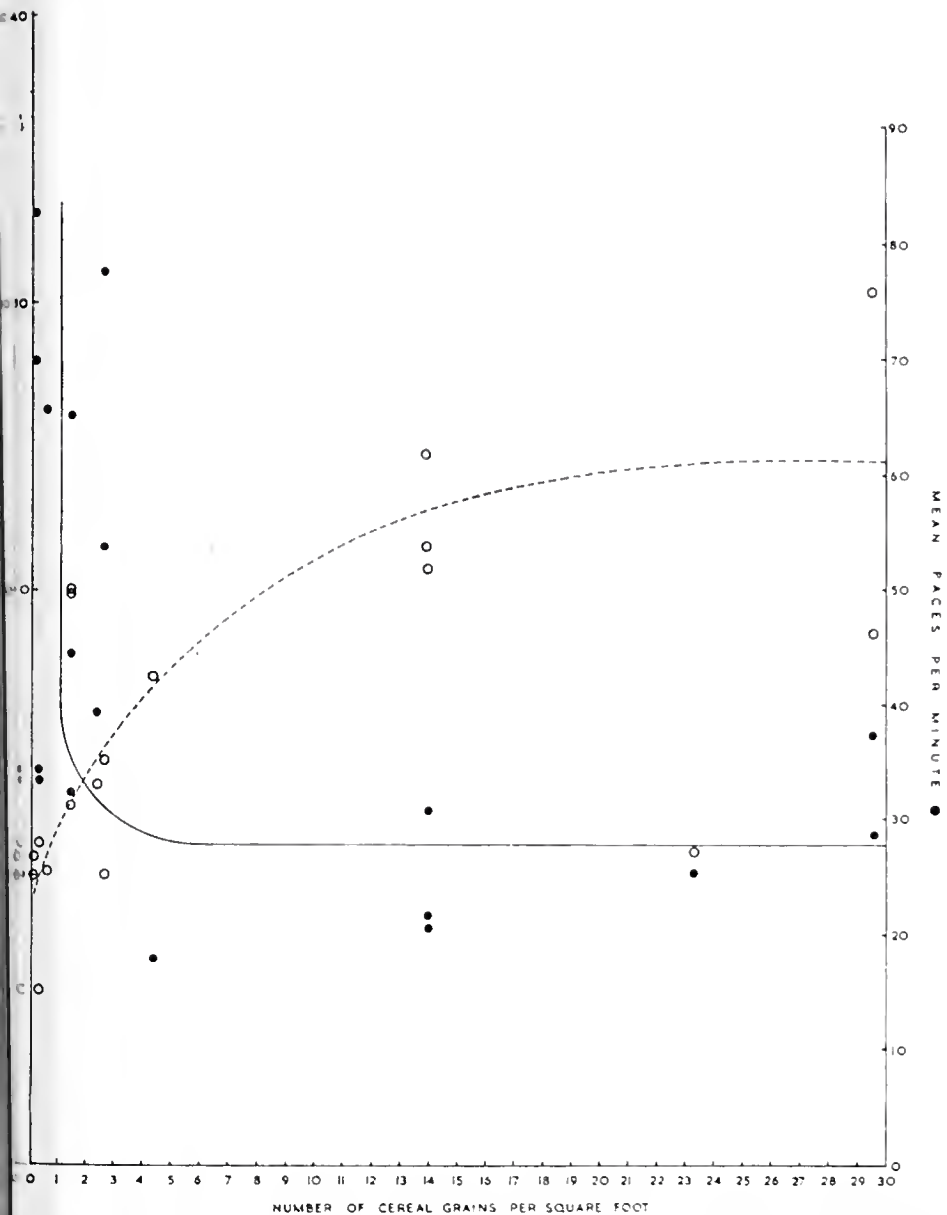


Fig. 6. The effect of changes in grain density on cereal stubbles on the feeding rates of Woodpigeons (*Columba palumbus*), based on the area searched and the food found and eaten per minute. The curves have been fitted visually.

maintained only for intermittent periods, whereas on stubbles feeding is continuous. This fact might explain the preference for stubble over standing corn, which has been noted.

DISCUSSION OF THE TIME REQUIRED TO FIND ADEQUATE FOOD

The food requirements of the Woodpigeon were not investigated in detail by us under laboratory conditions, but Colquhoun (1951) found the average intake of wheat for 15 adults over a period of 16 days

was 42.5 gm. per day per bird. Two adult Woodpigeons and one juvenile were confined in small outdoor cages at Carlton where they could not fly and where activity was reduced to a minimum. During the period from 14th November to 15th January they consumed an average of 40.7, 35.1 and 33.1 gm. of wheat per day respectively. Colquhoun's birds were able to fly within their cage and so it can be assumed that still more food would be needed by active birds in the wild.

Colquhoun also used information presented by Woodman (1944) to discuss the relative feeding values of the various foods of the Woodpigeon, making use of the starch equivalent (the amount of starch needed to produce the same amount of energy as 100 parts of a given food) as a measure of their comparative energy. Unfortunately, however, the starch equivalent has been calculated only for ruminant animals—cattle and sheep—although some information is available for pigs. The digestive ability of pigeons may differ enough from these animals to render the starch equivalents used by Colquhoun inaccurate. Consequently, using the data already presented, it will be assumed that 50 gm. of grain or 47 gm. dry of clover are the minimum amounts necessary to maintain health and body weight.

Knowing the approximate amount of food which can be collected by a Woodpigeon under a variety of conditions, it is possible to estimate the total time required to collect what would probably be adequate food supplies. This gives some indication of the potential time available for other activities throughout the year. On pasture, 7.2 hours were required to collect food in December. It is assumed that a similar time would be needed when feeding on such sites at other times of the year, although it would be different from April onwards, when woodland and other foods are also collected (hawthorn buds, ash leaves, weed seeds, etc.). Less feeding time is probably needed on clover leys, the estimate being 5.4 hours (table 4).

Knowing the average weight of wheat and barley and the characteristic pecking rates at different grain densities, the time required to collect 50 gm. has been calculated for a variety of feeding situations (appendix 3). The density of grain at different times in the season has already been determined (Murton *et al.* in preparation) and this information has been used as an indication of the general feeding situation facing pigeons throughout the grain season. The above approximations are represented diagrammatically in fig. 7 in relation to the daylight hours. The share of the male and female in incubation and brooding duties is based on data presented elsewhere (Murton and Isaacson 1962).

These theoretical approximations show that Woodpigeons require relatively little time to collect grain from most situations and this con-



11-56. Male Crane (*Ardea herodias*) approaching the nest, Norway, June 1958. The black-and-white head and the blackish 'tail' formed by the long secondaries, are much bigger than Herons and build quite large nests, though in dry areas may not be much more than flattened patches (page 376) *plum: M. D. England*



PLATES 57 and 58. Cranes (*Megalornis grus*) at the nest, Norway, June 1958. Both sexes incubate, for periods of two to four hours, and nest-relief may or may not be ceremonial (page 376). Above and below, the female moving the eggs and sitting. Opposite, three shots of the male settling on the eggs, dozing 'at the ready' (page 376) and crouching in a threat posture (page 377). The male is actually a little larger and often more clearly marked (photos: M. D. England)







PL. VI 1 59. Above, nesting habitat of the Crane (*Megalornis grus*) in Norway where the species usually breeds in desolate and often treeless mountain bogs, sometimes near sparse birch forests (page 375). Below, the hide from which plates 55-58 were taken; note the boggy conditions and the nest on the right (*photos: M. D. England*)



ation is supported by the information already presented. When these foods are available the birds spend much of the day within the woods and even on the feeding grounds devote very little time to actual feeding.

Fig. 7 shows that in winter, from December to February, most of the day is occupied in feeding; no time would be available for courtship and certainly not for incubation. When feeding on spring sowings at their maximum density, the pigeons would have enough time for display and could even manage an incubating routine, but such feeding situations do not persist for long and with a drop in grain density the feeding day must increase in length again. By April they have returned to pasture and ley feeding, but with the longer day more time is left for other activities. During April to June there would be just enough time for them to collect a second supply of food which could be given to nestlings, but it will be shown elsewhere that green food at this time of the year is not adequate for normal nestling growth. In any case, before any young could hatch, it is clear that the adults would not be able to take their proper share in incubation duties and to feed themselves. Weed seeds and other natural foods are also

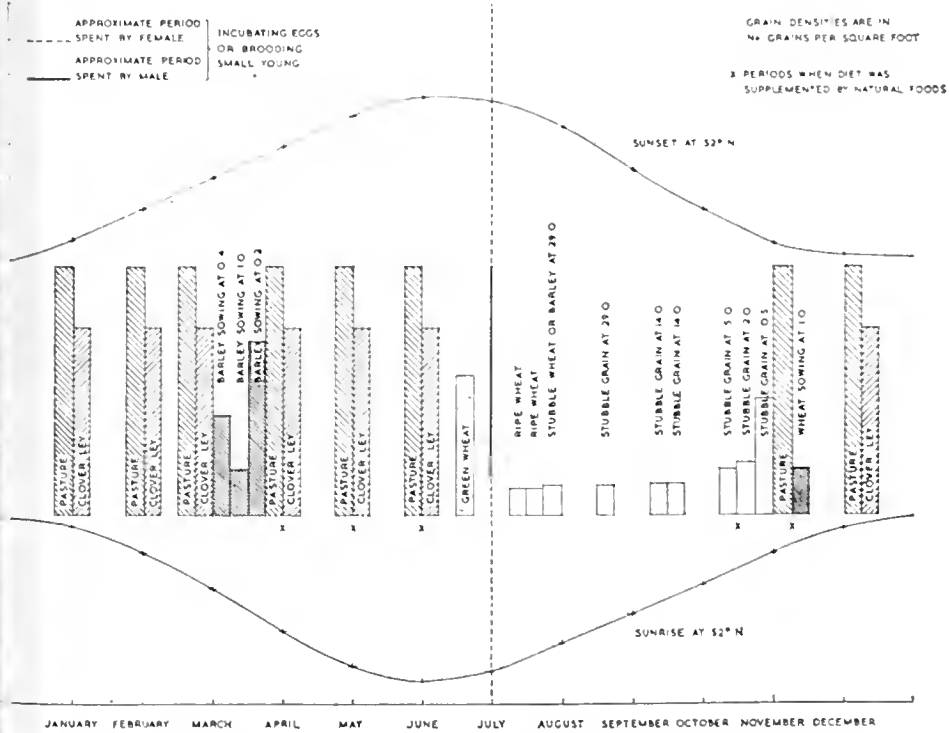


Fig. 7. Schematic representation of the time Woodpigeons (*Columba palumbus*) require to find their food, depending on its availability and the season (for explanation see text)

taken at these times, however, and it is possible that their availability could just enable breeding to take place.

Most egg laying is deferred until green cereals become suitable as food and at this point, usually sometime in July, there is sufficient time for the full breeding cycle to be feasible. From this period onwards, conditions improve and when ripe corn or rich stubbles are present the potential time available for other activities appears to be considerable. The increased time that must be devoted to feeding from October onwards, as stubbles become exhausted and daytime shortens, suggests why the breeding season ends in early October, enabling juveniles to grow and adults and juveniles to moult and lay down fat reserves in readiness for the poor conditions of winter. In some years autumn sowings are available and these do provide good feeding conditions, but as in the case of those in spring they do not last for long.

ACKNOWLEDGEMENTS

It is a pleasure to thank the various farmers who allowed us access to their land and Mr. A. Wylie who has made it possible for us to have a study area at Carlton. Mr. A. Jenson prepared the text figures from rough drawings and we are also grateful to him.

SUMMARY

(1) The feeding activity and feeding rate of Woodpigeons (*Columba palumbus*) was investigated in a study area at Carlton, near Newmarket, Suffolk. The proportion of the day spent searching for food on various feeding grounds was determined by making repeated counts of the activity of the birds. Roost observations were made to establish whether the whole population was sampled. Thus in mid-winter the pigeons left their roosts in the early morning and returned at dusk; for most of the day they were on surrounding fields where unbiased observations could be made. At other times of the year a varying amount of time was spent in the woods, where standardised counts could not be made as in the fields. The proportion of the day spent away from the woods throughout the year was determined and this enabled corrections to be applied to the field counts.

(2) Feeding rates were measured by counting the number of pecks per unit time and this is discussed. An index of the area searched for food was obtained by similarly counting the number of paces, the length of which was reasonably constant for a given feeding situation. Some birds were shot, enabling the food items collected to be measured.

(3) On pastures in winter, 95% of the feeding day was devoted to food searching, this being equal to 7.6 hours. On clover leys, where more food could be obtained per unit time, only 64% of the day was spent feeding. These results are discussed and compared with other data obtained for pastures in May, when the birds showed less urgency in their food searching.

(4) On pastures the number of pecks per minute varied throughout the day as did the size of the area searched for food. In February the pecking rate increased

70 per minute in the early morning to 103 per minute just before the return to the roost; at the same time there was a corresponding decrease in the area searched and this is discussed.

5) In winter each pigeon collected an average of 34,900 food items (mainly clover leaves) per day from pastures. This was equivalent to a dry weight of 47 gm. Similar results on clover leys are discussed.

6) Food was stored in the crop from around mid-day onwards. The increase in the feeding rate on pastures could account for the accumulation of food in the crop, equivalent to 10-14% of the total food collected per day. Thus the feeding rate was effectively lengthened by this amount and the significance of this is considered in relation to the occupation of a clover-feeding niche.

7) Less time was spent feeding when grain was available on sowings, stubbles and standing corn. Cage tests and field observations were consistent in suggesting that the pigeons required about 50 gm. of wheat or barley per day. The number of grains collected per minute on sowings and stubbles increased as the food density increased, but not proportionately. Similarly, the area searched for food decreased as food density increased, but again the relationship resulted in a curvilinear graph. These 'density-dependent' relationships are discussed. Food densities below 0.2 grains per square foot were too low for the birds to exploit successfully. On the other hand, the birds apparently derived no advantage when the grain density increased above 15 grains per square foot.

8) Feeding rates were also measured on standing grain and bean stubbles. From a knowledge of the time required by pigeons to find their food, depending on its nature, availability and the season, a diagram is shown to indicate the approximate time which would be available for other activities. From these results it can be concluded that breeding would only be feasible during the period April-October, and other considerations indicate that only the conditions pertaining in the months March-October are really suitable.

REFERENCES

QUHOUN, M. K. (1951): *The Wood Pigeon in Britain*. H.M.S.O. London.

SMITH, R. E. (1960): *Rations for Livestock* (Min. of Ag. Bull. 48). H.M.S.O. London.

SMITH, J. A. (1954): 'Feeding ecology of tits, with notes on Treecreeper and Goldcrest'. *Ibis*, 96: 513-543.

— (1956): 'Food, feeding habits and territory of the Rock Pipit *Anthus trivirgatus*'. *Ibis*, 98: 506-530.

— (1960): 'Populations of tits and Golderests and their food supply in pine plantations'. *Ibis*, 102: 163-208.

SMITH, R. K. (1958): 'The breeding of Woodpigeon populations'. *Bird Study*, 5: 177-183.

— and RIDPATH, M. G. (1962): 'The autumn movements of the Woodpigeon'. *Bird Study*, 9: 7-41.

—, and ISAACSON, A. J. (1962): 'The functional basis of some behaviour in the Woodpigeon *Columba palumbus*'. *Ibis*, 104: 503-521.

—, WESTWOOD, N. J., and ISAACSON, A. J. (in press): 'The feeding habits of the Woodpigeon *Columba palumbus*, Stock Dove *C. oenas* and Turtle Dove *Streptopelia turtur*'. *Ibis*.

WARTZ, C. W. and E. R. (1951): 'Food habits of the Barred Dove in Hawaii'. *Wilson Bull.*, 63: 149-156.

WOMAN, H. E. (1944): *The composition and nutritive value of feeding stuffs* (Min. of Ag. Bull. 124). H.M.S.O. London.

BRITISH BIRDS

Appendix 1. Feeding rates of Woodpigeons (*Columba palumbus*) on pastures and leys near Carlton Wood, Cambridgeshire, and the calculated amount of food eaten

A. FEEDING RATES

Time	No. of individuals examined	Total time of observation (minutes)	Average per minute of paces pecks		Average no. pecks per 10 paces
<i>Pastures on 26.2.60</i>					
08.00-09.00	7	420	30.4	69.9	23.0
09.00-10.00	26	1,620	25.9	67.5	26.0
10.00-11.00	24	1,440	35.0	63.9	18.3
11.00-12.00	25	1,500	29.4	84.1	28.6
12.00-13.00	24	1,500	28.8	80.9	28.1
13.00-14.00	—	—			
14.00-15.00	30	1,860	29.4	92.6	31.5
15.00-16.00	19	1,260	26.4	102.9	39.0
<i>Clover leys on 28.11.61, 11.12.61 and 12.12.61</i>					
08.00-09.00	9	495	9.2	65.4	71.0
09.00-10.00	26	1,443	13.1	64.8	49.3
10.00-11.00	27	1,376	8.6	70.6	81.8
11.00-12.00	26	1,396	10.5	67.0	63.4
12.00-13.00	16	824	8.5	69.9	81.3
13.00-14.00	7	310	11.8	81.2	68.8
14.00-15.00	21	965	11.0	78.3	71.1
15.00-16.00	17	734	13.5	83.3	61.4

B. AMOUNT OF FOOD COLLECTED IN PECKS

Pastures

Time	Average pecks per minute in February (see above)	% time spent feeding in December (table 4)	Feeding time available (minutes)	Total time spent feeding (minutes)	Total pecks taken
08.10-09.00	69.9	97.6	50	48.8	3,411
09.00-10.00	67.5	95.2	60	57.1	3,854
10.00-11.00	63.9	94.4	60	56.6	3,617
11.00-12.00	84.1	93.9	60	56.3	4,735
12.00-13.00	80.9	89.8	60	53.9	4,361
13.00-14.00	(86.8 estimated)	94.5	60	56.7	4,922
14.00-15.00	92.6	98.1	60	58.9	5,454
15.00-15.45	102.9	98.6	45	44.4	4,569
Totals	81.1 mean	95.3 mean	455	432.7	34,923

FEEDING ECOLOGY OF THE WOODPIGEON

Time	Average pecks per minute in December (see above)	% time spent feeding in December (table 4)	Feeding time available (minutes)	Total time spent feeding (minutes)	Total pecks taken
09.00	65.4	59.3	50	29.7	1,942
10.00	64.8	54.2	60	32.5	2,106
11.00	70.6	55.9	60	33.5	2,365
12.00	67.0	56.1	60	33.7	2,258
13.00	69.9	70.8	60	42.5	2,971
14.00	81.2	87.4	60	52.4	4,255
15.00	78.3	91.5	60	54.9	4,299
15.55	83.3	93.2	55	51.3	4,273
Means	71.1 mean	64.1 mean	465	330.5*	24,469

This total differs from that given in table 4 because there half-hour periods were counted separately and one such period was estimated whereas here the figures have been averaged on an hourly basis and no estimate has been made.

C. DRY WEIGHT OF FOOD CONSUMED PER DAY

The composition of the food items in Woodpigeons shot whilst feeding on those where field counts were obtained (above) was: clover, 98.7%; *Veronica* leaf, 0.1%; *Stellaria* leaf, 0.2%; grass, 0.1%; *Veronica* seed head, 0.1%; other, 0.1% (446 items counted).

The average food intake of each Woodpigeon per day on leys (assuming that 99 items were taken with the above composition) was therefore: clover, 24,150; *Veronica* leaf, 195; *Stellaria* leaf, 49; grass, 25; *Veronica* seed head, 25; other, 25. 996 fresh fragments of clover taken from the above birds had a dry weight of 15.25 gm. Therefore, 24,150 fragments of clover would have a dry weight of 364.3 gm. Similarly, 62 *Veronica* leaf fragments weighed 0.27 gm. dry, so that 24,150 would weigh 6.5 gm. Too few other items were collected to enable dry weights to be obtained.

It is clear that the total food consumed had a dry weight of around 60 gm.

The composition of the food items in Woodpigeons shot whilst feeding on those pastures where field counts were obtained (above) was: clover, 89.9%; grass, 0.1%; *Ranunculus* leaf, 2.7%; *Cerastium* and *Stellaria* leaf, 0.2%; *Rumex* leaf, 0.1%. The average food intake of each Woodpigeon per day on pastures (assuming 44,923 items were taken with the above composition) was therefore: clover, 40,155; grass, 2,480; *Ranunculus* leaf, 943; chickweed leaf, 70; *Rumex* leaf, 35. 912 fresh fragments of the same clover taken from birds shot on pasture had a dry weight of 15.25 gm. Therefore, 31,395 fragments of clover would have a dry weight of 478.8 gm. Similarly, 158 fragments of grass weighed 0.16 gm. dry so that 2,480 would weigh 398 gm. Too few other items were collected for weighing.

It seems likely that the total food consumed had a dry weight of around 47 gm.

Appendix 2. Comparison of the nutritive values of clover collected from pasture (field 211) in winter and of ripe wheat in September near Carlton Wood, Cambridgeshire

The original samples were analysed by Dr. C. J. L. Baker of the N.A.A.S.

	Clover from pasture		Ripe wheat	
	% composition of absolute dry matter	Weight equivalent in 44 gm. dry	% composition of absolute dry matter	Weight equivalent in 50 gm. dry
Crude protein	29.9	13.2	12.5	6.3
Oil (ether extract)	2.8	1.2	1.2	0.6
Crude fibre	9.3	4.1	2.4	1.2
Nitrogen-free extractives	43.8	19.3	82.2	41.1
Total ash	14.2	6.2	1.7	0.9
Siliceous matter	5.7	2.5	Trace	—
Silica-free ash	8.5	3.7	1.7	0.9
CaO	1.26	0.6	0.22	0.1
P ₂ O ₅	1.12	0.5	0.79	0.4
K ₂ O	2.58	1.1	0.45	0.2
NaCl	0.44	0.2	0.12	0.1
True protein	24.6	10.8	10.3	5.2

Appendix 3. Calculated times required by Woodpigeons (*Columba palumbus*) to collect the equivalent of 50 gm. (dry weight) of grain according to the grain density of wheat and barley on various feeding grounds

The nutritive values of ripe wheat and barley are shown in Evans (1960). It is not possible to give the proportions of digestible constituents for pigeons without feeding trials, and data are available only for ruminants. However, the starch equivalents of wheat and barley are nearly the same, 72 and 71 respectively (Evans 1960). Assuming that the dry weight equivalents of the nutritive components of ripe and green wheat and barley are very nearly the same, and that their values to a pigeon are similar, we can make the following calculations.

Barley samples of the sort found on sowings and stubbles were weighed and 10 batches each of 100 grains had an average weight of 3.81 gm. dry. Accordingly, there would be 1,312 grains in 50 gm. dry.

Wheat samples of the sort sold threshed for stock feeding, used for sowing and found on stubbles following combined harvesting were weighed and 10 batches each of 100 grains had an average weight of 4.93 gm. dry. Accordingly, there would be 1,015 grains in 50 gm. dry.

Consider that Woodpigeons would obtain enough food if they were able to collect about 1,200 grains of wheat or barley when ripe, excepting that some green food might also be needed in addition to provide other mineral salts, trace elements and vitamins. The following estimates give some idea of the time needed by Woodpigeons to collect 1,200 cereal grains under various conditions.

CRANE STUDIES

	Density in grains per square foot	Typical no. pecks per minute (figs. 5 and 6)	Time needed to collect 1,200 grains in minutes hours	
Wheat and barley	0.2	4	300	5.0
	0.4	7	171	2.9
	0.6	10	120	2.0
	0.8	13	92	1.5
	1.0	15	80	1.3
	1.4	18	67	1.1
	2.0	22	55	0.9
	2.5	24	50	0.8
Wheat or barley stubbles	0.5	6	200	3.3
	1.0	10	120	2.0
	2.0	13	92	1.5
	5.0	16	75	1.3
	14.0	22	55	0.9
Standing wheat	29.0	25	48	0.8
	—	31	39	0.7

Ripe wheat and barley have approximately a 15% moisture content. On 6th June 1960 green wheat contained 66% moisture and green barley 57%. As at this time the grains were also smaller and only partly developed, to get the same nutritive value from green wheat as from ripe wheat at least 4.4 times as much would be required; similarly, at least 3.8 times as many barley grains would be required. Assuming that 0.8 hours were needed to collect sufficient grain on ripe standing wheat, then at least 3.5 and 3.0 hours would be needed on unripe wheat and barley respectively.

Studies of less familiar birds

124. Crane

Photographs by M. D. England

(Plates 55-59)

THE CRANE (*Megalornis grus*) has featured previously in this series, in 1956 (*Brit. Birds*, 49: plates 57-64), but the photographs now published, which were taken in Norway in 1958, are so outstanding that we are glad to have this opportunity of giving them prominence. In addition, Mr. England has kindly supplied the following notes from his considerable experience of the species in Scandinavia. This text is largely confined to points additional to the previous one (*Brit. Birds*, 49: 435-437) or disagreeing with other published statements.—EDS.

In Norway and north Sweden the habitat is usually one of desolate mountain bogs, often treeless but sometimes near the edge of—or even of—sparse boggy birch forest (plate 59). Many nests are completely

surrounded by water and some are virtually inaccessible to man. In areas where flooding is likely as a result of thawing near-by they are often quite bulky, but some in drier areas are little more than flattened patches of vegetation not much over three feet in diameter. In central and southern Sweden the species breeds chiefly in forest bogs, often in quite small swampy clearings in vast pine forests. In Denmark, on the other hand, it favours a completely different habitat of undulating sand-dunes, partly grass-covered, with scattered marshy pools surrounded by increased vegetation.

Many reference books—including *The Handbook*—describe the Crane as uniformly grey in colour, but it is in fact tinged with brown which increases through wear. As a result, there is considerable individual variation and on the breeding grounds in May or June many (possibly the majority) have much fawn, brown or even chestnut about the body. The male seems usually to be the larger and to have more clearly defined markings, especially the white cheeks. This is not always so, however, since in the case of one pair I watched very closely the bird which behaved as the male was rather duller than its mate. In many the red on the head is most inconspicuous, so much so that in some it appears even from a hide by the nest to be absent.

The Handbook states that Cranes often soar high on migration but never over their nesting places like White Storks (*Ciconia ciconia*). In fact, however, they frequently circle on outspread wings at considerable heights like large birds of prey over the breeding habitat. They show remarkable strength when feeding, in uprooting and breaking off frozen earth and vegetation which my companions and I could not manage to pull up by hand.

Both sexes incubate (plates 57 and 58) for periods of two to four or more hours. The male takes a fair share, though usually rather less than the female. The incubating bird dozes for quite long periods 'at the ready'—with eyes closed and head drooped but neck erect (plate 58b). The calls of the chick within the chipping egg are clearly audible at a distance of fifty feet or more, often for two days before hatching which is thus a rather protracted business. The first egg usually hatches about 48 hours before the second (though I once saw two which hatched almost together) and the male takes charge of the chick while the female does most of the incubation of the remaining egg. The young can swim and run almost at once. When both have left the nest, one parent often takes charge of each.

Nest-relief is said in *The Handbook* to be usually accompanied by mutual trumpeting and various small ceremonies, but at my several nests there was usually little sound or ceremony and sometimes the whole thing was almost furtive. The sitting bird would rise from the eggs while its mate was still some distance away (20-100 feet) and quietly walk off *away from* the other, often 'false-feeding' as it went.

the sole note to be heard was a very quiet version of the purring noise (see below). The only occasions on which I noted loud calls of any form of the 'dance' near the nest or during the change-over were when the pair had been disturbed or were uncertain of a hide. At the site where the photographs on plates 55-58 were taken, the birds were completely relaxed as a result of the very greatest care being taken over the building of the hide and so they were quiet and unobtrusive.

The purring noise mentioned above is used, with variations, as a conversational note and may, according to its tone, mean anything from a greeting to an alarm or be uttered as a preliminary to flight.

On one occasion the male came within a few feet of the hide as he appeared to be feeding while his mate was sitting. He appeared suddenly to become aware of it and, after standing stiffly erect for a few moments, he turned slowly right round it, peering closely and all the while softly purring and grunting with a mixture of curiosity and mild alarm. The same noise may lead into the loud trumpeting, one bird beginning with a low note, followed by its mate with a higher one, the two then passing into the wild clanging duet. Once only, at a nest in 1950, did two birds (flying round low over our heads with their jerky movements) clapper with their bills like White Storks.

The Crane's defence of its nest against the Hooded Crow (*Corvus cornix*) seems singularly useless, though it must be more effective than it appears. At three of the nests where I had a hide the crows hovered around, obviously waiting for the eggs to be left. At one nest a crow was seen from the hide actually to pierce an egg—though not to carry it off—while the Crane was standing within thirty feet. The behaviour of the pair illustrated would, when sitting, make a somewhat feeble display at any crow which came too close, by crouching low and stretching his neck forward while uttering a rather hoarse hissing sound (plate 58c). On a few occasions one of the pair was seen to react to a crow, hissing and with wings partly raised, at the same time uttering a curious rattling noise which appeared to be produced by vibrating the wings.

M. D. ENGLAND

Notes

Black-headed Gulls apparently inciting Smews to dive.—The following observation may be of interest in connection with an earlier note on a feeding association between Black-headed Gulls (*Larus fuscus*) and Goosanders (*Mergus merganser*) (*Brit. Birds*, 54: 284). During March 1963 a party of up to fifteen Smews (*M. albellus*) was observed at Brent Reservoir, Middlesex, and on several days, notably on 7th and 23rd, I saw Black-headed Gulls behaving in a way which I

can only interpret as an attempt to force the Smews to dive, perhaps in the hope that they would bring up food. The gulls would hover a few feet above one of the ducks and then either swoop low over its head or drop and actually land on top of it, so forcing it to dive. Unfortunately, I never saw a Smew appear with a fish, though, had one done so, the food would have been open to immediate seizure by the gulls.

R. J. HUME

Sand Martin entangled with feather.—On 25th June 1963, at Wynyard, Co. Durham, an adult Sand Martin (*Riparia riparia*) trapped in a mist-net was found to have the third toe of its right foot securely fixed to the downy barbs at the base of a chicken feather. This was a contour feather, measuring 9 cm. in length by 4 cm. at its maximum width, and one imagines that it had been used as nest-lining. As the Sand Martin's capture had not been observed from close range, it is not known to what extent the encumbrance impeded flight. The barbs could not be unravelled, but had to be cut with scissors, so the bird could never have freed itself. When released it flew away strongly.

IAN F. STEWART

Death of male Blackbird during display.—At about 5.30 p.m. on 10th March 1963, at Cottingham, Yorkshire, I saw three male Blackbirds (*Turdus merula*) running on the ground and displaying to each other. After a while I noticed that one of them had not moved for a minute or two and was in an unusual position, sitting on its tail and supported by its wings on either side. I walked over to investigate and discovered that it was dead. Externally, it was in perfect condition and plumage in spite of the hard weather; the only unusual feature was a small line of eleven white feathers across the rump. Dissection showed the abdominal organs to be free from disease or parasites, but the thoracic cavity was full of blood and further examination suggested that the bursting of the aorta was the cause of death. The bird concerned had been moving and displaying very actively with the other two, but no actual fighting had taken place and, in any case, I found no sign of a puncture in the body wall. Death must have occurred very suddenly, probably within ten to twenty seconds of the blood vessel's bursting.

ANDREW PATERSON

House Sparrows dust-bathing in sugar.—During the winter of 1962-63, but well before the onset of the cold weather, House Sparrows (*Passer domesticus*) began to dust-bathe in sugar bowls on the tables in our works canteen in Derby, which they enter through the ventilators. The habit developed—sometimes they seemed almost to be 'queuing up' for a bathe—and continues even now, months afterwards, if the canteen staff fail to cover the bowls. The sparrows bathe in

exactly the same manner as in heaps of sand in the factory yard. The sugar is the ordinary granulated white variety; it remains very dry in the warm canteen and does not seem to stick to their feathers. Finally, it should be added that ants have never been seen in the canteen and so there can be no question that the birds are anting or that they were originally attracted to the sugar by these insects.

C. GOODWIN

Reviews

Birds from Britannia. By H.R.H. the Duke of Edinburgh. Longmans, London, 1962. 51 pages; 72 photographs; 8 pages of drawings; 2 end-paper maps. 21s.

Since the Archduke Rudolf died at Mayerling last century no royal prince of the first rank has until now become an enthusiastic ornithologist. In this engaging book the Duke of Edinburgh describes how it happened to him. Having bought a Hasselblad camera and a 250 mm. lens, he found himself in the Royal Yacht *Britannia* crossing 3,800 miles of sea from the Chatham Islands to Graham Land and having nothing to look at or photograph but the birds of the southern oceans. These included five species of albatrosses and several of petrels. Although the initial results were indifferent he found better opportunities at the Falkland Islands, South Georgia, Gough Island and Ascension Island, and he continued the series on a further Pacific voyage in 1959. As a number of the birds have rarely been photographed, he was persuaded by a friend to publish them with a brief account of the trips; the book is completed by notes on the species by Captain G. S. Mack, D.S.O., Chairman of the Royal Naval Bird-Watching Society, and illustrations by Commander A. M. Hughes.

While this work makes no pretensions to be scientific, it will undoubtedly prove valuable to any ornithologist who is voyaging through the southern oceans. It will also give a greatly appreciated encouragement and impetus to the Royal Naval Bird-Watching Society; this organisation has done much to stimulate the making and recording of observations by seafarers, who often have exceptional opportunities for contributing to oceanic ornithology. In view of the brief time at the Duke of Edinburgh's disposal, both to get to know birds and to learn to photograph them in motion, the standard of this achievement is remarkable; it is clear that, if other distractions could permit, he could become a first-class performer in this field.

E. M. NICHOLSON

Guide to the Birds of Sussex. By G. des Forges and D. D. Barber. Oliver & Boyd, Edinburgh and London, 1963. 177 pages; 12 plates. 30s.

Sussex has been well served by a variety of ornithological writers.

Whereas the previous work, J. Walpole-Bond's *A History of Sussex Birds* (1938) was unstinting in its verbiage and showed the author's great interest in nests and eggs, the present book is economical of words, averaging between two and three species per page, and reflects the post-war attention to migration and sea-watching. Indeed, the authors frankly admit that Sussex is much less well informed on breeding distribution today than it was in 1938. No attempt has been made to repeat Walpole-Bond's detail, and the breeding distribution and status of the commoner birds is summarised very briefly. For example, in the case of the Nuthatch, a sedentary resident, the entire account of the species occupies less than three lines. Where, however, any change in numbers or distribution seems to have occurred or the species is relatively scarce or unstable, the breeding history is concisely sketched, with detail in some cases going back more than a hundred years.

In compiling this book the authors have not blindly accepted previously published records, but have commendably undertaken a very considerable task of reassessment and, in doing so, have deliberately adopted a critical attitude regardless of sources. This has resulted in many rejections. Of breeding records thus jettisoned the most important concerns the sole claim of nesting Black Terns in this country during the present century, des Forges and Harber stating that there is no satisfactory evidence that the species has ever bred in the county, though several pairs are said to have done so at Pett Level in 1941 and 1942. Although the case is not further discussed, the authors' attitude is bound to cause it to be reconsidered by others. Of unacceptable non-breeding records, the Hastings Rarities form the main group, and it is evident that the authors of this book completely support the conclusions published in *British Birds* a year ago.

In an opening chapter on Sussex topography and ecology, the county is briefly described, particular mention being made of the features and areas of ornithological interest. One would have expected post-war human pressure, especially on coastal areas, to have had a greater detrimental effect than appears from this account to be the case. Twelve photographic plates illustrate admirably a wide range of Sussex habitats, and a folding outline map of the county is included. There is little mention of migration except in the species accounts. These accounts occupy all but the first 15 pages of the book, but within them the details of movements often occupy more space than all other subjects combined.

Of breeding birds, the Woodlark, Corn Bunting and Tree Sparrow are among the few noted as increasing. The Herring Gull has recently taken to nesting on roofs in St. Leonards, and Rooks nest on gasometers in Chichester. The Ringed Plover is still regarded as a common breeder in suitable localities. Among species which are decreasing

the Swallow, both martins, and the Yellow Wagtail and Red-backed Shrike; Dartford Warblers are at a very low ebb, Whinchats no longer breed regularly, Kentish Plovers apparently last did so in 1856 and Wrynecks in 1944. Seven species of waders are regular non-breeding summer visitors; the Ruff and Spotted Redshank are now seen every winter and the Greenshank most winters. The Mediterranean Gull and Gull-billed Tern are today regarded as of annual occurrence. In winter some Green Woodpeckers frequent the coast, even in quite treeless localities.

There are interesting analyses of the observations of some scarcer birds: up to 1938 only about 15 Shags had been recorded, but the species is now seen annually; since 1946, 66 Firecrests have been reported in spring, 44 in autumn and six in winter; over a hundred Little Gulls had been recorded up to 1937, but since then about 225 have been noted, about 150 in autumn, 30 in spring and 45 in winter. In many cases the figures appear to reflect the increase of bird-watching, especially on the coast, but Golden Orioles have dropped from about 90 between 1807 and 1937 to only two since then, and a rather similar picture is presented by the records of the Honey Buzzard. For commoner birds, too, examples of actual numbers—generally in bulk sizes—are given whenever possible as a guide to the strength of the species.

As these extracts show, this book is packed full of concise information assembled and carefully checked by the authors during their many years of work on Sussex birds.

P. A. D. HOLLOWAY

The Birds of Monmouthshire. By G. C. S. Ingram and H. Morrey; revised by P. N. Humphreys. Newport Museum, 1963. 128 pages; one map. 2s. 6d. (2s. 10d., post paid).

The warden at Minsmere sees more species in a year than have ever been recorded in Monmouthshire. But numbers are not the only criterion of importance and this small county of 350,000 acres is of particular interest to students of distribution because of its position on the march between lowland and highland Britain. Almost all our 'south-eastern' species have bred in it—there is even an old record of the Hoopoe—though, following recent trends, some have become scarce or absent, e.g. Nightingale, Red-backed Shrike and Wryneck. The highlanders have suffered from the industrialisation of west Monmouthshire; Britain's most southerly grouse moor at Blaenavon now little more than a name, and it is doubtful whether Black Grouse, Golden Plover and Merlin have bred for some years even in the unspoilt north-west corner where the Ring Ousel holds out, as did the Peregrine until its recent national decline.

The county's lack of standing fresh water results in what must be

one of the poorest populations of breeding water-birds in Britain: Mallard and Shelduck are the only regular duck; the latter is also the only special nesting species along the muddy shores of the Bristol Channel, though the 'conquest' of little Denny Island from Somerset has added Herring and Great Black-backed Gulls to the regular breeders, with old records for Oystercatcher and Rock Pipit. Apart from these, the profit side since 1939 shows Teal in 1943 and Buzzard, Coot and Willow Tit all regular, the last two probably overlooked previously. The Collared Dove arrived in 1962 and may well be nesting too.

Mr. Humphreys provides an illuminating table comparing the birds of Monmouthshire and its neighbours. Glamorgan, with its long and varied coastline, easily leads at 253, Herefordshire's broad acres give it 225, and Monmouthshire just pips Breconshire, 213 to 211; but in the group of occasional and rare visitors it is about 20 weaker than any of the others, a reflection no doubt of the lack of observers, which is at last being remedied. In spite of this Cinderella position, what other county can boast two published lists within 25 years? The reviser is to be congratulated on a workmanlike job, built on the solid foundation of the great 'I & S' team.

BRUCE CAMPBELL

Letters

Should the Western Sandpiper have been admitted to the British List?

Sirs,—Although I have no wish to enter any argument concerning the arrangements, merits, function and purpose of the British List, or of check-lists in general, may I be allowed to raise a lonely protest regarding the recent admission (*Ibis*, 105: 289) of the Western Sandpiper (*Calidris mauri*) on the strength of the re-identification of a bird ringed on Fair Isle in 1956 and originally accepted as a Semipalmated Sandpiper (*C. pusilla*). In spite of the eminence of all concerned in adjudicating this record and the meticulous care of Dr. I. C. T. Nisbet's analysis (*Brit. Birds*, 56: 55-58), I am not impressed by the result.

Four species of American waders—the two already mentioned and the Least and Baird's Sandpipers (*C. minutilla* and *bairdii*)—are not necessarily easy to distinguish in the field, while the Western and Semipalmated are not even always separable in the museum. I think I may claim to have seen as many individuals of all four species *along-side* each other in the field as any other British observer, and I may equally reasonably hazard a guess that I have collected more specimens of all four than any other living Englishman. I merely say this to emphasize that, when I first met these species in South America, I came to the conclusion that collecting was essential if one was to have a

ance of 90% accuracy in future field observation. In consequence, one who is prepared to make positive identification of Western or Semipalmated Sandpipers on first sight without careful museum comparison, or who believes that certainty can be reached by subsequent analysis of descriptions, is a bolder man than I. The positive acceptance of this record for either species seems to me to represent a full swing of the pendulum from the Hastings Rarities. Possibility perhaps probability could scarcely be stretched further.

Incidentally, both the editors of *British Birds* and the British Records Committee of the B.O.U. made a trivial mistake or omission in giving the winter range of the Western Sandpiper, for this species is well known as far south as Peru.

S. MARCHANT

83.—Mr. Marchant's comments on the difficulty of distinguishing Eastern and Semipalmated Sandpipers (*Calidris mauri* and *pusilla*) in the field presumably refer to their winter plumages, in which there is indeed much overlap in field-characters. However, this is irrelevant to the identification of the Fair Isle bird, since that was in moult and was identified by means of the new feathers belonging to the breeding plumage. In breeding plumage the two species are very different and present no difficulties in identification.

I. C. T. NISBET

The need for definitive English names of birds

84.—I wish to support the suggestion by Prof. Louis J. Halle (*Brit. Birds*, 54: 255-256) that a qualifying adjective should be assigned to the English name of every species of bird that now lacks one, wherever there is a possibility of confusion. In addition to Prof. Halle's two specific proposals (*Red Kite* and *Grey Heron*), I should like to make the following suggestions regarding birds which are regularly seen in Switzerland, where I happen to live, and for which the present absence of a qualifying adjective can easily give rise to misunderstanding in conversation:

Pochard	Northern Pochard
Buzzard	Broad-tailed Buzzard
Ringed Plover	Greater Ringed Plover
Snipe	Wilson's Snipe
Redshank	Western Redshank
Swift	Black Swift
Treecreeper	Long-toed Treecreeper
Redstart	White-browed Redstart
Whitethroat	Greater Whitethroat

Other west European birds for which suitable adjectives should be added include the Bittern, Eider, Shelduck, Sparrowhawk, Kestrel, Grebe, Coot, Curlew, Pratincole, Guillemot, Cuckoo, Nightjar, Mistletoe, Magpie, Jay, Chough, Nuthatch, Wheatear, Starling, Red-

poll and Crossbill. I hope that other readers of *British Birds* will make suggestions for these and that this will lead to some final decisions by the appropriate committee—or is it possible that the lack of follow-up action on Prof. Halle's letter indicates that in this committee-minded twentieth century there is no central body responsible for English names of birds?

O. M. ASHFORD

Photography and sound-recording to reinforce sight records of unusual birds

Sirs,—I am afraid that Myles E. W. North's suggestion that the ideal sight record should now be backed up by photographs and sound-recordings (*Brit. Birds*, 56: 226-227) is likely to find little support. I would invite Mr. North to spend a day's birding at Dungeness in Kent, carrying his miniature camera plus 300 mm. lens and his tape recorder plus parabolic reflector, in addition to binoculars and telescope. I am sure that after a day on the shingle, involving two rounds of the observatory's traps, a tour of the reserve and a walk to the Midrips and back, Mr. North would agree that to carry all this equipment, just in case an unusual bird made an appearance, was turning bird-watchers (who, after all, make this their hobby because they enjoy it) into mere beasts of burden.

R. E. SCOTT

Request for information

Status and distribution of the Chough.—There are indications that the Chough (*Pyrrhocorax pyrrhocorax*) has been increasing during the last decade in Wales and the Isle of Man, but in the absence of any systematic survey there is no definite evidence. The aim of the present enquiry is to get as accurate a picture as possible of the current status of the Chough in Great Britain and Ireland, as a basis for measuring population trends in future years. Information is requested on all known breeding pairs and also on the sizes of flocks throughout the year. Questionnaires may be obtained from **Martin Richards, Sub-department of Animal Behaviour, Madingley, Cambridge**, who will be pleased to receive any information, however slight.

News and comment

Edited by Raymond Cordero

S.O.C. Annual Conference.—The Annual Conference of the Scottish Ornithologists' Club will be held at the Hotel Dunblane (formerly Dunblane Hydro Hotel), Perthshire, from 25th to 27th October. Guest speakers will be Dr. Kai Curry-Lindahl, from Stockholm, on 'Birds of prey and their environment' and Stanley Cramp on 'The threat of toxic chemicals to wildlife'. Dr. Roger Tory Peterson will be present in person to show his film 'Flamingos of the World'; and other films will include the Nature Conservancy's 'The Living Pattern', F. Gordon Holland's

the Island Hills: Ecology of Scottish Islands', and C. E. Palmar's 'Highland Ironry' which won joint first prize in this year's film competition organised by the S.O.C. and Council for Nature. Application forms for membership of the S.O.C. can be obtained from the Secretary, Mrs. George Waterston, 21 Regent Terrace, Edinburgh 7.

Information Centre at Gibraltar Point.—The Gibraltar Point and Skegness Nature Reserves embrace over 1,200 acres of sandy beaches, mudflats, sand dunes and salt marshes which together make up the finest stretch of the Lincolnshire coast. The reserves are now the only regular breeding place of Little Terns and Ringed Plovers on this part of the coast. Earlier this year an Information Centre, built by the Lindsey County Council (owners of the Gibraltar Point Reserve) and containing displays prepared by the publicity officer of the Lincolnshire Naturalists' Trust, was opened to the public as part of the Trust's campaign to arouse the interest and goodwill of the ordinary visitor, for whom access to the reserves—which are owned by local authorities but managed largely by the Trust—is virtually unrestricted. The Trust already maintains there a successful field research station which is to be considerably expanded.

New bird bookshops.—A few years ago someone calculated that a new bird book is published in this country every twelve days and, in view of the continued increasing interest in ornithology, there is no reason to think that this rate has slowed down much, if at all. However, by no means all general booksellers hold a comprehensive stock of ornithological literature, and it is therefore welcome news that two new specialist bookshops have been opened in London and Edinburgh. Wetherby & Co. Ltd. have started a new bookshop at 61/62 Watling Street, London, W.C.4, which has an important section devoted to natural history books (and a wide range of paperbacks), while in Scotland the Scottish Ornithologist's Club has opened a bird bookshop, which has received official recognition from the Publishers' Association, at the Scottish Centre for Ornithology and Bird Protection, 21 Regent Terrace, Edinburgh 7. At the latter over a hundred titles of new bird books are available at the usual retail prices, profits going to the general funds of the S.O.C. The club pays carriage on all orders sent by post.

International information service.—The first issue of the International Ornithological Information Service, a booklet of 24 pages edited by Dr. W. S. Szezewski, Editor of *The Ring*, appeared in July. It is proposed to publish it four times a year and carry a very wide range of ornithological news and general information. I.O.I.S. can be ordered in Britain from Blackwell's, Broad Street, Oxford, or from RUCH, Wilcza 46, Warsaw, Poland, at 10s. for four consecutive issues.

Retirement of Miss Leach.—Miss E. P. Leach, who since relinquishing the post of Honorary Secretary of the B.T.O.'s Bird Ringing Committee in 1953 has continued to handle British recoveries of birds ringed abroad, is no longer participating in this work following the removal of the Ringing Office to the Trust's new headquarters at Ringing. Miss Leach's duties with the index of foreign-ringed birds is now being undertaken by Robert Hudson. Her retirement brings to an end a long career in the administration of bird-ringing in this country and we are sure that all our readers will join us in paying a tribute to her important work over so many years.

Allen Howard Sanctuary.—The small sanctuary at Ditchling, Sussex, at the home of Miss Len Howard, author of *Birds as Individuals* and *Living with Birds*, has been saved from the threat of building in adjacent gardens. Money raised by a

public appeal and from a loan has enabled the appeal trustees to vest the land in the Sussex Naturalists' Trust who will ensure its protection so long as Miss Howard remains at Bird Cottage. After her death, the Len Howard Sanctuary Fund will be spent on the purchase of another permanent bird sanctuary, elsewhere in Sussex, which will always bear her name.

Honour for Dorset Naturalists' Trust Secretary.—Miss Helen Brotherton, Honorary Secretary of the Dorset Naturalists' Trust, was awarded the O.B.E. in the Queen's Birthday Honours List. Miss Brotherton took a leading part in the foundation of the Dorset Trust, in securing Brownsea Island for the nation, and in providing the Portland Bird Observatory and Field Centre with its present magnificent quarters.

Recent reports

By I. J. Ferguson-Lees

[These are largely unchecked reports, not authenticated records]

This summary is mainly concerned with the period from 21st July to 10th September. Highlights included a heavy passage of northern waders, a striking movement of Black Terns, the now annual trickle of American visitors and some other interesting rarities, the most spectacular fall of night migrants on the east coast since September 1958, and a new irruption of Crossbills from the Continent.

NORTHERN AND AMERICAN WADERS

We have already seen (*Brit. Birds*, 56: 302-304) that the early movements of such birds as **Green Sandpipers** (*Tringa ochropus*), **Greenshanks** (*T. nebularia*), **Spotted Redshanks** (*T. erythropus*) and **Wood Sandpipers** (*T. glareola*) were on quite a large scale and this pattern continued throughout August. **Green Sandpipers**, in fact, were so numerous in so many areas (numbers up to twenty or thirty being quite common) that any sort of summary would be beyond the scope of this review. The same almost applies to **Wood Sandpipers** except that, this being generally a searce species, a few actual figures are of more value. Wood Sandpipers were reported in many counties from Shetland to Cornwall though, curiously, they were described as 'disappointingly searce' in Ireland. The largest numbers were, of course, in eastern districts and big concentrations included, for example, 32 at Cresswell (Northumberland) on 11th August, a flock of 25 and a total of 38 on the Tees marshes (Co. Durham) on the 8th and 17 in the East Riding (Yorkshire) on the 12th. Gatherings of ten or more were also reported in Lincolnshire and Norfolk, and up to thirty daily were noted at Minsmere (Suffolk) from the 5th to the 10th. On the 3rd a tired party of thirteen was flushed from such an unlikely habitat as a car park near Skegness (Lincolnshire). Numbers in inland counties and in the west were mostly no more than ones and twos, but several were recorded in, for instance, Somerset, Devon and Cornwall. The peak was in the first three weeks of August and the same sort of pattern emerges for **Greenshanks** and **Spotted Redshanks**; **Ruffs** (*Philomachus pugnax*) were also rather common, but they tended to reach a slightly later maximum.

Where the Wood Sandpipers left off, the **Little Stints** (*Calidris minuta*) and **Curlew Sandpipers** (*C. testacea*) took over. Odd individuals of both species were reported from the very end of June onwards and Little Stints became regular in eastern

ties in the fortnight from 21st July, with Curlew Sandpipers following a few days later. There was also quite a widespread scatter away from the east coast, and a Curlew Sandpiper appeared as far west as Co. Wexford as early as 28th July. It was not until about 20th August, however, that both species and particularly the Curlew Sandpiper became really numerous as the numbers were swollen by the beginning of the year. Little Stints were nowhere near so common as in 1960 (53: 333), but parties of half a dozen or more Curlew Sandpipers were quite widespread and there were a number of flocks of over twenty or thirty. Two Curlew Sandpipers were even noted at Stornoway (Lewis) on 21st and 22nd August; the species is seldom recorded in the Outer Hebrides. In Ireland migration started in August and became more intensive by the end of the month; a number were seen on Tory Island (Co. Donegal) in the extreme north-west. In some inland and south-eastern counties of England there were more Curlew Sandpipers than **Dunlins** (*Hyphantornis alpina*) at reservoirs and in similar habitats during the last part of August. The numbers began to fall away in the second week of September, however. A few American waders had appeared by 10th September and they included only **Pectoral Sandpipers** (*Calidris melanotos*), in Co. Durham, Suffolk, Co. Kerry, Sussex and on the Lincoln/Norfolk border. These were evenly spread throughout the period and all except one stayed at least a week or ten days. The **Stilt Sandpiper** (*Micropalama himantopus*) ringed at Wisbech sewage-farm (Lincoln/Norfolk border) on 19th July (56: 303) remained until 7th August, on which day another (unringed) bird was found at Manhood End, near Chichester (Sussex), where it stayed until at least the 15th; these were only the third and fourth Stilt Sandpipers observed in Britain, but it is the second year running that one has been recorded in south-west Sussex. In connection with these occurrences, it is interesting to note that Sweden's first Stilt Sandpiper was recorded on 13th July—an adult in breeding plumage at Beijershamn, in the province of Öland. The only other American waders were a **Lesser Yellowlegs** (*Tringa flavipes*) on Farlington Marshes (Hampshire) in July and August, a **Solitary Sandpiper** (*T. solitaria*) at Bardney Marshes (Lincolnshire) from 10th to 12th August, an early **White-rumped Sandpiper** (*Actitis macis*) at Teesmouth (Co. Durham) from the 13th to the 17th, a **Wilson's Phalarope** (*Phalaropus tricolor*) on the Camel Estuary (Cornwall) on 2nd September and two **Buff-breasted Sandpipers** (*Tryngites subruficollis*) on Tory Island on 8th and 10th September.

There were a few other rare waders, however, of which the most interesting were the **Marsh Sandpiper** (*T. stagnatilis*) at Swanscombe (Kent) from 18th August to the beginning of September, a **Sharp-tailed Sandpiper** (*C. acuminata*) on Cowpen Marsh (Co. Durham) from 21st to 24th August, a **Broad-billed Sandpiper** (*Limicola melanotos*) at Minsmere (Suffolk) on 31st July, and a **Black-winged Stilt** (*Himantopus melanotos*) at Beighton (Derbyshire) on 1st August. Only five **Temminck's Stints** (*Actitis temminckii*) were reported, one in Norfolk and two each in Nottinghamshire and Kent. **Kentish Plovers** (*Charadrius alexandrinus*) included single birds at Minsmere on the Exe Estuary (Devon), both on 11th August, and a male as far north and west as Lytham (Lancashire) on the 19th.

TERNs, GULLS AND SHEARWATERS

Terns (*Chlidonias niger*) began to trickle through during the last ten days of July and slightly larger numbers were passing from about 5th August onwards. Their movements were mainly along the coasts of south-east England, but some in late July and early August were noted as far north as Yorkshire and Co. Durham. At Selsey Bill (Sussex) not more than five were recorded up to 30th August, but at Dungeness there was a peak of 100 on the 20th when a **White-winged Black Tern** (*Ch. leucopterus*) was also seen; another White-winged Black Tern had been reported at Hurst Castle (Hampshire) on the 11th and 18th. On 10th August about 120 **Black Terns** were noted in the Thames Estuary. These

coastal movements are fairly normal in August, however, and what was much more spectacular and widely commented on was an inland passage which began late on the 30th, reached a peak that evening and the following day, continued on the 1st and 2nd September, and then gradually dropped away during the next three or four days. At Chew Valley Reservoir (Somerset) 200 were estimated on 30th August and 137 on 31st, but the numbers there had fallen to 14 by 1st September; smaller gatherings were noted at other reservoirs in Somerset. This was easily the largest single concentration reported at this time, but parties of thirty to sixty were seen in such counties as Lincolnshire, Hertfordshire and Middlesex, and odd birds appeared between 26th August and 11th September in many widely scattered areas from Yorkshire, Aberdeenshire and Fife to Dorset and Co. Kerry (a party of nine).

Hardly any rare terns and gulls were recorded during the period, though an adult **Whiskered Tern** (*Chlidonias hybrida*) in winter plumage appeared at Darwell Reservoir (Sussex) on 3rd September. **Gull-billed Terns** (*Gelochelidon nilotica*) were seen at Selsey Bill on 26th and 29th August, at Wisbech sewage-farm (Norfolk, Lincoln border) on 1st September, and near Stodmarsh (Kent) on 9th September. The only **Sabine's Gulls** (*Nema sabini*) reported were one at Lough Ennell (Co. Westmeath) on 8th August and two off Cape Clear Island (Co. Cork). **Mediterranean Black-headed Gulls** (*Larus melanocephalus*) were noted in Co. Durham, Sussex and Kent, including at least nine individuals at Dungeness. **Little Gull** (*L. minutus*) continued the general pattern of recent years by being fairly regular on the east coast and occurring more and more inland. Among the more interesting records were single birds in Leicestershire, Shropshire, Merioneth, Glamorgan, Co. Cork and Belfast Lough. In Scotland, where Little Gulls have particularly gathered in Fife and neighbouring counties during the last decade or more, the numbers at Kileonquhar Loch (Fife) were quite spectacular: a dozen or so on 20th July built up steadily to 150 by the 27th, to over 300 by 1st August, and to about 500 later in the month.

Arctic Skuas (*Stercorarius parasiticus*) are a regular sight on passage in August, but a total of 270 at Gibraltar Point (Lincolnshire) on 18th August seems worth noting. Several **Pomarine Skuas** (*S. pomarinus*) and one or two **Long-tailed Skuas** (*S. longicaudus*) were reported in various areas.

Cape Clear Island (Co. Cork) continued to provide spectacular movements of seabirds (cf. 56: 302-303, also 189-190). A considerable passage of **small petrels** reached peaks of 249 on 3rd August, over 300 on the 22nd, 23rd and 24th, and no less than 1,199 on the 29th: the small proportion specifically identified (but including the majority on the 23rd) were all **Storm Petrels** (*Hydrobates pelagicus*). More **Cory's Shearwaters** (*Procellaria diomedea*) included some at ranges down to six feet during a trip round the Fastnet Rock, and there were daily totals of up to 250 **Sooty Shearwaters** (*P. grisea*) and up to 53 **Great Skuas** (*Catharacta skua*). Among other reports of **Sooty Shearwaters** was one at Sandwich Bay (Kent) on 18th August: this species is seldom noted in south-east England (56: 197-203). Finally, though gales in October and November tend to bring odd **Manx Shearwaters** (*P. puffinus*) inland, it seems remarkable that one should have hit overhead wires near Writtle, not far from Chelmsford (Essex), on 13th September, during fine, settled weather.

OTHER NON-PASSERINES

A **Purple Heron** (*Ardea purpurea*) continued at Minsmere (Suffolk) throughout July and August (cf. 56: 303) and even into September, but it is uncertain whether one or two individuals were involved. Another, a sub-adult male, was found in a weak condition at Tenterden (Kent) on 19th July and died later. Two **Spoonbills** (*Platalea leucorodia*) were also seen regularly at Minsmere from 26th July to 11th August and there were another two at Breydon (Norfolk) during the last week of that time. The **Sacred Ibis** (*Threskiornis aethiopica*) (56: 272 and 303) continued its

derings, appearing at Hollowell Reservoir (Northamptonshire) during the last of August and then moving to Wisbech sewage-farm (Norfolk/Lincolnshire) on the 30th; it has now been seen in at least five counties.

Spotted Crakes (*Porzana porzana*) were reported in a number of areas. Two of the year were trapped at Chew Valley Reservoir (Somerset) on 24th and 25th August and they or others, including an adult, were seen there on several dates. Another immature was apparently caught at Ponteland, near Newcastle upon Tyne. Other reports of this species came from Gladhouse Reservoir (Midlothian) on 21st August and at Willington gravel-pit (Derbyshire) on 23rd August and at Hollowell Reservoir (Northamptonshire) on 8th and 12th September. Comparatively few **Epops** (*Upupa epops*) seem to have passed through during the period and, in fact, only reports came from Devon, Dorset, Kent and Essex. **Alpine Swifts** (*Apus alpinus*) were identified at Swanage (Dorset) on 2nd and 3rd September and at Horsey (Norfolk) on the 8th. **Collared Doves** (*Streptopelia decaocto*) continue to spread and may at last be penetrating into London, one having appeared in Regent's Park on 2nd September; more far-flung records included two on Tory Island (Co. Donegal) for most of the summer (this being the extreme north-west point of Great Britain, the next stop must presumably be Iceland!).

A SPECTACULAR FALL OF NIGHT MIGRANTS

One of the most striking features of the passerine scene occurred near the end of the period. Numbers of night migrants on the east coast from Norfolk northwards at the turn of August into September provided the biggest such fall since the large-scale autumn movements of 1956 and 1958 (52: 334-376). The movement began on 28th August and the numbers were highest on the 31st and on 1st and 2nd September thereafter falling away until most of the birds had disappeared by 5th and 6th September. The species involved were those typical of this type of movement—autumn falls of **Wheatears** (*Oenanthe oenanthe*), **Whinchats** (*Saxicola rubetra*), **Redstarts** (*Muscicapa pboenicurus*), **Garden Warblers** (*Sylvia borin*), **Willow Warblers** (*Phylloscopus trochilus*) and **Pied Flycatchers** (*Muscicapa hypoleuca*), with much smaller numbers of **Wrynecks** (*Jynx torquilla*), **Reed Warblers** (*Acrocephalus scirpaceus*), **Goldfinches** (*S. nisoria*), **Whitethroats** (*S. communis*), **Lesser Whitethroats** (*S. communis*) and even some **Wood Warblers** (*Pb. sibilatrix*), but surprisingly few **Tree Pipits** (*S. atricapillus*) and **Tree Pipits** (*Anthus trivialis*). The proportions of different species varied enormously at different points on the east coast, so that, for example, **Pied Flycatchers** and **Redstarts** hardly showed at Fair Isle. However, **Garden Warblers** were one of the commonest species almost everywhere. The movement was also reflected at observation points on the south coast, and to a large extent inland, by increases of **Pied Flycatchers**, **Redstarts** and other birds at the same time, while a sudden appearance of **Garden Warblers** was noted at Gruncle (Cumberland) on 31st August and 1st September.

As one might expect, the movement was accompanied by a number of scarcer **Barred Warblers**, which are really regular only on Fair Isle (earlier there were seen one or two there from 9th August onwards), were most numerous on the Isle of May (Fife) where no less than twelve were trapped (compared with Fair Isle peak of four on 4th September). Other **Barred Warblers** were seen on Foula (Shetland) on 31st August, at a number of localities in Northumberland and Co. Durham between 31st August and 3rd September, at Spurn (Yorkshire) on several occasions from 28th August to 7th September (three trapped) and at Holme (Norfolk) on 1st September; there were also at least four in the area of Cley (Norfolk) during the same period. **Marsh Warblers** (*Acrocephalus palustris*) were trapped on Fair Isle on 28th and 31st August and on the Isle of May soon afterwards, also at Dungeness on 3rd and 7th September. Few **Bluethroats** (*Cyanosylvia svecica*) were seen—the small total of seven being reported in Fife, Northumberland, Co. Durham, Yorkshire and Kent—and the only **Red-breasted Flycatcher** (*Muscicapa*

parva) was one in the Cley area (Norfolk) on 29th August. Similarly, there were only about 25 or 30 reports of **Red-backed Shrikes** (*Lanius cristatus*) and not more than 15 or 20 **Ortolan Buntings** (*Emberiza hortulana*) at this period; these included odd ones at Portland (Dorset) and Lundy (Devon) in both cases. Fair Isle had a **Scarlet Grosbeak** (*Carpodacus erythrinus*) on 4th September and three on the 8th; there was also one at Barns Ness (East Lothian) on the 5th. Most of the autumn's **Icterine Warblers** (*Hippolais icterina*), apart from one on Bardsey (Caernarvonshire) on 29th July, appeared during this period—about ten in all, in Fife, Northumberland (about six), Yorkshire and Norfolk, though the last a bird at Blakeney Point, was not specifically identified.

THE RARER PASSERINES

The period produced few real rarities among the passerines and hardly any associated with the fall discussed above. Ones that were, however, included a **Greenish Warbler** (*Phylloscopus trochiloides*) at Sandwich Bay (Kent) from 30th August to 6th September, what was thought to be an **Arctic Warbler** (*Ph. borealis*) on Foula (Shetland) on 31st August, a **Yellow-breasted Bunting** (*Emberiza aureola*) on Fair Isle from 3rd to 5th September (another Yellow-breasted Bunting was identified on Cape Clear Island on 1st September), and a **Red-throated Pipit** (*Anthus cervinus*) at Hauxley (Northumberland) on the 7th. A **Rufous Warbler** (*Cercotrichas galactotes*) near Skegness (Lincolnshire) from 2nd to 9th September must have had a rather different point of origin. The same applies to an **Aquatic Warbler** (*Acrocephalus paludicola*) and a **Bonelli's Warbler** (*Ph. bonelli*) at Dungeness (Kent) on 1st and 2nd September respectively, and another Bonelli's Warbler at Lavernock Point (Glamorgan) on 30th August. Earlier there had been an **Aquatic Warbler** at Slapton Ley (Devon) on 3rd August, but this and the Dungeness bird are the only two reported so far—rather less than in other recent years. Another species which has been less numerous is the **Melodious Warbler** (*Hippolais polyglotta*), only seven or eight having been reported from Bardsey (Caernarvonshire), Skokholm (Pembrokeshire), Portland (Dorset) and Dungeness (Kent)—two in the Irish Sea on 3rd August and all the rest between 29th August and 8th September. **Tawny Pipits** (*Anthus campestris*) appeared on Bardsey on 29th August, at Needs Oar Point (Hampshire) on 3rd September, at Seaford Head (Sussex) on 8th September, and at Perry Oaks (Middlesex) on 12th September. The only **Short-toed Lark** (*Calandrella cinerea*) was one on Tory Island (Co. Donegal) on 5th September. Finally, there was a **Serin** (*Serinus canarius*) at Dungeness on 27th July, and a **Rose-coloured Starling** (*Sturnus roseus*) at Formby (Lancashire) from 10th to 15th August.

SOME EARLY WINTER VISITORS

The first **Fieldfares** (*Turdus pilaris*) came in with the end August/early September migrants. There were about twenty together at Weybourne (Norfolk) on 29th August, then a couple at Cresswell Ponds (Northumberland) three days later and one at Holkham (Norfolk) on 2nd September when two also appeared at Spurn (Yorkshire). Similarly, the first **Redwing** (*T. iliacus*) was seen on Fair Isle on 3rd September. A flock of seven **Brent Geese** (*Branta bernicla*) on 29th August and a similar number of **White-fronted Geese** (*Anser albifrons*) on 3rd September, both in Co. Kerry, likewise seem on the early side. A **Firecrest** (*Regulus ignicapillus*) at Slapton Ley (Devon) on 13th July might also be included in this category, while an unusually early female **Snow Bunting** (*Plectrophenax nivalis*) on Fair Isle from 18th to 30th July was not followed by any more until 8th September. The first reports of **Lapland Buntings** (*Calcarius lapponicus*) came from Tory Island (Co. Donegal) and Lundy (Devon) on 2nd September.

A FURTHER IRRUPTION OF CROSSBILLS

Following the fairly widespread nesting of **Crossbills** (*Loxia curvirostra*) in a number

counties this year, it seemed that parties on the move in late June and early July were probably the result of post-breeding dispersal within the British Isles. However, it is now clear that a new and large-scale irruption took place from the Continent after the middle of July and on Fair Isle, for example, these formed the biggest irruption since 1956. Only odd ones were seen there until 13th July when there were 34. A lull and then a new arrival began with nine on 2nd August, building up to 50 by the 10th and 150 on the 12th and 13th, followed by a decrease to 20 by the 14th and a new wave of 70+ on the 23rd, after which numbers remained at about 50 until September. Over 120 were ringed and 95% were adult birds. There were also many Crossbills on Foula (Shetland) at the end of August and up to 84 on the island of May (Fife) in the first week of that month. Parties of 15 or 20 appeared on other Scottish islands such as Colonsay and Mull (both on the west side in Argyll) in the second half of August and flocks of a similar size or up to 40 or more were seen at various points on the east coast from Spurn (Yorkshire) to Cley and Runton (Norfolk), where the main arrival took place on 29th August. Smaller numbers (generally under ten) have since been seen on the move in many inland counties along the south coast as far south and west as Cape Clear (Co. Cork). On Goose Heath (Norfolk) a party of ten which appeared on 30th August were seen on 3rd September by what was considered to have been a juvenile Two-tailed Crossbill (*L. leucoptera*).

Obituary

Stuart Smith, D.Sc., Ph.D. (1906-1963)

THE UNTIMELY DEATH of Dr. Stuart Smith on 5th August, 1963, as a result of unexpected complications following an operation which had been anticipated would be a comparatively minor one, has deprived British ornithology of one of its most enthusiastic and gifted contributors.

Stuart took a keen interest in natural history from his early days. In 1906 in the little village of Houghton Regis, in south Bedfordshire, he was already taking notes on bird behaviour by the time he went to Luton Modern School. But it was a chance meeting with Leonard Kearton when he was thirteen years of age that gave him the inspiration and guidance he needed, and ornithology then became a passion with him. He soon found that photography was an aid to his study and throughout his life used his camera to record the incidents in bird life in which he was most interested. One result of that was that he became a first-class photographer. That he was elected a member of the Zoological Photographic Club is sure evidence of the value and his contributions to its folios of prints and his comments on the work of others were of the same high standard as he applied to everything he did. Several examples of his work were exhibited by the Royal Photographic Society and in 1952 he was awarded the Pease Trophy by the Manchester Amateur Photographic Society for his outstanding bird photography.

When carrying out experiments in the early 1940's on nest-sanitation,

he made excellent photographic records of the reactions of Meadow Pipits and Yellow Wagtails to plasticine faecal sacs of varying colours. He was fascinated by the way these birds had so strong an urge to remove a faecal sac that they would drop the food which they had brought to the nest for their young. These and other experiments led him to write his first book, *How to Study Birds*, which he dedicated to Richard Kearton and published in 1945.

Many ornithologists have a favourite bird and in Stuart's case this was the Yellow Wagtail. Each spring he looked forward with enthusiasm to the return of the first arrivals and would marvel at their brilliant coloration before it was dulled by the soot and dirt of Manchester. His detailed study resulted in a monograph entitled *The Yellow Wagtail* and published in 1950.

One evening George Edwards, Stuart and I started talking about the varying reactions of birds to the Cuckoo—why did certain species attack it furiously while others almost ignored it? Stuart there and then suggested that we should carry out a series of tests with a stuffed Cuckoo. I shall never forget the first experiment. We had a hide erected by a Willow Warbler's nest and, as Stuart walked towards it with the stuffed Cuckoo on his hand, the birds started to call when he was still twenty yards away; before he had reached the nest they were actually attacking the dummy within a few inches of his face! A great many experiments were carried out, with some astonishing results. The full account of this work was published in 1955 in his third and last book, *Birds Fighting*.

It was his quick, lucid and concise brain that made him a popular and valuable member of many committees. He served both on the Council (1952-58) and the Scientific Advisory Committee (1950-53 and 1954-58) of the British Trust for Ornithology, becoming Vice-Chairman of the first (1956-58) and Chairman of the second (1955-58). In 1960 the Trust awarded him the Bernard Tucker Medal. With the forming of the Manchester Ornithological Society he became Chairman and then President, holding the latter office until his death.

Professionally he was a research worker at the British Cotton Industries Research Association in Manchester, where he was head of the Fibre Structure Department. He studied chemistry for his B.Sc. at Leeds University, did research for his Ph.D. in textile chemistry, and only last year gained his D.Sc. for work on silk fibroin and fibre structure research. Quite recently he was awarded the Warner Memorial Medal by the Textile Institute for his 'outstanding work in textile science and technology'. He was Chairman of the Research Committee of the International Silk Association.

Stuart Smith had a great zest for enjoying life and all his varied interests were shared by his wife and their son and daughter who, like his many friends, will greatly miss him.

E.H.



PLATE 60: The Late Stuart Smith (1926-62) with a Willow Warbler, attending a stuffed Cuckoo during an experiment in 1945 (pages 691-892).
Photo: Ian Houston



Notice to Contributors

British Birds publishes material dealing with original observations on the birds of Britain and western Europe, or, where appropriate, on birds of this area as observed in other parts of their range. Except for records of rarities, papers and notes are normally accepted only on condition that the material is not being offered to any other journal. Photographs (glossy prints showing good contrast) and sketches are welcomed. Proofs of all contributions are sent to authors before publication.

After publication, 25 separates of papers are sent free to authors (two or more authors of one paper receive 15 copies each); additional copies, for which a charge is made, can be provided if ordered when the proofs are returned.

Papers should be typewritten with double spacing, and on one side of the sheet. Shorter contributions, if not typed, must be clearly written and well spaced.

Notes should be worded as concisely as possible, and drawn up in the form in which they will be printed, with signature in block capitals and the writer's address clearly written on the same sheet. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

Certain conventions of style and layout are essential to preserve the uniformity of any publication. Authors of papers in particular, especially of those containing systematic lists, reference lists, tables, etc., should consult the ones in this issue as a guide to general presentation. English names of species should have capital letters for each word, except after a hyphen (e.g. Willow Warbler, Black-tailed Godwit), but group terms should not (e.g. warblers, godwits). English names are as used in *The Handbook of British Birds*, with the exception of the changes listed in *British Birds* in January 1953 (46: 2-3). The scientific name of each species should be given (in brackets and underlined) immediately after the first mention of the species name. Subspecific names should not be used except where they are essential to the discussion. It is sometimes more convenient to list scientific names in an appendix. Dates should take the form '1st January 1963' and not '1st Jan.', 'Jan. 1st', or '1st Jan. 1', whichever most suits the layout of the table concerned. It is particularly requested that authors should pay attention to reference lists, which otherwise involve much unnecessary work. These should take the following form:

PERNER, B. W. (1949): 'Species and subspecies: a review for general ornithologists'. *Brit. Birds*, 42: 129-134.

PERBY, H. F. (1894): *Forest Birds: Their Haunts and Habits*. London. p. 34.

As other conventions concerning references, including their use in the text, should be noted by consulting examples in this issue.

Tables should be numbered with arabic numerals, and the title typed above in block capitals. They must either fit into the width of a page, or be reduced to fit a whole page lengthways. All tables should be self-explanatory.

Figures should be numbered with arabic numerals, and the captions typed on a separate sheet. All line-drawings should be in indian ink on good quality drawing paper (not of an absorbent nature) or, where necessary, on graph paper, but this should be light blue or very pale grey. It is always most important to consider how the drawing will fit into the page. The neat insertion of lettering, numbers, etc., is perhaps the most difficult part of indian ink drawing and, unless he has had considerable experience of this kind of work, an author should seek the aid of a skilled draughtsman.

BIRD WATCHING

CALLS FOR THESE ATTRIBUTES IN

BINOCULARS

- ★ LIGHTNESS OF WEIGHT
- ★ WIDE ANGLE OBSERVANCE
- ★ MAXIMUM LIGHT TRANSMISSION
- ★ CLARITY OF VISION

The WRAY
has them all
Eleven



Write for 16-page illustrated
brochure on binoculars

BINOCULAR MANUFACTURERS FOR 50 YEARS WRAY (OPTICAL WORKS) LTD. BROMLEY · KENT

Printed in England by Diemer & Reynolds Ltd., Eastcotts Road, Bedford
Published by H. F. & G. Witherby, 61/62 Watling Street, E.C.4

British Birds



Principal Contents

25 NOV 1963
PURCHASED

Report on rare birds in Great Britain in 1962
(with 1961 additions)

D. D. Harber, C. M. Swaine and the Rarities Committee

The incidence of albinism and melanism in British birds

Bryan L. Sage

Studies of less familiar birds: 125—Red-rumped Swallow

M. D. England, I. J. Ferguson-Lees and A. N. H. Peach

(with two plates)

Obituary: C. A. Gibson-Hill (1911-1963)

Notes

Reviews

Letters

News and comment

Recent reports



Three
Shillings

November
1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Editors Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

Photographic Editor

Eric Hosking

20 Crouch Hall Road

London, N.8

'News and Comment'

Raymond Cordero

Rohan Lodge, Wadhurst Park

Wadhurst, Sussex

Rarities Committee

D. D. Harber

1 Gorringe Road

Eastbourne, Sussex

Contents of Volume 56, Number 11, November 1963

	<i>Page</i>
Report on rare birds in Great Britain in 1962 (with 1961 additions). By D. D. Harber and C. M. Swaine on behalf of the Rarities Committee (with plate 61)	393
The incidence of albinism and melanism in British Birds. By Bryan L. Sage	409
Studies of less familiar birds: 125—Red-rumped Swallow. Photographs by M. D. England and A. N. H. Peach (plates 62-63). Text by I. J. Ferguson-Lees	416
Obituary: C. A. Gibson-Hill (1911-1963)	418
Notes:—	
Pheasant nesting 35 feet above ground in same tree as Sparrowhawk (John Anderson and Albert Egdell)	419
Sand Martin breeding in Dipper's nest (George C. Hamer)	419
Late and hurried breeding of Great Tit (P. G. Kitchener)	419
Young Blackbird repeatedly attacking Pygmy Shrew (Dr. E. A. R. Ennion)	420
Radde's Warbler in Kent (P. L. Britton and R. E. Scott) (plate 64) ..	420
Reviews:—	
<i>The House Sparrow</i> . By D. Summers-Smith. Reviewed by Robert Gillmor	422
<i>Oversigt over Danmarks Fugle</i> . By Finn Salomonsen. Reviewed by Dr. H. M. S. Blair	422
Letters:—	
Colour-marked and leucistic Barnacle Geese (Dr. Russell Marris) ..	423
A statistical test for defining a rarity (Robert M. Mengel)	424
News and comment. Edited by Raymond Cordero	426
Recent reports. By I. J. Ferguson-Lees	427

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 61/62 Watling Street, London, E.C.4

British Birds

Vol. 56 No. 11
NOVEMBER 1963



Report on rare birds in Great Britain in 1962 (with 1961 additions)

*Compiled by D. D. Harber and C. M. Swaine
on behalf of the Rarities Committee*

THIS IS THE FIFTH REPORT of the Rarities Committee. It has been compiled after the consideration of about 400 records for 1962 (rather fewer than in previous years), plus a few which were left over from 1961. Nearly all 1962 records have now been dealt with, though a few still remain outstanding.

The composition of the Committee is now as follows: P. A. D. Ingham (Chairman), D. D. Harber (Hon. Secretary), D. G. Bell, R. M. Blake, Peter Davis, M. F. M. Meiklejohn, G. A. Pyman, R. A. Smith, R. Wagstaffe and D. I. M. Wallace. C. M. Swaine, the former Hon. Secretary, had to resign in January 1963, owing to the pressure of other work. Since, however, he had already dealt with a good many of the 1962 records, the present report is published under the names of both Hon. Secretaries. As in the case of the previous transfer of this position (from G. A. Pyman to C. M. Swaine), the exact order in which the files had been kept greatly facilitated the page-over.

It will be seen that considerable changes in the composition of the Committee have taken place over the past year. The position left vacant by the resignation of C. M. Swaine was filled by R. Wagstaffe, Liverpool Museums, with his valuable knowledge of and access to records. Then, within a short time, H. G. Alexander, I. J. Ferguson-Smith and Kenneth Williamson all had to leave because they found the work involved too much for the time they had available; I. C. T. Nisbet had to resign on taking up a post abroad. When only two of these resignations had taken place, editors of county bird reports and conservatory officials were sent a circular announcing the vacancies and asking for nominations. The names which received the most

BRITISH BIRDS

nominations were taken and the four vacancies which eventually occurred were thus filled by A. R. M. Blake (for some years Hon. Secretary of the West Midland Bird Club), Peter Davis (until recently Warden on Fair Isle and now with the British Trust for Ornithology), F. R. Smith (long-established as Hon. Recorder of the Devon Bird-watching and Preservation Society) and D. I. M. Wallace (former Editor of the London Bird Report). Thus the Committee was brought up to strength again and its regional basis considerably strengthened. Its members would like to take this opportunity of expressing their appreciation of the work done in the past by the five who resigned.

We have recently given consideration to the list of birds which come under our notice. The five annual reports have shown that some species are now recorded so regularly and in such numbers that they cannot be regarded as sufficiently rare to justify their retention in this category. The following are now occurring ten or more times annually and so are being removed from our list:

Red-crested Pochard	Sabine's Gull
Snow Goose	Melodious Warbler
Pectoral Sandpiper	Icterine Warbler
Mediterranean Black-headed Gull	Yellow-browed Warbler

In addition, we are deleting the following which have been on our list for limited parts of Britain:

Goshawk	Crested Tit
Golden Eagle	Bearded Tit
Kite	Marsh Warbler
* Kentish Plover	Dartford Warbler

Thus only sixteen species in all are involved, but the amount of work which will be saved by their omission is out of all proportion to their number. Of the 400 or so records which, as mentioned above, were considered for 1962, about 150 related to these birds. These deletions begin as from 1963 and we must apologise to those who have meanwhile sent in records of the species concerned. We could not inform observers earlier, for it was only after the 1962 records had been analysed and compared with those of former years that the necessity for these changes became apparent. Needless to say, we shall still be glad to give assistance with these species at the request of county editors or bird observatories.

The principles and procedure followed in considering records have been explained previously (*Brit. Birds*, 53: 155-156) and still remain the same, as does the method of presentation adopted in the systematic list (*Brit. Birds*, 55: 563-564).

It should be noted that the following caveats apply to sight records of certain species:

Little Egret. Though observations are always listed as *Egretta garzetta*, it is conceivable that the Snowy Egret (*E. thula*) of North America might cross the Atlantic. The two species are virtually indistinguishable in the field when not in breeding plumage.

Night Heron. As has been pointed out elsewhere (e.g. *Brit. Birds*, 53: 159-160), records may relate to escapes from Edinburgh Zoo (see also page 426).

Ferruginous Duck. Numbers occur in captivity where they sometimes hybridise with Tufted Ducks and Pochards (*Aythya fuligula* and *ferina*). Such hybrids, particularly female Ferruginous × Pochard, can be very confusing in the field.

Great Reed Warbler. Sight records lacking a song description do not normally rule out the Clamorous Reed Warbler (*Acrocephalus stentoreus*), notably the less rufous *brunnescens*.

Arctic Redpoll. In view of the close similarity to *bornemannii* of some examples of *arctica*, which may as a result be almost indistinguishable in the field, we are treating sight records of Arctic Redpolls as we do those of well-defined races, i.e. 'knowing the characters of this species'.

Finally, we should like to thank the local organisations and the individual observers who have, as before, been so co-operative in assisting our work over the past year. We must also apologise to those who, unfortunately, have often had to wait far more than a reasonable time before learning whether records have been accepted or rejected. It is good to be able to state that the basic reason for such delays now seems to have been effectively eliminated. Apart from the usually 'difficult' cases, we can promise much speedier decisions than we have normally been able to give previously. An important factor in this very necessary speeding up of procedure is the sending of all records *direct* to the Hon. Secretary of this Committee at 100, Herring Road, Eastbourne, Sussex.

Supplementary systematic list of 1961 records accepted

Little Egret (*Egretta garzetta*)

1961

Swallow: 30 miles SW of the Lizard, captured in dying condition on the trawler *Stevenson*, 4th May (A. G. Parsons, R. J. Pentreath); skin now in the possession of J. M. Harrison.

Night Heron (*Nycticorax nycticorax*)

Wade: Rendall, 1st November (J. Halcro, R. Tulloch).

Little Bittern (*Ixobrychus minutus*)

Wade: Thorpness Mere, adult ♂, 13th May (G. Dent).

1961

White Stork (*Ciconia ciconia*)

Norfolk: Whitlingham, near Norwich, 23rd December 1961 to 2nd February 1962, when found dead (T. Colman, M. J. Seago); this bird had been caught, presumably in bad health, at Skaerbaek, Denmark, in 1960 and kept by a Danish ringer over the 1960-61 winter before being released, flying strongly, on 16th April.

Snow Goose (*Anser caerulescens*)

Inverness-shire: North Uist, winter 1960-61 (W. Mackenzie, J. Munro).

Kite (*Milvus milvus*)
(except in Wales)

Somerset: South Cadbury, 26th January (S. E. Chapman).

White-tailed Eagle (*Haliaeetus albicilla*)

Norfolk: Holme, 24th December (G. M. S. Easy).

Great Reed Warbler (*Acrocephalus arundinaceus*)

Suffolk: marsh in E of county, 9th June until mid-July (G. Dent *et al.*), two being present on 12th June (H. E. Axell).

Systematic list of 1962 records accepted

1962

Cory's Shearwater (*Procellaria diomedea*)

Cornwall: off Wolf Rock Lighthouse, 7th September (B. King).

Northumberland: off Holy Island, 11th September (L. P. Alder).

Outer Hebrides: off Ard an Runair, North Uist, 23rd August (Mr. and Mrs. P. J. K. Burton).

Purple Heron (*Ardea purpurea*)

Isles of Scilly: St. Mary's, 10th to 23rd May (P. Z. Mackenzie, R. F. Sanderson).

Little Egret (*Egretta garzetta*)

Devon: Salecombe, about the last week of May (E. Payne *per* J. Roebuck).

Hampshire: Biekton, 21st to 25th May (E. Cohen, C. W. Maekworth-Præd).

Isles of Scilly: St. Agnes, 13th to 28th May (E. Brown, R. F. Sanderson, F. R. Trust).

Norfolk: Stiffkey, 15th June (Mr. and Mrs. P. J. Fullagar, J. T. R. Sharrock).

Pembrokeshire: Little Milford, 1st June (J. H. Roberts). Sandy Haven, 5th August (R. E. Hitehoek). Gann Estuary, 13th to 29th August (T. A. W. Davis, J. W. Donovan, J. R. W. Stott *et al.*). The August records doubtless relate to the same individual, as may the June one also.

Cattle Egret (*Ardeola ibis*)

Sussex: Pagham, four, 27th April (J. Fleming, H. R. Hatch, W. W. A. Phillips), one, 29th April (W. W. A. Phillips *et al.*); Laneing, 28th April (P. Elston *per* C. A. Grigg) (*Brit. Birds*, 56: 293-294).

Night Heron (*Nycticorax nycticorax*)

Shire: near Runcorn, adult, 7th May (R. H. Allen, R. P. Cockbain, G. Thomas).

set: Radipole Lake, adult, Weymouth, 14th April (P. Lever, R. A. Montagu, R. Shepherd).

mpshire: Christchurch, 26th January and apparently for two or three weeks before this (P. S. Bulson, E. Cohen).

Little Bittern (*Ixobrychus minutus*)

t: Stodmarsh, adult ♂, 27th May (W. G. Harvey).

White Stork (*Ciconia ciconia*)

folk: Whitlingham, the bird first seen in December 1961 (page 396) remained until 2nd February when it was found dead (T. Colman).

Glossy Ibis (*Plegadis falcinellus*)

erland: Cambusavis, 3rd December (J. D. Oliver).

Teal (*Anas crecca*)

akes showing the characters of the American race, known as the Green-winged Teal (*A. c. carolinensis*), were reported as follows:

wall: Marazion Marsh, 4th February to 5th April (J. E. Beckerlegge, R. G. Eden, R. Khan *et al.*).

on: River Yealm, 20th March to 3rd April (P. F. Goodfellow, L. I. Hamilton).

ppshire: Avington, 30th January to 18th March (A. S. Cheke, E. A. Grove, J. Taverner).

American Wigeon (*Anas americana*)

xx: Foulness Island, first-winter ♂, shot, 20th December (H. Hume, G. A. Mann, P. Rudge).

humberland: Holywell Ponds, ♂, 24th February to 25th March (J. D. Parrack, S. Stobart, R. M. Wood *et al.*).

Red-crested Pochard (*Netta rufina*)

(except in the London area)

xx: Abberton Reservoir, ♂, 6th July (R. V. A. Marshall); two, 19th August (J. W. Cowlin, J. R. Cowlin); one or two on several dates in September (J. W. Andrews, R. V. A. Marshall, M. S. J. Snoxell); seven, 4th October (R. V. A. Marshall), two, 6th (J. W. Andrews, R. G. H. Cant), three, 8th (R. V. A. Marshall), three, 17th (J. A. Cowlin, J. R. Cowlin). Hanningfield Reservoir, ♂ in eclipse, 1st July to 26th August (S. Hudgell, A. P. Simes *et al.*).

shire: Eccup Reservoir, 29th June (G. R. Naylor).

Ring-necked Duck (*Aythya collaris*)

olk: Stanford Battle area, ♂, 1st to 22nd April (C. A. E. Kirtland, M. J. Seago, J. Vine *et al.*).

Ferruginous Duck (*Aythya nyroca*)

on: Burrator Reservoir, one of the two recorded on 23rd November 1961 (*Birds*, 55: 569) was still there on 3rd January (L. I. Hamilton).

Lancashire: Bolton, 13th October to 10th November (F. A. Lowe, T. E. Wheeler, J. R. Whitelegg *et al.*).

Surf Scoter (*Melanitta perspicillata*)

Orkney: Echnaloch Bay, Burray, ♂, 21st October (E. Balfour, Miss E. R. Bullard, S. Luke *et al.*).

King Eider (*Somateria spectabilis*)

Shetland: Yell, ♂, 6th June to 5th July (K. D. Smith *et al.*).

Lesser White-fronted Goose (*Anser erythropus*)

Norfolk: Yare Valley, the two adults recorded on 26th and 27th December 1961 (*Brit. Birds*, 55: 570) were still there on 13th January (R. W. Colman, M. J. Seago) and one was present on 4th February (C. J. Cadbury, G. M. S. Easy, A. E. Vine). Lower Bure Marshes, 20th January (R. Harrison) and 27th January (P. R. Allard).

Gloucestershire: Slimbridge, 27th February (K. D. Edwards).

Snow Goose (*Anser caerulescens*)

[**Lanarkshire:** Libberton, the blue-phase bird seen in autumn 1961 and the two previous winters (*Brit. Birds*, 54: 565; and 55: 570) stayed until 20th April; it returned on 20th October, remaining until 11th November (R. Erskine-Hill, W. K. Richmond *et al.*).

Lanarkshire/Midlothian: various localities, adult white phase, noted each winter since 1959-60 (*Brit. Birds*, 55: 570) stayed until at least 11th April, but did not return in the autumn (W. Brotherston, R. Erskine-Hill, W. K. Richmond *et al.*).

Yorkshire: the adult white-phase bird seen up to the end of 1961 (*Brit. Birds*, 55: 570) was last seen at Scaling Dam Reservoir on 9th January (D. G. Bell).]

It seems likely that all these records relate to birds which had escaped from captivity.

Red-breasted Goose (*Branta ruficollis*)

Norfolk: Halvergate Marshes, 2nd to 28th January (P. R. Allard, M. J. Seago, G. R. South *et al.*).

Goshawk (*Accipiter gentilis*)

(except in the southern half of England)

Dumbartonshire: Gartocharn, 20th and 25th November (M. Forrester, D. Stalker, T. Weir).

Shetland: Fair Isle, 16th to 24th November (G. J. Barnes, P. Davis).

Kite (*Milvus milvus*)

(except in Wales)

Devon: Dartmoor, 23rd June (L. I. Hamilton), 25th November (G. M. Spooner), 16th December (L. H. Hurrell), 19th and 20th December (H. G. Hurrell, K. G. Hurrell).

Gloucestershire: Sherbourne, 8th September (F. Brockman).

Northumberland: near Belford, 20th April (C. Souter, D. C. Souter).

White-tailed Eagle (*Haliaeetus albicilla*)

folk: Scolt Head, 7th, 19th and 20th February (R. Chestney).

Gyr Falcon (*Falco rusticolus*)

ersert: Chew Valley Reservoir, the bird reported on 5th November 1961 (*Brit. Birds*, 55: 571) was last seen on 13th January.

Red-footed Falcon (*Falco tinnunculus*)

nt: Dungeness, ♀, 17th April (C. A. Thompson). Sevenoaks, ♀, 8th June (J. G. Davison).

ney: near Stromness, ♀, 8th May (Mr. and Mrs. R. Bremner).

Crane (*Megalonga fusca*)

rdshire: Kemnay, two, 14th August to 16th September (A. Anderson, Jenkins, Mrs. M. Jenkins *et al.*).

shire/Shropshire: near Audlem, 6th June to 2nd July (J. Baker, L. A. Pownall, J. Samuels).

shire: Hilbre Island, 2nd May (D. I. Clugston, K. Mullins).

: Newburgh, two, 27th June (T. Spence).

rnness-shire: Glen Urquhart, 23rd June to 27th July (L. Girvan).

arkshire: Carnwath, two, 30th September to 8th October (R. Erskine-Hill).

land: Fair Isle, two, 29th May (G. J. Barnes, P. Davis, B. R. Spence *et al.*); 19th July to 28th August (P. Davis, B. R. Spence *et al.*).

Houbara Bustard (*Chlamydotis undulata*)

olk: Westleton, 21st November to 29th December (H. E. Axell, G. B. G. Mason, W. H. Payn *et al.*) (two photographs appear on plate 61).

Kentish Plover (*Charadrius alexandrinus*)

((except coast from Wash to Hampshire and Isle of Wight)

rdshire: Ythan Estuary, Newburgh, 3rd and 4th May (A. G. Gordon, W. E. Davison).

Lesser Golden Plover (*Charadrius dominicus*)

of Scilly: St. Agnes, 30th September to 10th October (R. E. Emmett, I. J. Mason-Lecs, D. I. M. Wallace *et al.*).

Great Snipe (*Gallinago media*)

tinghamshire: Alderbourne and Rush Green watercress beds, 23rd to 27th November (D. G. Harris, D. M. Putman, D. I. M. Wallace *et al.*).

olk: near Thetford, 1st January (A. J. Davison).

of Scilly: St. Agnes, 27th and 30th April (F. H. D. Hicks, C. Sharr, J. J. Mason *et al.*).

Solitary Sandpiper (*Tringa solitaria*)

tinghamshire: Nottingham sewage-farm, trapped, 24th August to 1st September (A. Dobbs, P. M. Hope, A. R. Johnson *et al.*) (*Brit. Birds*, 56: 65-66).

Lesser Yellowlegs (*Tringa flavipes*)

Hampshire: Farlington Marshes, 19th to 21st July (D. F. Billett, G. H. Clay, E. J. Wiseman *et al.*).

Middlesex: Perry Oaks, 5th to 7th September (B. E. Cooper, J. Cooper, M. J. Cowlard *et al.*) and Staines Reservoir, 9th September (*per* F. M. Gauntlett).

Least Sandpiper (*Calidris minutilla*)

Isles of Scilly: St. Agnes, 4th October (R. E. Emmett, I. J. Ferguson-Lees, D. I. M. Wallace).

White-rumped Sandpiper (*Calidris fuscicollis*)

Isles of Scilly: St. Agnes, trapped, 2nd and 3rd October (R. E. Emmett, I. J. Ferguson-Lees, D. I. M. Wallace *et al.*).

Suffolk: Minsmere and Walberswick, trapped, 20th August to 7th September (H. E. Axell, P. J. Makepeace, D. J. Pearson *et al.*).

Pectoral Sandpiper (*Calidris melanotos*)

Cornwall: Marazion Marsh, 29th May (J. E. Beekerlegge).

Derbyshire: Egginton, 12th to 24th August (R. H. Appleby, R. A. Frost, R. G. Hawley *et al.*).

Co. Durham: Teesmouth, 12th to 17th September (J. A. Bailey, Mrs. A. Cooper, P. J. Stead).

Hampshire: Pennington Marsh, 25th August (E. J. Williams), two, 1st and 2nd September (E. J. Williams, G. Westerhoff, D. B. Woodridge *et al.*), one, 8th September (E. J. Woodridge).

Kent: Sittingbourne, trapped, 13th September (D. Burkett, G. Morgan, E. G. Philp *et al.*). Sandwich Bay, 16th to 18th September (A. Halliwell, G. Halliwell, G. R. Shannon). Barnfleet, 13th to 19th September (P. L. Britton, J. M. Harrison, M. L. R. Romer *et al.*).

Lanarkshire: near Hamilton, 18th to 21st October (J. M. S. Arnott, M. F. M. Meiklejohn *et al.*).

Lincolnshire/Norfolk: Wisbech sewage-farm, 8th to 16th September, two being present on 10th (J. A. Bailey, J. A. W. Moyes, P. J. Stead).

Middlesex: Perry Oaks, 8th to 16th September (R. E. Emmett, F. M. Gauntlett, C. M. Veysey *et al.*).

Norfolk: Cley, 1st to 17th September (W. F. Bishop *et al.*).

Pembrokeshire: Skokholm, 1st and 2nd June (R. Coleman, D. Glanville).

Isles of Scilly: St. Agnes, three, trapped, between 27th August and 12th September (J. C. Eaton, F. H. D. Hicks, R. C. Righelato *et al.*).

Shetland: Fair Isle, at least two (one trapped), 29th August to 9th September (P. Davis, B. R. Spence *et al.*).

Staffordshire: Blithfield Reservoir, 23rd and 30th September (K. C. G. Farmer, G. M. Ireson, J. Lord *et al.*).

Suffolk: Minsmere, 27th July (H. E. Axell, P. J. Makepeace). Easton Broad, 23rd August (G. B. G. Benson).

Sussex: Weir Wood Reservoir, 1st to 7th September (J. F. Cooper, S. Greenwood, A. Quinn *et al.*). Newhaven, 29th and 30th September (R. H. Charlwood, D. V. Freshwater, M. H. Port).

adult, 17th April (R. L. K. Jolliffe, A. R. Kitson); second-summer, 24th June (A. B. Sheldon). Porto Bello, Brighton, first-year, 15th September (A. B. Sheldon).
Yorkshire: Spurn Point, adult, 21st October (M. Densley, P. H. G. Wolstenholme, G. R. Naylor *et al.*).

Sabine's Gull (*Xema sabini*)

Dorset: Portland Bill, 11th September (K. D. Edwards).

Co. Durham: Hartlepool, adult, 29th September (E. C. Gatenby, P. Harland, P. J. Stead *et al.*).

Norfolk: Scolt Head, first-winter, 6th November (R. Chestney).

Ross's Gull (*Rhodostethia rosea*)

Yorkshire: Bridlington, 17th to 22nd February (G. R. Bennett, H. O. Bunce I. N. B. Richards *et al.*) (*Brit. Birds*, 55: 480-481).

White-winged Black Tern (*Chlidonias leucopterus*)

Essex: Abberton Reservoir, juvenile, 6th September (R. V. A. Marshall).

Norfolk: Cley, adult, 18th June (D. L. Clugston, R. A. Richardson, J. T. R. Sharrock).

Kent: Stoke, several dates from 29th July to 11th August (P. C. Bance, M. E. Barnard, N. London *et al.*). Isle of Sheppey, Shellness, 12th August (M. E. Barnard, B. W. Edwards, N. London *et al.*). Hook's Fleet, between Stoke and Allhallow-, 26th August (J. M. Crocker, R. B. Tozer). Lower Hope Point, 1st September (S. J. Oliver).

Gull-billed Tern (*Gelochelidon nilotica*)

Kent: Stour Estuary, 7th May (D. F. Harle). Sandwich Bay, 21st, 26th, 27th and 29th August (D. M. Batchelor, J. Websper, D. C. F. Worsfold *et al.*); probably a different bird, 2nd to 4th September (D. M. Batchelor, K. Charman, W. Harvey *et al.*).

Sussex: Selsey Bill, 26th April (R. K. L. Jolliffe, R. M. Leaney, R. F. Porter).

Caspian Tern (*Hydroprogne caspia*)

Breconshire: Langorse Lake, 20th July (G. Griffiths, J. Griffiths).

Suffolk: Minsmere, 6th June (H. E. Axell, P. J. Makepeace, J. W. Tattersall-Wright *et al.*).

Sussex: Pagham Harbour, 28th July (H. C. Dunk, G. R. Gervis).

Alpine Swift (*Apus melba*)

Caernarvonshire: Bardsey Island, 12th October (F. R. Clifton, D. L. Clugston)

Hampshire: St. Catherine's Point, Isle of Wight, 13th May (E. J. Wiseman).

Kent: Deal, 24th June (J. N. Hollyer, E. G. Philp).

Norfolk: Cley, 14th June (J. T. R. Sharrock).

Shetland: Hermanness, Unst, 13th June (K. D. Smith).

Suffolk: Minsmere, 12th July (P. J. Makepeace).

Bee-cater (*Merops apiaster*)

Cornwall: Perranporth, 12th July (D. F. Smith).

Roller (*Coracias garrulus*)

Kent: Canterbury, 26th June to 2nd July (Miss A. Ottley, K. Windle, Mrs. M. H. Middle). Wye, Ashford, 4th or 5th to 15th July (B. E. A. Knight, D. Robinson).

Lincolnshire: Grainthorpe, shot in mistake for a Jay, 13th June (L. R. Dawson, has the skin).

Wiltshire: Pennygarreg Reservoir, 12th July (R. H. Baillie).

Bimaculated Lark (*Melanocorypha bimaculata*)

Wiltshire: Lundy, 7th to 11th May (R. Carden, M. R. Jones).

This is a species new to Britain. Fuller details will be published later.

Bearded Tit (*Panurus biarmicus*)

(except in East Anglia)

Wiltshire: two (one ♂), Fleet Pond, 10th February to 4th March (M. Harvey, H. Pratt).

Wiltshire: Pagham, at least three (two ♂♂) during March (F. P. Penfold, N. F. Robson, W. A. Phillips *et al.*). Church Norton, nine, 16th October; seven trapped, 20th October (P. J. Davis). Pagham Harbour, 22nd October to 25th December (G. R. Davis, L. G. Holloway *et al.*).

Yorkshire: one to five in one locality on several dates (Yorkshire Naturalists' Record Committee).

American Robin (*Turdus migratorius*)

Wiltshire: Lundy, 7th November (M. R. Jones).

Rock Thrush (*Monticola saxatilis*)

Outer Hebrides: St. Kilda, ♀, 17th June (J. M. Boyd, W. E. Waters) (*Brit. Birds* 1966-67).

Desert Wheatear (*Oenanthe deserti*)

Yorkshire: Easington, 16th to 19th April (R. F. Dickens, P. J. Mountfort, G. R. Corcoran *et al.*).

Cetti's Warbler (*Cettia cetti*)

Wiltshire: The Crumbles, trapped, 9th October (R. H. Charlwood, D. D. Harber).

Great Reed Warbler (*Acrocephalus arundinaceus*)

Wiltshire: Marazion Marsh, 15th May (R. Khan).

Wiltshire: Sandwich Bay, trapped, 12th and 13th May (D. M. Batchelor, K. Charman, J. Websper *et al.*); another trapped, 19th August (D. M. Batchelor, J. Websper, L. H. Worsford *et al.*).

Wiltshire: of Scilly: St. Agnes, trapped, 6th to 8th June (Mr. and Mrs. J. L. F. Parslow, H. M. Quick *et al.*).

Marsh Warbler (*Acrocephalus palustris*)

(outside England)

Wiltshire: Fair Isle, adult, trapped, 2nd September (P. Davis, B. R. Spence *et al.*).

Aquatic Warbler (*Acrocephalus paludicola*)

Shetland: Fair Isle, trapped, 23rd August (P. Davis, B. R. Spence, E. M. Wilkinson *et al.*).

Glamorgan: Kenfig Pool, 29th August (R. G. Knight, H. M. Salmon, J. R. Smith *et al.*).

Hampshire: Newtown, Isle of Wight, 7th October (C. J. Cadbury).

Kent: Sandwich Bay, trapped, 9th September (D. M. Batchelor, J. N. Hollyer, D. C. M. Worsfold).

Norfolk: Cley, 14th September (B. J. Burton, S. Dobson, J. Johnson).

Melodious Warbler (*Hippolais polyglotta*)

Devon: Lundy, trapped, 15th September (M. R. Jones, A. J. Vickery).

Dorset: Portland Bill, trapped, 16th to 22nd August (K. V. Edwards, G. H. Evans, J. R. Newmark *et al.*); another, 1st and 2nd September (G. A. Pyman, A. B. Watson, J. K. Weston *et al.*); another, trapped, 29th September to 8th October (D. J. Godfrey, Miss A. Lansdown, R. F. Thearle *et al.*); another, trapped, 29th September to 15th October (same observers as last); another, 30th September to 6th October (J. S. Ash, A. B. Sheldon, M. Shrubbs); one, 7th October (J. S. Ash, B. A. E. Marr, A. B. Sheldon *et al.*).

Kent: Dungeness, trapped, 8th August (A. R. Mainwood, R. E. Scott, L. P. Tucker *et al.*); another trapped, 26th September (P. L. Britton, Miss H. A. Fitzgerald, P. J. Grant *et al.*).

Pembrokeshire: Skokholm, trapped, 17th August (R. C. B. Coleman, D. Glanville); two, trapped, 20th August (same observers); another, trapped, 30th August (same observers); another, trapped, 10th September (R. C. B. Coleman, M. P. Harris); another, trapped, 12th September (same observers as last).

Isles of Seilly: St. Agnes, at least five (three trapped), 6th to 18th September (J. A. Burton, D. D. Harber, R. C. Righelato); one, 2nd and 3rd October (R. E. Emmett, I. J. Ferguson-Lees, D. I. M. Wallace). St. Martin's, trapped, 5th September (D. M. Broom).

Sussex: Holywell, Eastbourne, trapped, 23rd August (D. D. Harber). Selsey Bill, 26th August (M. A. Jennings, B. A. E. Marr, A. B. Sheldon); one on 27th September, apparently two on 28th September, one on 30th September (M. J. Helps, A. A. K. Lancaster, B. A. E. Marr *et al.*).

Icterine Warbler (*Hippolais icterina*)

Caernarvonshire: Bardsey Island, trapped, 3rd September (M. Lindstrom, P. Reading, M. P. Richards *et al.*).

Devon: Prawle Point, 13th and 14th October (R. M. Curber, P. J. Darc, R. Goodsell).

Dorset: Portland Bill, 31st August (M. E. Griffiths, C. Newton, M. D. Smith *et al.*). Studland Heath, 9th September (K. D. Edwards, K. J. Grearson, J. M. Sage *et al.*).

Essex: Bradwell, 3rd September (G. Downey, R. Lerner).

Shetland: Fair Isle, 31st August (K. T. B. Hodd, D. A. Whitehouse, E. M. Wilkinson).

Kent: Sandwich Bay, 4th May (D. M. Batchelor, U. Benecke, J. Websper *et al.*); one, trapped, 22nd September (G. Dunkling, R. Fern, D. C. M. Worsfold *et al.*).

Norfolk: Holkham, 5th September (I. C. T. Nisbet).

Pembrokeshire: Skokholm, two, trapped, 3rd September (R. C. B. Coleman, D. Glanville).

Islands of Scilly: St. Agnes, 14th and 15th September (M. J. Carter, M. J. Cowlard, W. W. Scott *et al.*); 16th September (T. H. Levere); 30th September and 1st October (E. Emmett, I. J. Ferguson-Lees, D. I. M. Wallace). Annet, 18th September (A. A. Burton, J. Cooke, F. H. D. Hicks).

Wiltshire: Flamborough Head, 15th September (R. S. Oddy, D. A. Scott).

Olivaceous Warbler (*Hippolais pallida*)

Wiltshire: Easton, Portland, 5th September (G. A. Pyman, A. B. Watson, J. K. Clugston *et al.*).

Islands of Scilly: St. Agnes, 30th September to 2nd October (R. E. Emmett, I. J. Ferguson-Lees, D. I. M. Wallace *et al.*).

Greenish Warbler (*Phylloscopus trochiloides*)

Wiltshire: Dungeness, trapped, 9th June (P. J. Grant, G. J. Harris, R. E. Scott).

Isle of Man: Calf of Man, 27th July (A. H. Morley).

Islands of Scilly: St. Agnes, at least two (one trapped), 15th to 21st September (M. J. Cowlard, J. Cooke, M. J. Cowlard *et al.*).

Wiltshire: Selsey Bill, 27th September (A. A. K. Lancaster, R. F. Porter). The Combles, 19th October (D. D. Harber).

Arctic Warbler (*Phylloscopus borealis*)

Wiltshire: Fair Isle, trapped, 1st September (P. Davis, P. J. Slater, B. R. Spence).

Wiltshire: Hartley, 15th August (D. T. Parkin, S. R. Stobart, R. M. Clugston *et al.*).

Yellow-browed Warbler (*Phylloscopus inornatus*)

Wiltshire: Bardsey Island, trapped, 12th and 13th October (F. R. Clifton, J. K. Clugston, R. C. Pratt *et al.*).

Wiltshire: Lundy, 4th to 6th October (M. R. Jones).

Wiltshire: Durham: Hartlepool, 14th October to 6th November (J. A. Bailey, E. C. Clugston, P. J. Stead *et al.*).

Wiltshire: Isle of May, 8th October (Miss N. J. Gordon, R. A. O. Hickling, K. Williamson).

Wiltshire: Tetney, trapped, 11th to 15th October (C. K. Brown, E. A. Mackell, K. Norman *et al.*).

Wiltshire: Blakeney Point, 21st to 23rd September (S. Greenwood, R. A. Richardson).

Wiltshire: Tynemouth, 8th October (J. M. Bayldon, M. Bell, J. D. Clugston). Whitley Bay Cemetery, 13th and 14th October (J. A. Bailey, B. Galloway, S. R. Stobart *et al.*). Blyth Cemetery, 13th to 15th October (B. Etheridge, P. J. Clugston, T. Winter *et al.*).

Islands of Scilly: St. Agnes, 6th to 9th October (R. E. Emmett, I. J. Ferguson-Lees, D. I. M. Wallace *et al.*) and 15th October (K. H. Hyatt, R. M. Larner).

Wiltshire: Fair Isle, two (one trapped), 29th September (P. Davis, P. J. Slater, B. R. Spence *et al.*); one, 5th and 7th October (P. Davis, B. R. Spence).

Wiltshire: Spurn Point, trapped, 26th September (P. J. Mountfort).

Pallas's Warbler (*Phylloscopus proregulus*)

Wiltshire: Durham: Hartlepool, 12th and 13th October (J. A. Bailey, D. G. Bell, P. J. Clugston *et al.*) (*Brit. Birds*, 56: 112-113).

Radde's Warbler (*Phylloscopus schwarzi*)

Fife: Isle of May, 8th October (G. H. Aeklam, G. Patrick, K. Williamson *et al.*).

Kent: Dungeness, trapped, 3rd to 8th October (P. L. Britton, P. J. Morgan, R. E. Scott *et al.*) (*Brit. Birds*, 56: 420-421).

Collared Flycatcher (*Muscicapa albicollis*)

Essex: North Fambridge, 21st to 23rd September (J. T. Friedlein).

Richard's Pipit (*Anthus novaeseelandiae*)

Cornwall: Ponsandane, near Penzance, 4th December (R. G. Hadden, J. E. Beekerlegge).

Shetland: Fair Isle, 24th September (G. J. Barnes); one, trapped, 6th to at least 26th October and another, trapped, 20th to at least 26th October, one of these remaining until 10th November (P. Davis, B. R. Spence).

Shetland: Sumburgh, 30th September and 1st October (P. Devillers, W. E. Oddie, C. E. Wheeler).

Tawny Pipit (*Anthus campestris*)

Cambridgeshire: Grantchester, 7th September (I. C. T. Nisbet).

Fife: Isle of May, trapped, 24th and 25th October (J. S. Phillips, I. F. Stewart).

Kent: Dungeness, 25th April (L. A. Batten, R. E. Scott, C. A. Thompson *et al.*); at least two, 27th to 30th September (D. J. Britton, P. L. Britton, P. J. Grant *et al.*). Sandwich Bay, 6th September (D. M. Batchelor, G. Dunkling, J. Websper *et al.*).

Isles of Scilly: St. Agnes, 9th and 11th May (Mr. and Mrs. D. I. M. Wallace, R. Williams).

Suffolk: near Walberswick, 7th September (H. Bentham).

Yellow-headed or Citrine Wagtail (*Motacilla citreola*)

Shetland: Fair Isle, first-winter, trapped, 22nd and 24th September (P. Davis, P. Devillers, B. R. Spence *et al.*) (*Brit. Birds*, 56: 30-31).

Lesser Grey Shrike (*Lanius minor*)

Sussex: Siddlesham, 1st and 2nd July (W. W. A. Phillips, Miss J. Stacey).

Woodchat Shrike (*Lanius senator*)

Kent: Sandwich Bay, immature, 14th to 23rd August (W. G. Harvey, J. Websper, D. C. M. Worsfold *et al.*).

Norfolk: Sheringham, 17th June (J. T. R. Sharrock).

Red-eyed Vireo (*Vireo olivaceus*)

Isles of Scilly: St. Agnes, adult and immature, 4th to 10th October, one seen again 17th (R. E. Emmett, I. J. Ferguson-Lees, D. I. M. Wallace *et al.*).

Bobolink (*Dolichonyx oryzivorus*)

Isles of Scilly: St. Agnes, trapped, 19th September (J. A. Burton, F. H. D. Hicks, M. J. Carter *et al.*).

This is a species new to Britain. Fuller details will be published later.

Rose-coloured Starling (*Sturnus roseus*)

Wiltshire: Kingswear, juvenile, 12th October (M. R. Edmonds).
Wiltshire: Lundin Links, adult, 6th and 7th September (Miss P. G. Baxter, R. S. Weir).
Northumberland: Tynemouth, adult, 21st to 25th August (J. M. Bayldon, M. Lawley, J. D. Parrack).
Wiltshire: Rousay, adult, dead, beginning of August (W. Groundwater).
 As pointed out in our last two reports (*Brit. Birds*, 54: 195; and 55: 196), Rose-coloured Starlings are frequently imported as cage-birds.

Baltimore Oriole (*Icterus galbula*)

Wiltshire: Beachy Head, adult ♂, 5th and 6th October (R. H. Charlwood, D. D. Barber).
 The possibility of this having escaped from captivity cannot be entirely excluded since it is known that a few have been imported in recent years, but we have not been able to trace any actual escape and several other American species appeared in Great Britain and Ireland about the same time.

Arctic Redpoll (*Carduelis hornemanni*)

Outer Hebrides: Uigen, Lewis, ♂, dead, 8th April (W. A. J. Cunningham, C. E. G. Marshall, D. Weir).
 In addition, there were the following sight records of birds showing the characters of this species:
Northumberland: St. Mary's Island, Whitley Bay, one of the two observed on 1st December 1961 (*Brit. Birds*, 55: 581) was still present on 1st January (C. Douglas). Holy Island, the bird recorded on 31st December 1961 (*Brit. Birds*, 55: 581) was seen again on 1st January (S. R. Stobart, R. M. Wood).
Wiltshire: near Patrington, six, 25th February (A. Credland).

Serin (*Serinus canarius*)

Wiltshire: Weymouth, 18th April to 6th July (Miss M. D. Crosby, R. H. J. Nash, J. H. Stokess).
Islands of Scilly: St. Agnes, 9th May (D. I. M. Wallace); 13th October (G. J. Harris, K. H. Hyatt, B. P. Pickess *et al.*).
Wiltshire: Selsey Bill, 30th August (M. A. Jennings).

Scarlet Grosbeak (*Carpodacus erythrinus*)

Wiltshire: Fair Isle, trapped, 12th September; another, 13th to 15th September (P. Davis, P. Devillers, B. R. Spence *et al.*); one, trapped, 25th October (P. Davis, B. R. Spence).
Northumberland: Holywell Ponds, 22nd and 23rd September (J. M. Bayldon, P. Deacon, J. D. Parrack *et al.*).
Islands of Scilly: St. Agnes, 8th to 12th October (G. J. Harris, K. H. Hyatt, B. P. Pickess *et al.*).
Wiltshire: Spurn Point, 26th and 27th September (J. Cudworth, W. C. Wakefield).

Two-barred Crossbill (*Loxia leucoptera*)

Shetland: Fair Isle, immature ♂, 29th to 31st July (P. Davis, B. R. Spence, J. A. Stout).

Black-headed Bunting (*Emberiza melanocephala*)

[**Shetland:** Fair Isle, ♂, 5th to 13th June (P. Davis, B. R. Spence, J. A. Stout).]

This bird was very tame and is believed to have escaped from captivity.

Yellow-breasted Bunting (*Emberiza aureola*)

Shetland: Fair Isle, first-winter, 12th to 15th September (P. Davis, B. R. Spence, J. A. Stout).

Rustic Bunting (*Emberiza rustica*)

Fife: Isle of May, trapped, 11th and 12th September (J. Ballantyne, S. R. Stobart, R. M. Wood *et al.*).

Kent: Shellness, 9th April (Mr. and Mrs. J. Hori).

Isles of Seilly: St. Agnes, 26th and 27th October (K. H. Hyatt, R. Lerner, B. S. Milne *et al.*); another, 4th November (K. H. Hyatt).

Shetland: Fair Isle, ♂, 13th May, and two ♂♂ on 14th, one staying until 18th (G. K. Brown, P. Davis, B. R. Spence *et al.*).

Suffolk: Minsmere, trapped, 24th October (H. E. Axell, P. J. Makepeace *et al.*).

Little Bunting (*Emberiza pusilla*)

Cheshire: Bidston, two, 9th to 15th March, three (one adult ♂), 17th to 19th March, two (including the adult ♂) to 28th March, one to 11th April (J. R. Mullins, K. M. Mullins, W. T. C. Rankin *et al.*).

Northumberland: near Gosforth, trapped, 22nd October (M. Marquiss, C. F. Watson).

Shetland: Fair Isle, 11th to 18th October (P. Davis, B. R. Spence).

Appendix—Observations in ‘Recent reports and news’ not now accepted

The following records appeared in ‘Recent reports and news’, but were found to be unacceptable upon fuller consideration. This list includes all the records of this kind unless they were qualified by such terms as ‘apparent’ or ‘probable’, or unless they appeared in brief summaries without precise date or location. A few other observations remain outstanding, no decision having yet been reached on them. The rejection of these records does not imply a slur on the observers concerned. Often it merely means that we considered the evidence insufficient for complete acceptance.

1961

Broad-billed Sandpiper Seaton Burn, Northumberland, 12th-16th August
(*Brit. Birds*, 55: 48).

1962

Wren	Cley, Norfolk, 8th September (55: 460).
Greater Yellowlegs	Shotton, Cheshire, 3rd September (55: 596).
Lesser Gull	St. Ives, Cornwall, from 26th July (55: 460).
Black-billed Tern	Gosford Bay, East Lothian, 16th September (55: 460).
Marbled Warbler	Oxwich Marsh, Glamorgan (55: 460).

The incidence of albinism and melanism in British birds

By Bryan L. Sage

INTRODUCTION

In 1956, I PUBLISHED appeals for records of albinism and melanism in various journals, including *British Birds* (49: 512) and *Bird Study* (279). Similar requests for information were broadcast on the radio on my behalf by Dr. Bruce Campbell and James Fisher. It was hoped to amass sufficient data to discover some of the causes of these phenomena and to ascertain their incidence among British birds. The first of these aims has already been dealt with (Sage 1962) and the present paper is concerned with the second.

As a result of the appeals for information and a fairly extensive search of the literature, a total of 3,134 records of partial or complete albinism and 113 of melanism in British birds were brought together for analysis. The treatment here is primarily at the family level and more detailed discussion on certain species groups may be published elsewhere.

For various reasons I have found it convenient to base all calculations on the *Check-list of the Birds of Great Britain and Ireland* (1952) and I have ignored subsequent additions and deletions which do not, in any case, materially affect the results. There are, however, two points where I have departed from the *Check-list* treatment: I have regarded the Bean* and Pink-footed Geese as separate species, and the Carrion Crow and Hooded Crows as conspecific. These departures should be borne in mind in any reference to the *Check-list* of 1952.

ALBINISM

An analysis by families of the 3,134 instances of albinism is given in Table 1. Of the 59 families on the British List in 1952, no less than 42, or 71.2%, have provided records. The condition has been noted in 163, or 38.3%, of the 426 species included in the *Check-list*, these representing 105 genera.

Scientific names of all species mentioned in the text are given on page 416.

BRITISH BIRDS

Table 1. Analysis by families of 3,134 records of albinism in British birds
 The numbers of species shown in the first column of figures are those included in the *Check-list of the Birds of Great Britain and Ireland* (1952), ignoring later additions and deletions. The Mallard (*Anas platyrhynchos*) and the Pheasant (*Phasianus colchicus*) have been omitted from the remaining columns for reasons given in the text, however. In the last column percentages are given to the nearest whole number and those less than 1% are not shown

	No. of species	Species with records of albinism	No. of records	% of total records
Colymbidae (divers)	4	1	1	—
Podicipidae (grebes)	5	2	6	—
Procellariidae (petrels, shearwaters)	16	1	6	—
Sulidae (gannets)	1	1	1	—
Phalacrocoracidae (cormorants)	2	2	11	—
Ardeidae (herons, bitterns)	10	2	10	—
Anatidae (ducks, geese, swans)	43	16*	69	2%
Falconidae (birds of prey)	22	9	38	1%
Tetraonidae (grouse)	4	3	23	—
Phasianidae (partridges, pheasants)	4	2*	97	3%
Rallidae (crakes, rails, coots)	8	4	70	2%
Haematopodidae (oystercatchers)	1	1	38	1%
Charadriidae (plovers)	12	5	96	3%
Scelopacidae (waders)	41	14	137	4%
Burhinidae (stone curlews)	1	1	1	—
Stercorariidae (skuas)	4	1	1	—
Laridae (gulls, terns)	27	11	34	1%
Aleidae (auks)	7	3	19	—
Columbidae (pigeons, doves)	5	4	40	1%
Cuculidae (cuckoos)	4	1	5	—
Strigidae (owls)	10	3	6	—
Caprimulgidae (nightjars)	4	1	10	—
Apodidae (swifts)	3	1	15	—
Picidae (woodpeckers)	4	4	4	—
Alaudidae (larks)	8	3	64	2%
Hirundinidae (swallows, martins)	4	3	233	7%
Corvidae (crows)	9	6	356	11%
Paridae (tits)	8	5	14	—
Sittidae (nuthatches, wallcreepers)	2	1	1	—
Certhiidae (treecreepers)	1	1	1	—
Troglodytidae (wrens)	1	1	12	—
Cinclidae (dippers)	1	1	2	—
Turdidae (thrushes, chats)	25	12	902	29%
Sylviidae (warblers)	38	7	28	—
Regulidae (goldcrests)	2	1	2	—
Muscicapidae (flycatchers)	5	1	9	—
Prunellidae (dunnoeks)	2	1	65	2%
Motacillidae (pipits, wagtails)	10	5	51	2%
Laniidae (shrikes)	5	2	4	1%
Sturnidae (starlings)	2	1	216	7%
Fringillidae (finches, buntings)	33	15	203	6%
Passeridae (sparrows)	2	2	233	7%

*Mallard and Pheasant excluded

The records were also classified under partial or complete albinism. True or complete albinism, in the strictest sense, involves a complete lack of pigment in the soft parts as well as the whole plumage. However, the vast majority of field observations do not describe the colour of the soft parts and so in this study it has been necessary to treat in the category of complete albinism all records of birds reported to have plumage pure white or nearly so. Division on this basis showed 44% partial and 36.6% complete albinos.

So far as I am aware, the only previous comparable analysis is that of Glegg (1931), which was based entirely on Essex records. Table 2 is adapted from his results. If we use the same criteria as in the previous paragraph, his records can be separated as 69.7% partial and 30.3% complete.

Table 2. Analysis by families of 201 records of albinism in British birds, adapted from Glegg (1931)

	No. of records	% of total records
Colymbidae (divers)	1	0.5%
Anatidae (ducks, geese, swans)	2	1.0%
Phasianidae (partridges, pheasants)	18	9.0%
Rallidae (crakes, rails, coots)	4	2.0%
Charadriidae (plovers)	3	1.5%
Scolopacidae (waders)	3	1.5%
Laridae (gulls, terns)	4	2.0%
Columbidae (pigeons, doves)	3	1.5%
Apodidae (swifts)	1	0.5%
Alaudidae (larks)	7	3.5%
Hirundinidae (swallows, martins)	5	2.5%
Corvidae (crows)	18	8.9%
Troglodytidae (wrens)	5	2.5%
Turdidae (thrushes, chats)	54	26.9%
Sylviidae (warblers)	1	0.5%
Prunellidae (dunnocks)	2	1.0%
Motacillidae (pipits, wagtails)	5	2.5%
Laniidae (shrikes)	1	0.5%
Sturnidae (starlings)	24	11.9%
Fringillidae (finches, buntings)	20	9.9%
Passeridae (sparrows)	20	9.9%

Table 1 shows that, although there are 42 families of British birds in which albinism has been recorded, a mere 19 families are responsible for 93% of the total observations. The great bulk of the records (93%) have occurred in the Turdidae, Corvidae, Hirundinidae, Passeridae, Sturnidae and Fringillidae, in that order. The percentages of records for the Anatidae and Phasianidae would have been far higher than they are, however, if those for the Mallard and Pheasant could

have been included, but semi-domesticated and inbred populations of these two species provide so many cases of albinism that to have used them in the calculations would have unbalanced the whole analysis.

Study of Glegg's data shows that the families he found most affected were, in order of frequency, the Turdidae, Sturnidae, Fringillidae, Passeridae, Corvidae and Phasianidae (still excluding the Pheasant). In America, Lee and Keeler (1951) tabulated all the records of plumage variations of this type that they could find in English language publications available in the libraries of Chicago. The results involved 36 families and those with the greatest number of records were the Fringillidae, Corvidae, Icteridae (New World blackbirds and orioles), Anatidae, Phasianidae and Turdidae. Considering the wide differences in these studies, there is a remarkably close agreement in the families most affected by albinism.

It is appreciated that this method of analysis, whereby the incidence of albinism is expressed as a percentage of the total number of records, does not take into account the relative abundance of each species, but I am unaware of any method which would allow for this. Nevertheless, it is perhaps significant that the species which account for the greatest percentages of the records are the Blackbird (19.7%), House Sparrow (7.3%), Starling (6.9%), Swallow (4.9%), Rook (4.0%) and Jackdaw (3.7%). According to Fisher (1946), but allowing for the recent calculation of Summers-Smith (1963) regarding the House Sparrow, the most numerous British birds are, in order of abundance, the Chaffinch, Blackbird, House Sparrow, Starling, Rook and Jackdaw.

In addition, there are other factors which may well bias the results of a study of this nature. Species such as the Starling, Robin, Chaffinch, Blackbird and House Sparrow are all common in the vicinity of human habitation and therefore quite familiar to the lay public. It follows that albinistic examples of these species stand a greater chance of being seen, identified and reported. Different degrees of conspicuousness must also play a part: albinism is readily seen in such dark-coloured species as the Blackbird and Carrion Crow, but it is much more difficult to detect in gulls or other birds which already have much white in the plumage.

At present it is impossible to do much more than guess at the reasons why albinism is fairly regular in some families and almost unknown in others. However, consideration of the species involved in the six families which make up the bulk of the records on which this paper is based provides some clues. In the Turdidae over two-thirds of the records relate to the Blackbird, followed by the Robin and Song Thrush. The Rook and the Jackdaw account for the majority of those involving the Corvidae, though the Carrion Crow makes up nearly 20% (incidentally, white barring on the wings appears to be fairly wide-



PLATE 67. Houbara Bustard
Chlamyopsis subdita, Suffolk,
 November-December 1962. Note the turkey shape, the black and white feathers down the neck, the long barred tail and the darkish pattern on the sandy upper-parts. The first record in Britain this century; it spent most time in a mustard field, but it used also to go across a lane and the small picture shows it only yards from the wing mirror of the photographer's car, full details to be published soon, but see page 300 *pl. of Br. Birds*.



PLATES 62 and 63. Red-rumped Swallows (*Hirundo daurica*) entering and leaving their bottle-shaped mud nest during the later stages of construction, Portugal, May 1963. Note the two-tone pale rump, the unmarked tail and incurving streamers, and the lack of a dark gorget (pages 416-418) (photos: A. N. H. Peach and M. D. England)

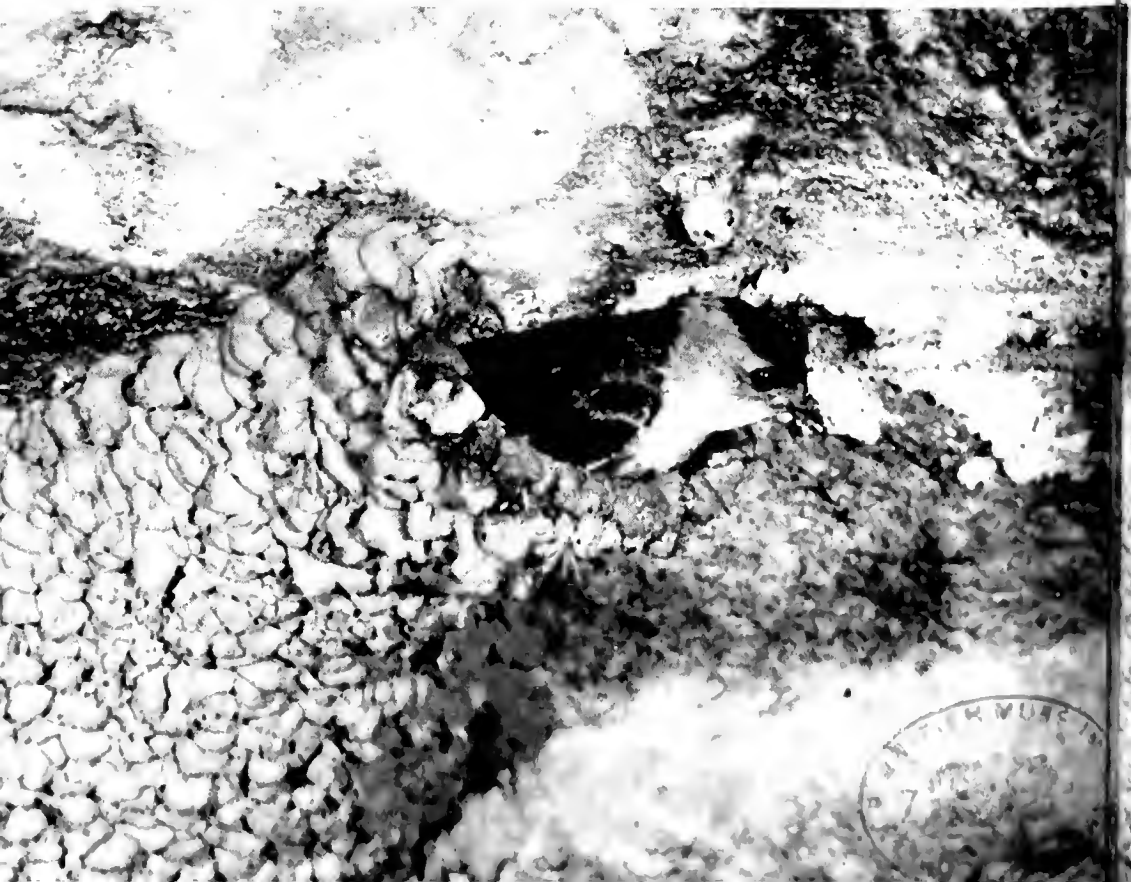






PLATE 64. Radde's Warbler (*Phylloscopus schwarzi*), Kent, October 1962. This and another in Scotland soon after were only the third and fourth British records. The dark eye-stripe, pale supercilium and heavy bill show well above, and the out-size first primary and short second are seen below (pages 420-421) (photos: G. R. Shannon)



spread in this species). In the Fringillidae, the Chaffinch, Corn Bunting, Linnet and Greenfinch together total 55.7% of the records. The Swallow is responsible for 66.1% of the observations involving the Hirundinidae and this is the only migratory species showing a high incidence of albinism. The House Sparrow accounts for 88.7% of the records in the Passeridae and the Starling for all of those in the Sturnidae.

The picture that begins to emerge is that nearly all migratory species (with the striking exception of the Swallow), as well as those which tend to breed as isolated pairs, show a very low incidence of albinism. The Sylviidae, for example, an almost entirely migratory family composed of species that are not social nesters, account for less than 1% of the 3,134 records. The highest incidence of albinism appears to be found in species that are both social in their breeding habits and also entirely sedentary. In such conditions the chances of matings between individuals heterozygous for albinism must be relatively high. The data also support the theory that the majority of cases of albinism are genetically based and that other factors such as diet and trauma (see page 1962) are of minor significance.

Such an analysis as this, involving an accumulation of individual records, does not give any indication of the frequency of albinism in natural populations of individual species. In some areas, for instance, albinistic Blackbirds may be sufficiently numerous to give the impression that they constitute a large proportion of the total population, but without actual counts of both normal and abnormal birds it is impossible to know how correct this may be. So far as I am aware, however, very few studies covering this aspect of the subject have been made. Hicks (1934) examined 10,000 Starlings during ringing operations and found only 11, or about 0.1%, with signs of albinism. Michener and Michener (1936) checked 30,000 birds, excluding House Sparrows, in the course of ringing and found 17, or about 0.05%, with traces of albinism. Piechocki (1954) examined 20,931 House Sparrows that had been killed by poisoning; he found no pure white birds and those exhibiting traces of partial albinism amounted to less than 1%. More recently, Ilyenko (1960) stated that albinism is characteristic of bird populations in cities and heavily populated districts, and that it is found less frequently in rural areas. He based his conclusion on an examination of 3,605 House Sparrows and 267 'Field Sparrows'*

*I have not read Ilyenko's paper in the original and the information given here was taken from the summary in *Biological Abstracts*, vol. 40 (1962), abstract 17106. Where the term 'Field Sparrows' is used with the scientific name *Spizella pusilla*, but the latter must presumably have been inserted by the abstractor since this is a species which is confined to the United States and Canada. It has not so far proved possible to clarify this matter, but it seems likely that by 'Field Sparrow' Ilyenko meant the Tree Sparrow (*Passer montanus*).

BRITISH BIRDS

collected in Moscow and the rural area of Chashnikov. No complete albinos were found, but partial albinos accounted for 1.8% of the House Sparrows and 1.7% of the 'Field Sparrows' in Moscow, compared with none of either species in the Chashnikov sample. The condition was found $2\frac{1}{2}$ times as frequently in females as in males.

MELANISM

Melanism is clearly of much less frequent occurrence than albinism, although the Buzzard, Montagu's Harrier, Partridge, Pheasant, Red Grouse, Snipe and Woodcock all have a melanistic phase in the normal range of plumage and the Mallard is also very prone to produce melanistic variants. Excluding these eight species, I have collected a total of 113 records of apparent melanism in 39 species. These involve seventeen families, as shown in table 3. The relative infrequency of melanism is further demonstrated by the fact that 23 of the 39 species, or 59%, are able to show only one record. The bulk of the records (72%) have occurred in the Paridae, Passeridae, Laridae, Phasianidae (excluding both Partridge and Pheasant), Turdidae and Charadriidae, in that order.

Table 3. Analysis by families of 113 records of melanism in British birds
The numbers of species shown in the first column of figures are those included in the *Check-list of the Birds of Great Britain and Ireland* (1952), ignoring later additions and deletions. Eight species which produce regular melanistic phases or variants (see above) have been omitted from the remaining columns, however, as have reports of melanism in captive birds. In the last column percentages are given to the nearest whole number and those less than 1% are not shown

	No. of species	Species with records of melanism	No. of records	% of total records
Anatidae (ducks, geese, swans)	43	3*	3	3%
Falconidae (birds of prey)	22	4*	5	4%
Phasianidae (partridges, pheasants)	4	1*	10	9%
Rallidae (crakes, rails, coots)	8	1	1	—
Charadriidae (plovers)	12	3	8	7%
Scelopacidae (waders)	41	3*	3	3%
Laridae (gulls, terns)	27	3	11	10%
Picidae (woodpeckers)	4	1	1	—
Alaudidae (larks)	8	2	4	4%
Hirundinidae (swallows, martins)	4	1	3	3%
Corvidae (crows)	9	2	2	2%
Paridae (tits)	8	3	28	25%
Turdidae (thrushes, chats)	25	6	8	7%
Sylviidae (warblers)	38	1	1	—
Motacillidae (pipits, wagtails)	10	2	4	4%
Fringillidae (finches, buntings)	35	2	5	4%
Passeridae (sparrows)	2	1	16	14%

*Certain species excluded from these families (one from the Anatidae and two from each of the others)

The melanistic phases of the eight species mentioned above are genetic in origin, but it is difficult to say how far this applies to other species. However, the outbreak of melanism among Great Tits in Surrey (see Sage 1962)—which is mainly responsible for the Paridae leading the list—was almost certainly hereditary: melanistic individuals were recorded from 1954 to 1959 and in one instance eight out of a brood of nine young showed this condition. The melanism in the Herring Gull recorded by Stokoe (1954) was also probably of genetic origin as the bird's beak exhibited the type of pigmentation typical of hereditary melanics. Nevertheless, some of the examples of melanism reported in the Laridae may well have been due to oiling of the plumage and it is often difficult to know whether abnormally dark feathering is due to pigmentation or a surface covering of dirt. In this connection, there are several instances, where supposed melanism in House Sparrows has been proved to be due to 'industrial' contamination of the plumage and it is therefore important that a cleaning process such as that described by Harrison (1963) should be carried out before any cases involving species living in urban environments are ascribed to true melanism.

ACKNOWLEDGEMENTS

I am greatly indebted to the many hundreds of observers who kindly sent me records. It is impossible to list them all here by name, but without their generous co-operation this study would not have been possible.

SUMMARY

A total of 3,134 records of albinism in British birds have been analysed, involving 105 species of 105 genera in 42 families. Over two-thirds of the records concern only six families, however—the Turdidac, Corvidac, Hirundinidac, Passeridac, Fringillidac and Fringillidac, in that order. The six most commonly affected species are the Blackbird, House Sparrow, Starling, Swallow, Rook and Jackdaw, and these together make up nearly half the total. The highest incidence of albinism appears to be found in sedentary species that tend to form isolated populations and in social feeders. With the striking exception of the Swallow, migratory species and those with solitary habits generally have a very low incidence of albinism. Melanism is a comparatively rare condition and, excluding eight species which have a normal melanistic phase, the enquiry has yielded only 113 records involving 113 species in 17 families. Some of these may be due to discoloration rather than to melanism.

REFERENCES

SMITH, J. (1946): *Watching Birds*. London. Revised edition.
 MCGG, W. E. (1931): 'Heterochrosis in Essex birds and in their eggs'. *Essex Nat.*, 33: 171-202.
 HARRISON, C. J. O. (1963): "'Industrial" discoloration of House Sparrows and other birds'. *Brit. Birds*, 56: 296-297 and plate 46.
 STOKOE, L. E. (1934): 'Individual and sexual variations in the European Starling'. *Bird Banding*, 5: 103-118.

- ILYENKO, A. I. (1960): 'O yavlenii al'binizma sredi vorob' cv Moskvvy'. In *Okbrana priredy i ozelenenie*. Moscow.
- LEE, F. C., and KEELER, C. E. (1951): 'Pigment variations and their correlates in birds'. *Auk*, 68: 80-85.
- MICHENER, H., and MICHENER, J. R. (1936): 'Abnormalities in birds'. *Condor* 38: 102-109.
- PIECHOCKI, R. (1954): 'Statistische Feststellungen an 20,000 Sperlingen'. *J. Orn.*, 95: 297-305.
- SAGE, B. L. (1962): 'Albinism and melanism in birds'. *Brit. Birds*, 55: 201-225.
- STOKOE, R. (1954): 'A black Herring Gull in Cumberland'. *Brit. Birds*, 47: 132-133.
- SUMMERS-SMITH, J. D. (1963): *The House Sparrow*. London.

Appendix—Scientific names of species mentioned in the text

Mallard (<i>Anas platyrhynchos</i>)	Rook (<i>Corvus frugilegus</i>)
Bean Goose (<i>Anser fabalis</i>)	Jackdaw (<i>Corvus monedula</i>)
Pink-footed Goose (<i>Anser brachyrhynchos</i>)	Robin (<i>Eritbacus rubecula</i>)
Montagu's Harrier (<i>Circus pygargus</i>)	Great Tit (<i>Parus major</i>)
Buzzard (<i>Buteo buteo</i>)	Song Thrush (<i>Turdus philomelos</i>)
Red Grouse (<i>Lagopus lagopus</i>)	Blackbird (<i>Turdus merula</i>)
Partridge (<i>Perdix perdix</i>)	Starling (<i>Sturnus vulgaris</i>)
Pheasant (<i>Phasianus colchicus</i>)	Greenfinch (<i>Chloris chloris</i>)
Snipe (<i>Gallinago gallinago</i>)	Linnet (<i>Carduelis cannabina</i>)
Woodcock (<i>Scolopax rusticola</i>)	Chaffinch (<i>Fringilla coelebs</i>)
Herring Gull (<i>Larus argentatus</i>)	Dunnock (<i>Prunella modularis</i>)
Swallow (<i>Hirundo rustica</i>)	Corn Bunting (<i>Emberiza calandra</i>)
Carrion Crow (<i>Corvus corone</i>)	House Sparrow (<i>Passer domesticus</i>)
	Tree Sparrow (<i>Passer montanus</i>)

Studies of less familiar birds

125. Red-rumped Swallow

Photographs by M. D. England and A. N. H. Peach

(Plates 62-63)

ALTHOUGH ONLY NINE Red-rumped Swallows (*Hirundo daurica*) have been recorded in Britain and Ireland, the latest in 1959 and 1960, this is a species with a wide range which includes many parts of Africa, the Near East and Asia Minor through southern and eastern Asia north to southern Siberia, Manchuria, Korea and Japan, as well as, in Europe, the Iberian and Balkan peninsulas.

In Spain and Portugal at least, it seems to be spreading. Most writers before 1939 regarded it as confined to the extreme south of Spain, largely to Andalusia (see *The Handbook*), and as recently as 1952 R.-D. Etchécopar (*L'Oiseau*, 22: 319-320) felt able to say in connection with nests which he and others had found at Despeñaperros in the province of Ciudad Real that 'jamais cet oiseau n'avait été signalé comme nidificateur en un point aussi septentrional d'Espagne'.

However, during 1951-53 Dr. F. Bernis (*Ardeola*, 1: 117-118) recorded Red-rumped Swallows breeding in eight localities in central Spain, as far north as the provinces of Avila and Madrid, and in 1959 J. R. dos Santos Júnior (*Anais da Faculdade de Ciências do Porto*, 41: 126-128) discovered them nesting in two localities in the area of Mogadoura (Traz os Montes) in the north-east corner of Portugal. (The latter author pointed out that W. C. Tait, writing in 1924, did not mention the species in Portugal at all and that P. de Oliveira, in 1910, described it as very rare in Spain.) Then in 1960 C. Ferry (*Alanda*, 29: 70-71) established nesting in the province of Gerona in the extreme north-east of Spain. In Portugal in 1963, apart from the site by the River Tagus where the photographs on plates 62-63 were taken, M. D. England also found evidence of breeding at localities near Lisbon and about sixty miles further to the north-east. All the more recent records mentioned here are well outside the range shown in the later editions of the *Field Guide*, one or two of them as much as 150-350 miles or more.

Many nests of the Red-rumped Swallow in Spain and Portugal are under new concrete bridges or in stone and concrete culverts under recently improved roads, and it may be that the considerable increase in such sites during the last 15 or 20 years has helped this evident spread. On the other hand, the natural breeding places of the species are caves and overhangs of rock, and these have always existed in abundance in Iberia. Whatever the factors involved, it is interesting to note that in the last 15 years Red-rumped Swallows have been recorded six times in Britain and Ireland, as well as in Finland (a pair for a long time in the summer of 1952) and Denmark (1954). If the spread continues, perhaps we may expect more occurrences in northern Europe as a result of overshooting.

Lest it be suggested that this apparent increase in Iberia is due to the species having previously been overlooked, it must be pointed out that this is a far more distinctive bird than many pictures and descriptions might lead one to suppose. Its longer body, blunter wings and shorter and thicker outer tail-feathers (which often seem incurved—plate 63b) give it a different shape from that of the familiar Swallow (*Hirundo rustica*) and, instead of the latter's light, swerving and irregular flight, it has a much more deliberate action and a characteristic way of keeping round low in a wide circle without the Swallow's constant changes of direction. It feeds more like a House Martin (*Delichon urbica*) with rapid climbs on fluttering wings interspersed with more gliding. The resemblance to a House Martin is, of course, increased by the pale rump which is partly orange-red and partly sandy contrasted with the blackish tail-coverts and tail (plates 62a and 63b), but the proportions of Red-rumped Swallow and House Martin are quite

different and confusion is hardly possible. Other features which should be noted in the plates are the unmarked tail (plate 63b), the lack of the Swallow's dark gorget (plates 62b and 63a) though this often does not strike people quickly in the field, and the contrast of the blue-black cap and mantle with the orange-red on the nape and the sides of the head (plate 62b). This orange-red and the reddish-buff under-parts can be quite striking.

The photographs on plates 62-63 were taken at a nest in a drainage tunnel beneath a railway. It was early May and the birds were still building. When found, the bowl was complete but the 'neck' of the curious bottle-shaped structure was still being extended; the nest-entrance faced roughly south-east and not the same direction as the drainage tunnel which opened to the north (plate 63a). During the next few days large quantities of dry grass, in lengths of up to about 18 inches, were taken inside to form a substantial nest-lining (plate 63b and see *The Handbook*). Building, accompanied by much twittering, was carried out by both sexes; sometimes they were inside together, but usually the second to arrive would wait for the other to leave. Eventually all activity ceased and it was assumed that egg-laying had begun, but some days later the birds suddenly started again and added at least two inches to the 'neck'. This was done chiefly from the inside: the bird would shoot into the hole carrying a large blob of mud, turn round and then fix it with only its head visible and its body inside the nest (plate 62b). Occasionally a third Red-rumped Swallow was seen in the air near the site, but it was never observed to approach the actual nest.

I. J. FERGUSON-LEES

Obituary

C. A. Gibson-Hill (1911-1963)

CARL GIBSON-HILL, who died suddenly on 18th August 1963 in Singapore, where he had been successively curator and director of the Raffles Museum, was best known in Britain for his *British Sea Birds* (1947) and *Birds of the Coast* (1949), both published by Witherby. The photographs for the first were all taken in the wet summer of 1946 during a hectic tour of these islands, a *tour de force* for a man who had just endured four years' internment.

He was born on 23rd October 1911 and so was only 51 years old at his death. Educated at Malvern and Cambridge, he spent all of his working life abroad and it was a series of illustrated articles in *The Field* on the birds of the Indian Ocean Christmas Island and the Cocos Keelings that first established him as a photographer and

ornithologist of standing. On his return to Singapore after the war he devoted himself to the compilation of *An Annotated Checklist of the Birds of Malaya*, published as the 20th Bulletin of the Raffles Museum in 1949. Though he wrote other papers and notes on birds, his interests turned more to the local culture and antiquities and he became an outstanding authority on everything Malayan. B.C.

Notes

Pheasant nesting 35 feet above ground in same tree as Sparrowhawk.—On 6th May 1963, in company with Adam Gains, we flushed a Pheasant (*Phasianus colchicus*) from the old nest of a Sparrowhawk (*Accipiter nisus*) which had been built the previous year about 35 feet above the ground in a spruce in a wood near Alnwick, Northumberland. The nest contained fourteen eggs which were well incubated. Seven feet above was the Sparrowhawk's new nest with four fresh eggs. The Pheasant subsequently succeeded in hatching her young, but the Sparrowhawk's nest was later destroyed by somebody with a gun.

The Handbook states that Pheasants have been recorded nesting exceptionally in such sites as . . . old Wood-Pigeon's nest or squirrel's drey in tree up to 30 ft. from ground', but it seems rather remarkable that this particular bird should continue to incubate even when the Sparrowhawk started building over her.

JOHN ANDERSON and ALBERT EGDELL

Wood Martin breeding in Dipper's nest.—During 1962 and 1963 a pair of Dippers (*Cinclus cinclus*) built a total of three nests within the space of a yard on a mud bank about five feet above the water of a river near Sedbergh, Yorkshire, supporting them on a thick root under an overhang of rock. They raised one brood in each of the two years and in 1963 the young left the nest on 12th May.

(On 25th July 1963 I found a Sand Martin (*Riparia riparia*) incubating three eggs in the nest the Dippers had used that spring, the central one of the three; a new lining of dried grass and chicken feathers had been inserted. The eggs duly hatched and the young Sand Martins eventually fledged successfully. A few feet to the left were two normal Sand Martin holes in which young were also reared.

In T. H. Nelson's *The Birds of Yorkshire* (vol. 1, pp. 102 and 162) there is a reference to a similar occurrence on the Yorkshire/Lancashire border in 1901.

GEORGE C. HAMER

Late and hurried breeding of Great Tit.—On 6th July 1963, in an urban garden in Bedford, I noted that a pair of Great Tits (*Parus major*)

were carrying material into a nest-box. Only two days earlier the box had been empty. On the 7th one bird was seen collecting large amounts of roots about once every minute between 10.00 and 10.25 a.m. Frequently it attempted to carry so much that it could not land at the entrance-hole and was forced to release some.

On 8th July, only the third or fourth day of building, I examined the box and was astonished to find that three eggs had already been laid in a very poorly made nest which was still not more than three-fifths complete. On the 9th there were four eggs, but the fifth and final one did not appear until the 11th. Even then it was another two days before the nest seemed to be fully built and it was still only thinly lined with hair. Only two of the eggs hatched, and only one young bird eventually left the nest.

P. G. KITCHENER

Young Blackbird repeatedly attacking Pygmy Shrew.—On 28th July 1963, at Shalbourne Mill, Wiltshire, I saw a juvenile Blackbird (*Turdus merula*) circling round something concealed in short grass. The bird repeatedly hopped up to the spot and pecked at it, then retreated about a foot. It seemed fascinated but hesitant to press home its attack upon its 'prey', which, after watching the performance for five minutes or more, I found to be a nearly full-grown Pygmy Shrew (*Sorex minutus*). The shrew may well have been prevented from escaping by the matted grass stems, and the Blackbird puzzled by its protesting squeals.

E. A. R. ENNION

Radde's Warbler in Kent.—At 13.30 hours GMT on 3rd October 1962, A. H. Lukes, P. J. Morgan and P.L.B. caught a strange warbler in one of the heligoland traps at Dungeness, Kent. They took it to the observatory's laboratory where it was also seen by Mrs. H. A. Britton and D. M. Timmins. Later, G. R. Shannon was contacted and he obtained a fine series of photographs, two of which are reproduced on plate 64. After a full description had been made and identification as a Radde's Warbler (*Phylloscopus schwarzi*) confirmed, the bird was ringed and released. It was not seen again until mid-afternoon on 7th October when it was recaptured with a small number of Chiffchaffs (*Pb. collybita*). On this occasion it was seen by H.A.B., P.L.B., P.J.M., R.E.S. and several members of the Bedfordshire Natural History Society, including M. D. Wortley and R. G. O. Stephenson. R.E.S. made a brief laboratory examination and the bird was then released near the observatory building. The following day, 8th October, it made its final appearance, once again in mid-afternoon, and on this occasion was seen by B. P. Austin, H. A. R. Cawkell and R.E.S.

All agreed that the general impression was of a completely 'new'

Phylloscopus, unlike any that they had previously seen. The most striking features were a long, straight, dark eye-stripe and contrasting white superciliary (plate 64a); long, pale legs; a rather tit-like bill; dark, uniform upper-parts; and bright yellow under-parts rather similar to those of a first-winter Melodious Warbler (*Hippolais polyottha*). In the collecting box of the trap the bird sat back on its tarsi in a manner rather reminiscent of a Redstart (*Phoenicurus phoenicurus*) or Chinchat (*Saxicola rubetra*). When it was standing on its feet, everyone was struck by its upright appearance and a curious, aggressive, startling action. The wings were remarkably short and rounded, showing an extremely long first and short second primary (plate 64b). Unfortunately no views were obtained in the field, for immediately after it was released it would disappear into the nearest low scrub and could only be flushed again with extreme difficulty. As it flew away on these occasions, however, the impression was of a smallish warbler with very short 'wren-like' wings and very dark uniform upper-parts. The following detailed description is taken from the observatory's record card:

Upper-parts: forehead, crown, nape and mantle uniform dark olive-green; rump slightly paler, having a greyish tinge; superciliary broad and off-white with a creamy yellow tinge; eye-stripe very broad and very dark olive-green; ear-coverts pale olive-grey with creamy yellow fleckings; all wing-coverts uniform olive-green with a slightly richer hue on upper tail-coverts; primaries, secondaries and tail-feathers dark brown with olive-green edgings to outer webs. *Under-parts:* throat silky-white with lemon tint; breast and belly rich lemon yellow and under tail-coverts warm buff-yellow. *Soft parts:* bill stumpy, short and broad at base; upper mandible dark horn with pale tip and cutting edge; lower mandible flesh horn; inside of mouth bright orange-yellow; eye large for *Phylloscopus* with iris bright dark brown; tarsus and upper side of toes pale horn, tinged pink; underside of toes yellow; numerous nasal and orbital poristles. *Measurements:* wing 59 mm., bill (from skull) 11.5 mm., width of bill at nostrils 4 mm., width at gape 7.5 mm. and depth at nostrils 3.75 mm., tarsus 23 mm., tail 48 mm.; weight at 14.10 hours on 3rd October 10.2 gm., at 15.10 hours on 7th 10.6 gm. *Wing-formula:* 5th primary longest, 4th and 6th 1 mm. shorter, 3rd 3 mm. shorter, 7th 5 mm. shorter, 8th 7 mm. shorter, 9th 7.5 mm. shorter, 10th 9.5 mm. shorter, 2nd 11 mm. shorter, 1st 10.5 mm. longer than primary-coverts; 3rd-6th emarginated. Outer tail-feathers 2 mm. shorter than central pair.

This appears to be the third record of Radde's Warbler in Britain and it appeared exactly a year to the very day after one at Cley, Norfolk, (October 1961 (*Brit. Birds*, 55: 166-168). It is interesting to note that another occurred at Ottenby Bird Station, Sweden, during a vast 'rush' of Robins (*Erithacus rubecula*) on 25th September 1962, and that the fourth British example was seen on the Isle of May, Fife, on 8th October 1962 (*Scottish Birds*, 2: 367-368).

P. L. BRITTON and R. E. SCOTT

Reviews

The House Sparrow. By D. Summers-Smith. Collins, London, 1963. xvi+269 pages; one colour and 32 black-and-white photographs; 36 text-figures. 25s.

The distinguished reputation of the New Naturalist series is greatly enhanced by this latest addition to its range of Special Volumes. In eleven years of patient observation and study Mr. Summers-Smith has devoted himself to the task of finding out what makes the House Sparrow probably the most successful and adaptable bird in the world. His thoroughness in unravelling the complexities of the daily life and habits of resident populations in two contrasting areas of England, as well as in examining the place of the species throughout the world and its relationship with man, is matched by a succinct and absorbing style which makes a most fascinating and readable book.

In the first of three sections the House Sparrow's life history is taken from the time the young birds leave the nest and followed through their adult and everyday life, pair formation, display and breeding. In a chapter on numbers and density it is estimated that there are nine and a half million House Sparrows in Great Britain. The second section deals with origins and distribution, and the third with ecology. The whole book is illustrated with many good photographs and the thirty-six text-figures include six drawings by P. J. Stead of display postures.

The underlying theme of the book is the success of the House Sparrow as an animal and its adaptation to a close relationship with man, which Mr. Summers-Smith sees as the key to that success. This idea is explored further in the final chapter where it is suggested that the House Sparrow may show something more than mere trial-and-error learning. Instances are described which indicate signs of intelligence and it seems that this may result in a real difference in levels of behaviour to give the species an advantage over others.

Those who hurry through their front gardens to get to the nearest sewage-farm or gravel-pit and ignore the cheerful chirrup from the guttering should read Mr. Summers-Smith's excellent book—they will have a new respect for the 'humble spadge'.

ROBERT GILLMOR

Oversigt over Danmarks Fugle. By Finn Salomonsen. Munksgaard, Copenhagen, 1963. 155 pages; one map. Danish text with English explanatory notes and glossary. Dkr.18.00.

The reviewer only once finds himself in disagreement with the author of this latest work on Danish ornithology. This is over the latter's description of his little volume—in the English key to the text—as a

'check-list'. Here Dr. Salomonsen's modesty surely does him less than justice. His 'oversigt', in fact, deserves to be known as a handbook, and an excellent handbook at that! It gives the status and distribution of every bird on the Danish list, both today and in the past—that is, since records were first kept.

Where a species is of mixed status, an attempt is made at assessing the proportions of the different types; it is estimated, for example, that 65% of the native Kestrels normally emigrate in the autumn. Wherever possible, Dr. Salomonsen names the countries in which birds banded in Denmark have been detected, as well as the sources of those banded elsewhere and recovered on passage or in winter by Danish observers. In the case of a local or interesting species, such as the Little Gull, the fortunes of each colony are followed from the time of its establishment. If an accidental visitant has occurred less than ten times, the author furnishes details of every authenticated record, and he also mentions any he considers unreliable. Throughout he is careful to distinguish between records confirmed by collecting and those based on observation or recognition of song. Species known to have been introduced into Denmark, or to have escaped from captivity, are relegated to the first of two appendices. In the other are listed those which, in the author's opinion, cannot be retained in the Danish avifauna.

Readers unfamiliar with the Danish language will find the well-compiled English explanatory notes and glossary all they require to follow the text. A very full index and a small-scale but quite adequate map are provided. The publishers' choice of a strong, glazed paper to be commended, and the stiff cover should withstand all but the roughest treatment.

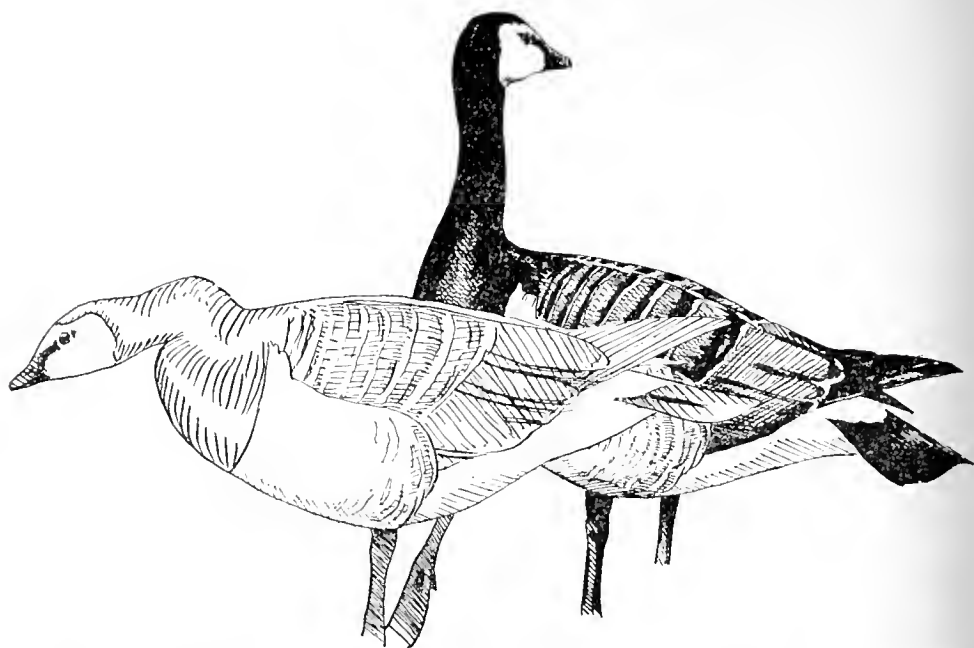
H. M. S. BLAIR

Letters

Colour-marked and leucistic Barnacle Geese

—I should be most grateful if anyone who sees Barnacle Geese (*Branta leucopsis*) in north-west Scotland, the Hebrides or Ireland during the next two winters would look for individuals wearing North American plastic neck-bands, which are of three different colours. These geese, and some others without neck-bands, also have coloured leg-bands which may be identified in favourable conditions; some are of a spiral type. It would also be interesting to hear of flocks which contain no neck-banded geese.

The description, whereabouts, and winter and spring movements of white or leucistic individuals is also needed. One was seen on the breeding grounds in 1963: all the black areas of the normal adult



Leucistic Barnacle Goose (*Branta leucopsis*) compared with normal individual Greenland, 1963 (sketch: Richard Waddingham)

plumage were very pale (and the white areas white), except that the stripe between the eye and bill was slightly darker than the neck (see sketch).

The above information is requested in connection with field work done in Jameson Land by the 1955 and 1961 Cambridge and 1963 British Expeditions to East Greenland. Observations should be sent to me at Fairacres, St. Leonards Hill, Windsor, Berkshire. Postage will be refunded.

RUSSELL MARRIS

A statistical test for defining a rarity

Sirs,—For years I have been an admirer of the state of ornithology in Great Britain, and intrigued with the high point to which field observation has been brought in your country—even unto the maintenance of an active ‘Rarities Committee’!

Of this I was reminded again upon reading Peter Davis’s review, in your excellent and informative journal (*Brit. Birds*, 56: 154-155), of the third (revised) edition of P. A. D. Hollom’s *The Popular Handbook of British Birds*, wherein complaint is registered about the apparent lack of system in defining a rarity: ‘The decision as to what is or is not a rarity, when based on the total number of occurrences, can be made only once and will never be so clear-cut again. The situation obtaining only ten years ago lacks relevance today.’

This cannot help but remind one of the excellent reasoning put forward years ago by Joseph Grinnell (*Auk*, 39: 373-380). Under the title of ‘The role of the “accidental”’ he argued convincingly that, if

one waits long enough almost anywhere, nearly every avian species will show up, although with vastly different frequencies of occurrence. Further, much of this, far from being 'accidental', represents a quite normal and potentially adaptive form of low-level, long-distance dispersion.

The problem, for such purposes as Mr. Hollom's and those of the compilers of the periodic standard lists of British birds, would seem to be one of making some sort of lasting distinction (albeit necessarily an arbitrary one) between species of such exceeding rarity as to approach the truly accidental and those—many of them North American and recently ably analysed in your journal by Dr. I. C. T. Nisbet (*Brit. Birds*, 52: 205-215; and 56: 197-217)—which, however rare, are virtually regular in the British Isles and therefore 'British birds' in a valid sense.

It appears to me that British ornithologists are now in an excellent position to begin applying statistical tests to this problem. While there must be many sophisticated formulae in use by wildlife managers and students of population dynamics, which could be adapted to its needs, perhaps at the simplest level all that is required is a standard and arbitrarily set level of frequency (F). This could be established as a criterion of rarity, F equalling the number of acceptable records (N), multiplied if necessary by a factor (let us guess at 100) sufficient to yield a figure easy to manipulate, and divided by time (t), a value to be set by experimentation. The value of F thus obtained would, of course, be nothing but a simple statement of the frequency of observation in Great Britain and would tell little about absolute abundance, but if further divided by a value (Ob) standing for the intensity of observation (and again multiplied if convenient by 100 or some other figure), then the value of F would represent an actual, if very rough, index of the true rate of occurrence and would be directly comparable, not only between species, but also from period to period for one species. The resulting formula (doubtless susceptible of much mathematical refinement) would be:

$$F = \frac{100 \left[\frac{(N_{100})}{t} \right]}{Ob}$$

(Of course, arriving at Ob is the rub, and this would call for much thought and study, but I believe that you now have adequate records to make intelligent and highly meaningful guesses at the increasing intensity of observation over the last few decades—if not for all areas and all species, certainly for many areas and many species. I should think it would make a most interesting exercise.

ROBERT M. MENGEL, *Editor, 'The Auk'*

News and comment

Edited by Raymond Cordero

Conference of European Ringing Centres.—A Conference of European Ringing Centres was held in Paris in October to discuss plans for the orientation of ringing towards certain selected species, the advisability of controlling or abandoning ringing of species which have already produced important results, any problems which could be studied by ringing but which have not yet been considered, and the possibility of intensifying ringing in the Mediterranean area and in Africa. On the more administrative side, the possibility of establishing a common European method of recording recoveries with a central card index was investigated. Other matters considered included greater uniformity of abbreviations, ring specifications, problems involving any international publication of results, colour ringing, control of mist nets and manufacture of rings. Robert Spencer, the B.T.O.'s Ringing Officer, attended the conference in his official capacity.

Monograph on Britain's wildfowl.—By the time this issue appears, a new monograph, *Wildfowl in Great Britain*, is expected to have been published. Prepared for the Nature Conservancy by the Wildfowl Trust and edited by G. L. Atkinson-Willes, the work presents, *inter alia*, a complete survey of the distribution and habitats of all ducks, geese and swans in England, Scotland and Wales. The survey is of particular interest in that it is the result of a tremendous co-ordinated effort by amateur and professional ornithologists over many years; it will be gratifying to the faithful wildfowl counters to see that their patient work has been incorporated in what promises to be a most valuable book. The volume runs to 364 pages and has many colour and other illustrations. It is available from H.M.S.O. at 45s. (47s. 6d. by post).

Bernard Tucker Medallists.—The Bernard Tucker Medals for 1963 were presented to Mrs. Ruth Barnes and Stanley Cramp at the annual dinner of the British Trust for Ornithology in London on 8th October. Mrs. Barnes has been the B.T.O.'s Regional Representative for Wiltshire for fifteen years and 'her help in organising Trust enquiries has been outstanding'. Stanley Cramp has served the Trust in many ways—on the Council, as Chairman of the Scientific Advisory Committee and of the Nest Records Sub-Committee, as Regional Representative for the large London area and, above all, in his capacity as Chairman of the Joint Committee of the B.T.O. and the R.S.P.B. on Toxic Chemicals.

Edinburgh Zoo's Night Heron colony.—The free-flying colony of Night Herons in the Edinburgh Zoological Park continues to maintain its numbers, according to the annual report for 1962 of the Royal Zoological Society of Scotland. 'Five nests were occupied during the year and five broods successfully reared . . . From young seen being fed by the parents, these broods should have added fourteen or fifteen birds to the colony strength, assessed at about forty herons.' Individuals will doubtless continue to fly away from time to time and provide headaches for national and local records committees.

Wildfowl Trust man in MAR surveys.—P. J. S. Olney, of the Wildfowl Trust, has gone to La Tour du Valat in the Camargue for six months to work on the MAR project for the preservation of the remaining wetlands of Europe and North Africa. He will also take part in surveys of wildfowl habitats in Spain, Morocco, Greece and Yugoslavia.

Postage stamps and conservation.—Although the Postmaster General has in recent years shown a more liberal approach to new designs for British postage stamps—for example, the National Nature Week issues—this country has a long way to go to match some of the efforts abroad. Japan has recently issued a stamp depicting the Japanese Crested Ibis (*Nipponia nippon*), and bearing the name of the International Council for Bird Preservation, as part of a nation-wide attempt to save the species. One bird was fledged this year, says the I.C.B.P., thus increasing the Japanese population to ten.

Recent reports

By I. J. Ferguson-Lees

(These are largely unchecked reports, not authenticated records)

This summary is mainly concerned with the thirty days from 11th September to 10th October, but it brings in some earlier reports received too late for inclusion in the previous one (*Brit. Birds*, 56:386-391) and also a few later observations which seem closely connected. Highlights of the period were a near wreck of Leach's Petrels, various other interesting sea-birds, unusual numbers of certain warblers and flycatchers on the south coast, and more American and eastern stragglers as well as a few from the south, but it was a rather quiet time in many areas.

THE GENERAL PICTURE

The numbers of northern waders, including **Curlew Sandpipers** (*Calidris testacea*) and **Little Stints** (*C. minuta*) were maintained throughout much of the period (*ibid.*, 56:386-387). In Scotland, for instance, it was the best autumn for Curlew Sandpipers for some years and they were widely seen during September, including such peaks as 34 at Grangemouth (Stirling) on the 15th and 13 at Troon (Ayr) the next day. **Spotted Redshanks** (*Tringa erythropus*), to take examples from one other species, were more numerous than usual in Ireland and the records included three on Tory Island (Co. Donegal) on 12th September (unusual in the extreme north-west) and a flock of nineteen in Co. Wexford at the end of the month (unusual anywhere in Ireland in such numbers).

The spectacular fall of night migrants at the end of August and beginning of September (56:389) was later paralleled (but not equalled in numbers) on the south coast, particularly the south-west, between 14th and 22nd September. For example, there were 'big arrivals' of **Tree Pipits** (*Anthus trivialis*), **Garden Warblers** (*Sylvia borin*), **Redstarts** (*Phoenicurus phoenicurus*) and **Pied and Spotted Flycatchers** (*Muscivora hypoleuca* and *striata*) on St. Agnes (Isles of Scilly) at this time. On Cape Clear Island (Co. Cork) a scattering of **Garden Warblers** was described as 'most unusual' and there were increases of **Redstarts** and both flycatchers. At Slapton (Devon) the two flycatchers, **Garden Warblers** and **Blackcaps** (*S. atricapilla*) were all 'far more numerous' than usual. Much further east, to give one other illustration, **Redstarts**, **Wheatears** (*Oenanthe oenanthe*), **Whinchats** (*Saxicola rubetra*) and **Whitethroats** (*Sylvia communis*) all reached a peak at Selsey Bill (Sussex) during this period. At various places, too, there were odd **Wrynecks** (*Jynx torquilla*), **Red-backed Shrikes** (*Lanius cristatus*) and **Wood Warblers** (*Phylloscopus sibilatrix*), as well as more uncommon species and rarities which will be mentioned in later sections. Incidentally, a normally very scarce warbler which has been unusually numerous throughout the autumn is the **Lesser Whitethroat** (*S. curruca*) and at Sandwich Bay (Kent)—admit-

tedly one of the places where this species is most frequently noted on passage—no less than 70 were trapped in August and September, including 20 on 10th September.

The winter visitors also became more conspicuous during the period. Following the early arrivals at the end of August and the beginning of September (56: 390), there were a few more reports of **Fieldfares** (*Turdus pilaris*) from about 11th September onwards and then one or two larger parties in eastern counties from the 26th. **Redwings** (*T. iliacus*) were not much in evidence, however, and only odd ones were reported in September; at Fair Isle the main passage began on 1st October and reached peaks of 100 on the 4th and 180 on the 7th, with small numbers of the Icelandie *coburni* after the 9th. Between about 7th and 20th September the first **Snow Buntings** (*Plectrophenax nivalis*), **Lapland Buntings** (*Calcarius lapponicus*), **Twites** (*Carduelis flavirostris*) and **Bramblings** (*Fringilla montifringilla*) began to appear in their east coast winter quarters, and numbers built up slowly through the rest of the month; by 11th October there were even about 50 Bramblings in Marley Wood (Oxfordshire). Large concentrations of **Redpolls** (*Carduelis flammea*), including a flock of 500 at Tring (Hertfordshire), were another striking feature of mid-October. **Pink-footed Geese** (*Anser brachyrhynchus*) were reported in various places in Scotland on 26th September and were followed by much larger numbers on the 27th and 28th when the first ones also arrived in East Anglia. **Whooper Swans** (*Cygnus cygnus*) similarly started to appear in Scotland between 28th September and 1st October. There were a number of early reports of **Great Grey Shrikes** (*Lanius excubitor*), including ones at Holme and Winterton (Norfolk) on 20th September, and also of **Rough-legged Buzzards** (*Buteo lagopus*). Among the latter were two in Argyll on 9th September, one in Dumbartonshire on the 15th and one in Devon on the 17th; observations in the first half of October included single birds on the Calf of Man and on Cape Clear Island (Co. Cork). **Glaucous Gulls** (*Larus hyperboreus*) reached the south coast of England early, there being an adult at Warsash (Hampshire) on 28th September and another on the Exe estuary (Devon) on 13th October.

By contrast, there were a number of reports of late nests, particularly of **Yellowhammers** (*Emberiza citrinella*) which were reported with both eggs and young in several areas from Huntingdonshire to Northumberland in the first three weeks of September.

LEACH'S AND STORM PETRELS

The last big wreck of **Leach's Petrels** (*Oceanodroma leucorhoa*) was as long ago as October and November 1952 (47: 137-163). There was considerable interest, therefore, when numbers of these birds were noted close inshore off north-western coasts of England (and to a far lesser extent elsewhere) in late September and early October. No real wreck resulted, fortunately, but the total of observations was quite significant.

The first relevant reports of Leach's Petrels came on 17th September when two were seen north of Skegness (Lincolnshire) and one was found dying on Unst (Shetland); on the 18th there was one at Cley (Norfolk) and on the 24th one on Breydon Water (Norfolk). Then on 27th September 45 were recorded only 50 to 100 yards offshore from the Calf of Man. The next day some were seen off Wallasey (Cheshire) and over 200 around Hilbre Island in the Dee Estuary. On the 29th 129 were counted from the Calf of Man. On the 30th over 70 were noted in an hour at Wallasey and ten were seen at Blackpool (Lancashire); at both places some of the birds were wind-driven to the very line of the shore and even over. On 2nd October, in Lancashire, there were three at Lytham, two at Rossall, and one over Longton Marsh on the Ribble. Meanwhile, there had been many more at Hilbre and a few more off the Calf of Man, so that by 3rd October these two areas had had

RECENT REPORTS

totals of 500-600 and 180 respectively. Most of those off the Calf were seen just before dusk and all were moving south or south-west, which suggests that they had entered the Irish Sea through the North Channel. One or two birds crashed in a flying state at Rossall and Preston (Lancashire), but not many were found dead and there were few inland records. In Yorkshire, however, one was picked up dead at Eggleston, another was found alive near Masham and a third was seen near Cherry Robb, east of Hull, all on 29th September; one was also picked up alive in Huddersfield on the 30th. In Norfolk there was another between Cley and Blakeney Point on 27th September. The only other report was a completely isolated one from near Brockbridge (Hampshire) where, on 27th September, a single Leach's Petrel was seen flying at a height of about 15 feet across open country and low trees in a SSW direction parallel to the River Test; it passed within twenty feet of the observer. The last one was recorded in the Hilbre area on 9th October.

Very few **Storm Petrels** (*Hydrobates pelagicus*) seem to have been involved in this movement—at Hilbre, for example, only two were seen—but one interesting occurrence was a bird picked up alive but exhausted in the district of Cwmbran (Monmouthshire) on 14th October; it died during the night.

OTHER SEA-BIRDS

The most interesting identification in this category was that of a **Black-browed Albatross** (*Diomedea melanophrys*) at a range of 300 yards off Cape Clear Island (Co. Cork) on 24th September. Another albatross—or perhaps the same bird—was rather less well seen off Malin Head (Co. Donegal) two days later. At this same time Cape Clear also had several more **Cory's Shearwaters** (*Procellaria diomedea*) between 29th and 30th September (cf. 56: 302-303 and 388) and others were noted between the Isles of Scilly and the Cornish mainland on 28th September and 11th October. A **frigate-bird** (*Fregata* sp.) was identified off the Calf of Man on 28th September. Other reports of pelagic species at this time included an early **Little Auk** (*Plautus leucurus*) on the sea at Walberswick (Suffolk) on 23rd September and rather more **Long-billed Skuas** (*Stercorarius longicaudus*) than usual. Among the latter were as many as six at Cley (Norfolk) on 25th September and single ones at three localities on the west side of Britain—Hilbre Island (Cheshire), Bardsey (Caernarvonshire) and St. Agnes (Isles of Scilly)—where this species is comparatively seldom recorded. **Pomarine Skuas** (*S. pomarinus*) were also noted in several east coast counties including 15 adults at Cley, Norfolk, on 14th October), as well as in Sussex, Co. Cork, Co. Donegal and the Isle of Man. **Arctic Skuas** (*S. parasiticus*) appeared for the first time inland in Cambridgeshire on 6th and 27th September, the first over Cambridge itself and the second at Milton. In this connection, following the report of a **Manx Shearwater** (*Procellaria puffinus*) inland in Essex in September (56: 388), it is interesting to note that there were three others in Leicestershire at this unusual time of year—on the 9th, 14th and 28th.

Two other species which one associates with late September and October are the **Grey Phalarope** (*Phalaropus fulicarius*) and **Sabine's Gull** (*Xema sabini*), but this year both have been rather scarcer. **Phalaropes**, mostly Grey, appeared in various western areas from the Isles of Scilly and southern Ireland to Somerset, Wiltshire, Caernarvon and Cheshire and there were odd ones round to Norfolk, but the largest total and there were very few inland. **Sabine's Gulls** were reported only from Cape Clear Island, Hilbre Island and Spurn (Yorkshire). There were also fewer **Mediterranean Black-headed Gulls** (*Larus melanocephalus*), all between Dungeness (Kent) and St. Ives (Cornwall) except the one at Hartlepool (Co. Durham). **Little Gulls** (*L. minutus*) were seen on both St. Agnes and Tresco (Isles of Scilly) in mid-September, but these were the only ones away from eastern and south-eastern counties.

BRITISH BIRDS

AMERICAN VAGRANTS

In the last summary it was stated that only five **Pectoral Sandpipers** (*Calidris melanotos*) had been reported by 10th September. To those should now be added a second in Anglesey and also one in Cornwall, while the following four weeks produced a further twelve in the Isles of Scilly (three), Cornwall (two), Devon (two), Monmouthshire, Glamorgan and Cos. Wexford, Cork and Donegal. The autumn total thus appears to be nineteen. The latest ones were the two in Devon which were seen on the Axe estuary on 12th October. It is perhaps of interest to add that a Pectoral Sandpiper appeared at Rabat in Morocco, on the Atlantic coast about 275 miles south-west of Tangier on 22nd and 23rd September, at roughly the same time as there was a peak in the September records in Britain.

Six more species of American waders and one passerine were reported in the period. Easily the most numerous of these were **dowitchers** (*Limnodromus* sp.), with a total of ten. The first was at Fremington Quay on the south side of the Taw Estuary (Devon) on 21st September, but the peak came a few days later when three (afterwards five) appeared in Co. Galway, one in Rosecommon and one at Wisbech (Lincoln/Norfolk border). All these stayed into October—the Wisbech bird from 28th September to at least 6th October, for example—and by then two more had been seen, one at The Gins (Hampshire) on 5th October and one at Freckleton (Lancashire) from the 6th to the 10th. Freckleton also produced two other American waders at this time, a **Baird's Sandpiper** (*C. bairdii*) from 5th to 11th October and a **White-rumped Sandpiper** (*C. fuscicollis*) on the 12th and 13th. Other White-rumped Sandpipers, bringing the autumn total to four, had earlier been seen at Southport (Lancashire) on 28th September and at Whittledeane Reservoir (Northumberland) on the 29th and 30th. The remaining three species of waders were a **Lesser Golden Plover** (*Charadrius dominicus*), still in summer plumage, in Co. Kerry from 15th to at least 23rd September, a **Wilson's Phalarope** (*Phalaropus tricolor*) at Teesmouth (Co. Durham) on 12th and 13th October, and a series of **Buff-breasted Sandpipers** (*Trygites subruficollis*)—another on Tory Island (Co. Donegal) on 13th September (*cf.* 56: 387), one on St. Mary's (Isles of Scilly) on the 18th and two more on the 28th and 29th, and two separate birds in Northern Ireland on the 18th and 25th. With the records mentioned in the previous summary (56: 387) we now have an autumn total of some 47 American waders of eleven species.

The only American passerine was a first-winter male **Baltimore Oriole** (*Icterus galbula*), the third of this species in Britain in six years, which was trapped on the Calf of Man on 10th October. It was a remarkably heavy bird, weighing 40.4 gm., which is more than most immature Baltimore Orioles in America and this suggests that it may have come over some days earlier.

SCANDINAVIAN, EAST EUROPEAN AND ASIATIC SPECIES

One of the most interesting eastern birds was a **Sociable Plover** (*Chettusia gregaria*), only the eighth to be recorded in Britain and Ireland, which appeared at Braunton (Devon) on 23rd September and was still present in late October. Two **Great Snipe** (*Gallinago media*) were seen at Wisbech sewage-farm (Lincoln/Norfolk border) on 12th and 13th September, but **Temminck's Stints** (*Calidris temminckii*) continued to be scarce and ones in Co. Durham and Co. Kerry were the only additions to the five reported in the previous summary (56: 387). Single **White-winged Black Terns** (*Chlidonias leucopterus*) were seen at the mouth of the River Nene (Lincolnshire) from 8th to 14th September and at Huttoft (Lincolnshire) on the 28th, while among the more far-flung records of **Black Terns** (*Ch. niger*) was one at Stornoway (Outer Hebrides) on the 24th. A male **Red-footed Falcon** (*Falco vespertinus*) appeared at Grantham sewage-farm (Lincolnshire) on 8th September: this is a species which

now seems to turn up every spring but which is generally much scarcer in autumn (only three records during 1958-62 compared with 28 spring ones for the same period).

Among passerines, a belated report which must be mentioned first as so few have been recorded in Britain in recent years concerned a **Nutcracker** (*Nucifraga caryocatactes*) trapped at Northfleet (Kent) on 26th August. All other observations were of species which are annual vagrants. Fair Isle (Shetland) had its second **Yellow-breasted Bunting** (*Emberiza aureola*) of the autumn from 13th to 16th September (cf. 56: 390) and another appeared on the Isle of May (Fife) on the 26th; this bird is certainly occurring more frequently in the British Isles as it increases in Finland. Single **Richard's Pipits** (*Anthus novaeseelandiae*) were seen on St. Agnes (Isles of Scilly) on 20th September, at Sandwich Bay (Kent) on 29th September and 10th October, and at Fair Isle on 7th, 11th and 13th October. Approximately the same three areas produced all the **Yellow-browed Warblers** (*Phylloscopus inornatus*) that had been reported by 12th October—Fair Isle on 1st, 2nd and 7th October, Dungeness (Kent) on the 9th and 10th, and St. Agnes on the 10th. To the reports of **Scarlet Grosbeaks** (*Carpodacus erythrinus*) in early September (56: 390) should be added one at Fife Ness (Fife) from 2nd to 11th September. The most remarkable thing about this bird was the fact that it was an adult male in the rosy plumage which is very seldom seen in Britain. There was then a gap before one was trapped on Bardsey (Caernarvonshire) on 20th September and another appeared on Auskerry (Orkney) on the 23rd: these were both females or immatures.

Turning now to less rare passerines, there were a few more **Icterine Warblers** (*Hippolais icterina*) in the second and third weeks of September—at Gibraltar Point (Lincolnshire) on the 11th, on Bardsey on the 15th and 17th, and on Cape Clear Island (Co. Cork) on the 22nd—but the autumn total is still only thirteen or fourteen (see also Melodious Warbler under SOUTH EUROPEAN SPECIES). Apart from one in Norfolk at the end of August (56: 389-390), no **Red-breasted Flycatchers** (*Muscivora parva*) were reported until 11th September, but between then and 10th October about 24 were seen or trapped in Shetland, Fife, Northumberland, Yorkshire, Norfolk, Kent, Isles of Scilly, Caernarvonshire and Co. Cork. **Barred Warblers** (*Sylvia nisoria*) are earlier migrants and only about 11 more were reported in the period (cf. 56: 389): some of these were on the east coast between Shetland and Norfolk (including one on Fair Isle as late as 3rd and 4th October), but they included ones on Tory Island (Donegal), Bardsey, Skokholm (Pembrokeshire) and St. Agnes in the third week of September. **Bluethroats** (*Cyanosylvia svecica*) continued to be scarce (cf. 56: 389) and the distribution was peculiar as, apart from one at Cley (Norfolk) on 10th September and two or three on Fair Isle between the 19th and 28th, there was none on the east coast, the remaining reports coming from St. Agnes (two), Beddington (Surrey) and The Crumbles (Sussex), the last trapped as late as 16th October. As one of those on St. Agnes was of the **White-spotted** form (*C.s. cyanecula*), however, it is possible that some of these birds were of southern rather than eastern origin. Only another five **Ortolan Buntings** (*Emberiza hortulana*) were reported (cf. 56: 390)—in Norfolk, Kent and Scilly in September and on Fair Isle and Walney Island (Lancashire) as late as 10th October. Finally, there were **Red-headed Buntings** (*E. bruniceps*), doubtless of not so distant origin, at Minsmere on 12th September, on Bardsey on the 13th and 14th and on Skokholm on the 15th.

SOUTH EUROPEAN SPECIES

Fleming's Flamingo (*Phoenicopterus ruber*) on the south coast between Dorset and Sussex, first reported in the latter county at Worthing and Brighton in the second week of October, appeared from the description to be of the South American form *chilensis* and was doubtless an escape from captivity. It does not seem to be generally

realised that in the past three years there have frequently been one or more escaped Flamingos wandering at large somewhere on the east or south coasts of England and at least four different individuals have been involved. There is, however, no reason to suspect that the **Little Egret** (*Egretta garzetta*) seen at Newtown (Isle of Wight) on 25th and 26th September was anything but a wild bird. A **Kentish Plover** (*Charadrius alexandrinus*) appeared at Ynys Las (Cardiganshire) on 30th September. It continued to be a poor autumn for **Hoopoes** (*Upupa epops*) though there were several reports from the south coast, one in Norfolk and two as far north as Lincolnshire. To the **Alpine Swifts** (*Apus melba*) in the previous summary (56: 389) should be added one at Lowestoft (Suffolk) on 6th September.

Among the most striking passerine records of the autumn were two **Rock Buntings** (*E. cia*), one of them trapped, at Sandwich Bay (Kent) on 2nd October; there are now only five other accepted British records of this species. An **Olivaceous Warbler** (*Hippolais pallida*) was identified on St. Agnes in mid-September: this is the third successive year that the species has appeared there and, if this latest observation is accepted, the island can now claim half the total British records. Only four or five more **Melodious Warblers** (*H. polyglotta*)—at Cape Clear Island (Co. Cork) (two or three), St. Catherine's Point (Isle of Wight) and Longton Marsh (Lancashire)—can be added to those mentioned last month (56: 390) and, although one or two other *Hippolais* on the south coast and in the Irish Sea are likely to have been this species, there have certainly been many less than in the last year or two; one rather late individual trapped on Cape Clear Island on 2nd October was still present ten days later. Another interesting observation was a **Woodchat Shrike** (*Lanius senator*) at Spurn (Yorkshire) from 20th September to at least 6th October—interesting because this species has suddenly become so much rarer since 1960 with only two to four records annually compared with anything up to 20 or more in each of the previous few years.

Some species are much more difficult to classify as either southern or eastern and any choice is arbitrary. A **Short-toed Lark** (*Calandrella cinerea*) on Fair Isle (Shetland) from 25th September to 10th October was of the southern *brachydactyla* type rather than the eastern *longipennis*. The only **Tawny Pipit** (*Anthus campestris*) reported since 12th September was one on Bardsey (Caernarvonshire) on 20th and 21st September. **Aquatic Warblers** (*Acrocephalus paludicola*) appeared on Cape Clear Island, Treseo (Isles of Scilly), West Huntspill (Somerset) and Dungeness (Kent) in the third week of September, bringing the autumn total to six or seven. Finally, **Spotted Crakes** (*Porzana porzana*) were reported during this period from Kent, Berkshire, Suffolk, Northampton, Leicester, Cheshire and Lancashire, and this autumn there certainly seem to have been more observations than usual in a number of widely scattered areas (*cf.* 56: 389).

Effects of the severe winter of 1962-63

In connection with the proposed analysis of the effects on birds of last winter's severe weather (see *Brit. Birds*, 56: 228-229), questionnaires were sent to some 600 observers in many parts of Britain and Ireland. A large number of these have long since been returned and they contain much useful data, but the organisers report that others are still trickling in slowly and it would be a great help if any outstanding questionnaires could now be completed and sent either to H. M. Dobinson, The Old Barn, Sonning Common, Nr. Reading, Berkshire, or to A. J. Richards, 120a Hamilton Road, Reading, Berkshire, *within seven days of the arrival of this issue.*



*Recently published books
available from*

WITHERBY'S BOOKSHOP

The Rocks Remain by Gavin Maxwell. A sequel to the author's famous *Ring of Bright Water*. 24 plates of photographs 30s.

Bird Migration by Robert Spencer. A comprehensive introduction to the subject. 9 plates of photographs and 13 figures. 12s. 6d.

The Birds of the British Isles, Vol. XII, by D. A. Bannerman and G. E. Lodge. 63s.

Birds of the Atlantic Islands, Vol. I, by D. A. Bannerman. 84s.

The Wonders of Wildlife in Europe by Roedelberger and Phillips. Successor to *The Wonderful World of Nature*. 42s.

The Senses of Animals and Men by Lorus J. Milne and Margery Milne. 25s.

A Brush with Animals by R. Thompson. Gerald Durrell's famous artist. 15s.

Birdwatching by E. A. R. Ennion. 13s. 6d.

A Million Years of Man by Richard Carrington. A unique account of man's biological and cultural development. 36s.

Collins Guide to Mushrooms and Toadstools by Morten Lange and F. Bayard Hora. 96 colour plates. 30s.

Collins Field Guide to the Birds of East and Central Africa by J. G. Williams. 45s.

The Birds of Hampshire and the Isle of Wight by Edwin Cohen, M.B.O.U. 16 plates of photographs, and line maps and drawings in the 270 pages of text. 30s.

While some Trees Stand by Garth Christian. Wildlife in our vanishing countryside. 21s.

As the Falcon her Bells by Phillip Glasier. 25s.

Please address all enquiries to

**The Manager
Witherby's Bookshop
61/62 Watling Street
London, E.C.4
or telephone City 5405**

ORDERS BY POST PROMPTLY DISPATCHED
(only 1s. extra for postage, whether for one or more volumes)

INSTRUCTIONS TO YOUNG ORNITHOLOGISTS

THE TIMES LITERARY SUPPLEMENT said of this series—*"a work which for style presentation and freshness of approach makes many a bird book written for grown-ups seem sad stuff"*

I BIRD BIOLOGY

by J. D. Macdonald

The purpose of this book is to instruct naturalists, young in years or young in the study of birds, on some of the main features of the whole of the life of birds, such as adaptations to habitat, feather structure, internal anatomy, and variations

Illustrated 12/6 net

"A useful and competent book"—TIMES EDUCATIONAL SUPPLEMENT

II BIRD BEHAVIOUR

by Derek Goodwin

This book elaborates upon the subjects introduced in *Bird Biology*, describing how birds court, nest, rear their young, feed, keep clean, fight, and escape their enemies

Illustrated 12/6 net

"An eminently readable and highly competent introduction to bird behaviour"
—BRITISH BIRDS

III BIRD MIGRATION

by Robert Spencer

This new book provides a comprehensive introduction to the subject of bird migration, including the nature of migration, types of movement, preparation and departure, finding the way, bird ringing, and observatories

Illustrated 12/6 net

"This book continues the series on ornithology, stamped with the authority of experts"—ROYAL NAVAL BIRD WATCHING SOCIETY

IV SEA-BIRDS

by Mary E. Gillham

The author's extensive experience of bird watching in many parts of the world, her genuine enthusiasm for the subject, and her numerous drawings and photographs make this book very readable as well as being a sound introduction to the study of sea birds, under such headings as classification, distribution, flight, swimming, feeding, fishing, habitats, and breeding

Illustrated 15/- net

"To anyone interested in birds I would say don't miss this book"—CHILDREN'S NEWSPAPER

MUSEUM PRESS

26, Old Brompton Road
London SW7

British Birds

Principal Contents

The moult migration of the Shelduck to Bridgwater Bay, Somerset
S. K. Eltringham and Hugh Boyd

Observations on the Black-winged Kite in Portugal
with preliminary notes on its status

M. D. England
(with eight plates)

The Pheasant in Wales
Colin Matheson

Obituary: Oliver Pike, Hon. F.R.P.S. (1877-1963)

News and comment

Notes

Reviews

Letters

Three
Shillings



December
1963

- 2 DEC 1963

PL 107 100

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Editors Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

Photographic Editor
Eric Hosking
20 Crouch Hall Road
London, N.8

'News and Comment'
Raymond Cordero
Rohan Lodge, Wadhurst Park
Wadhurst, Sussex

Rarities Committee
D. D. Harber
1 Gorringe Road
Eastbourne, Sussex

Contents of Volume 56, Number 12, December 1963

	<i>Page</i>
The moult migration of the Shelduck to Bridgwater Bay, Somerset. By Dr. S. K. Eltringham and Hugh Boyd	433
Observations on the Black-winged Kite in Portugal with preliminary notes on its status. By M. D. England. Photographs by M. D. England and A. N. H. Peach (plates 65-72)	444
The Pheasant in Wales. By Colin Matheson	452
Obituary: Oliver Pike, Hon. F.R.P.S. (1877-1963)	456
Notes:—	
Peregrines rearing young Kestrels (Dr. D. A. Ratcliffe)	457
Inland passage of Oystercatchers in central Wales (John Griffiths and Gwilym Griffiths)	460
Blue Tit lining and laying in nest of Blackbird (F. E. Stephenson) ..	461
Blackbirds fostering nestling Bullfinches (Mr. and Mrs. John Weller) ..	461
Another case of fungus disease affecting a Robin (J. W. Macdonald) ..	462
Red-eyed Vireos and other American birds in the Isles of Scilly in early October 1962 (D. I. M. Wallace)	462
Baltimore Oriole in Sussex (D. D. Harber)	464
Immature Goldfinch trapped by seed head of ragwort (B. G. Hamblin) ..	466
Reviews:—	
<i>A Mosaic of Islands</i> . By Kenneth Williamson and J. Morton Boyd. Reviewed by George Waterston	466
<i>Instructions to Young Ornithologists. III. Bird Migration</i> . By Robert Spencer. Reviewed by J. L. F. Parslow	467
<i>Birdwatching</i> . By E. A. R. Ennion. Reviewed by Raymond Cordero ..	468
Letters:—	
Further remarks on discoloration in House Sparrows (Prof. Richard F. Johnston and Dr. Robert K. Selander)	469
'Industrial' discoloration of House Sparrows (Ian Woodward)	470
News and comment. Edited by Raymond Cordero	471

Annual subscription £2 (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 61/62 Watling Street, London, E.C.4

British Birds

Vol. 56 No. 12

DECEMBER 1963



The moult migration of the Shelduck to Bridgwater Bay, Somerset

By *S. K. Eltringham and Hugh Boyd*

The Wildfowl Trust, Slimbridge, Gloucestershire

THE ANNUAL MOULT of the Shelduck (*Tadorna tadorna*) results in the simultaneous loss of all the flight feathers, but before this happens the great majority of the north European population migrates to a small area in the Heligoland Bight. The existence of this migration was first suggested by Hoogerheide and Kraak (1942), and was confirmed by Coombes (1949, 1950). Details of the moulting grounds and the numbers in moult have been given by Goethe (1961a, b). Most British Shelduck depart abruptly in July, but the return is more gradual and may take up to six months to complete.

In addition to the German moulting grounds, there are three subsidiary areas where moulting Shelduck are regularly found. One of these, the island of Römö off the south-west coast of Denmark, harbours only a few hundred, though the second, near Breskens on the West Schelde estuary in south-west Holland, is more important. The third moulting area, which forms the subject of this paper, is found in Bridgwater Bay, Somerset.

The first suggestion that Bridgwater Bay contained moulting Shelduck was made by Perrett (1951) who observed large numbers of these birds in the Bay throughout the summer of 1950. Subsequent investigation from a boat in July 1951 proved that many of them were unable to fly (Perrett 1953). The total number was said to be in the region of 5,000, of which 90% were estimated to be in moult. The moulting period was given as 20th July-14th August, with possibly a further influx in August.

Apart from a few incomplete counts, no further studies of the Shelduck in Bridgwater Bay were made until the present investigation was started in 1959. The preliminary information sought was the

size of the population, the proportion in moult and the chronology of the major movements to and from the Bay. In order to examine possible inter-relationships with other local Shelduck it was necessary to take the population of the upper reaches of the Bristol Channel into consideration. An adequate cover of these coasts is not easy because of the lack of approach roads and vantage points, while the time factor precludes regular simultaneous counts on the opposite shores of this large estuary without a large army of enthusiastic helpers. In Bridgwater Bay itself, the Shelduck are difficult to count, even at high tide, because of the large area involved and the tendency for moulting birds to keep well out to sea—sometimes as much as two miles from the shore. At low tide, the large areas of exposed mud make it almost impossible to approach them. The use of a boat is not very satisfactory, for, apart from the low viewpoint, the Shelduck are thereby driven ahead so that counted and uncounted birds become irremediably mixed. It is a formidable task, therefore, to undertake regular counts of Shelduck in the Bristol Channel, but most of the difficulties are resolved if the observations are made from the air. Consequently, the counts made during the present investigation were carried out from a low-flying light aircraft. Observations have extended over two seasons. A preliminary report of the 1959 surveys was made by Eltringham and Boyd (1960), but the work in 1960 added importantly to the first year's results.

METHODS

During 1959 and 1960, 47 surveys were flown over Bridgwater Bay and the Bristol Channel/Severn Estuary area north-east of a line joining Hinckley Point (Somerset) and Sully Island (Glamorgan). Shelduck occur more or less continuously within this area, but they are not found in any numbers to the west of these two points until the Burry Inlet is reached on the Welsh shore and Porlock Bay on the English side. A map of the area covered is given in fig. 1. The average time taken to fly a survey was $2\frac{1}{2}$ hours, of which about 30 minutes were spent over Bridgwater Bay (defined as the area between Hinckley Point and Brean Down). The surveys were timed to coincide with high tide in Bridgwater Bay, as Shelduck are more easily seen from the air than when they are scattered over the mud at low tide. Most of the flights were made from Staverton Aerodrome, near Gloucester, using an Auster 5D which is a high wing monoplane affording an excellent downward view. This aircraft was not available in August 1959 and October 1960, and during these months the surveys were made from Bristol Airport in a second Auster. As this was of more limited endurance, the complete cover could not be flown, although the Bridgwater Bay survey was always completed.

MOULT MIGRATION OF SHELDUCK TO BRIDGWATER BAY

The survey team consisted of two observers, one of whom was the pilot, sitting side by side and looking out of either side of the aircraft. The surveys of the coasts were flown about 300 feet offshore, at an altitude of about 100 feet and an airspeed of 90 m.p.h. Shelduck could be recognised and counted up to half a mile from the aeroplane on the seaward side, and diversions were made to inspect unidentified flocks further out than this if they were believed to be Shelduck. A modified technique was required to count the more concentrated population in Bridgwater Bay. The height was increased to between 200 and 400 feet and the airspeed reduced to 70 m.p.h., while a series

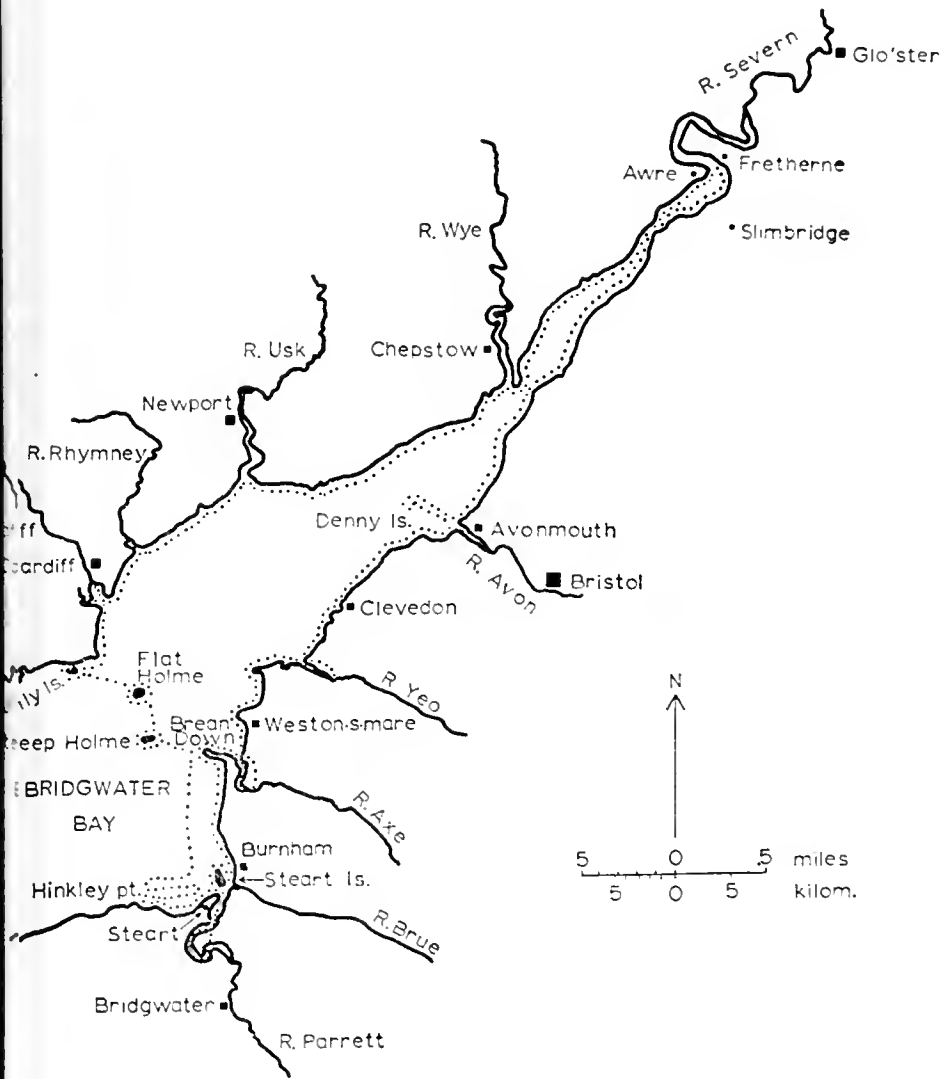


Fig. 1. Map of the Severn Estuary and the upper reaches of the Bristol Channel. The dotted line shows the aerial survey route followed for counting Shelduck (*Tadorna tadorna*), beginning at Awre and terminating near Frertherne

of transects was flown across the sea at various distances from the shore. In these conditions it was possible to treat the larger flocks as units and more time was available for counting them. The birds were counted by means of a hand tally either individually or in units of 10 or 50, according to the size of the flock. Some photographs were taken with a K20 aerial camera and Kodak super XX aerofilm, but, because of the wide dispersal of the Shelduck, a complete cover was almost impossible to achieve with a hand-held camera. Many of the photographs taken were of limited value because of sun glare, heat haze or lack of contrast between bird and background. Consequently, a photographic count could not be relied upon and visual counts were always made.

The moulting birds were identified by their reaction to the aircraft as it passed over. Those able to fly did so, while those incapable of flight, and therefore in full wing-moult, remained on the water. It is a curious but useful fact that moulting Shelduck will not dive when disturbed by an aircraft although they invariably do so when approached by a boat. During 1959, the proportion of moulting birds was estimated from a sample low run over each large flock. A more refined technique was employed in 1960, as it was found that birds not in moult would fly when the aircraft passed over at normal survey height. A complete count of the moulting Shelduck remaining on the water could be made from this height.

COUNTS IN BRIDGWATER BAY

The total number of Shelduck and the number of moulting birds seen in Bridgwater Bay on each survey are shown in fig. 2. At first sight, the fluctuations in these results appear confusing, but it is believed that a pattern is discernible in them. It seems that a simple movement to and from the Bay does not occur. The 1959 counts show three principal peaks falling early in July, August and September. In the 1960 data, the peak in July is fairly clear-cut, but the August one, if present, has tended to merge with the September maximum. The September peak is the highest in both years, while those in July and August are of comparable size. A fourth maximum, in late October, was registered in 1960, but not in 1959 when it may have been masked by birds remaining from the September concentrations.

The numbers of flightless Shelduck recorded in 1959 were a little erratic due, no doubt, to the crude counting technique of that year, but comparison with the 1960 figure suggests that there were three main groups of moulting birds (in August, September and October respectively) coinciding with the peaks in total numbers. No moulting Shelduck were seen at the time of the July concentrations, and it seems that these birds moved off without moulting.

MOULT MIGRATION OF SHELDUCK TO BRIDGWATER BAY

With the exception of the September maximum the timing of the peaks tended to be somewhat later in 1960 than in 1959, while the numbers of birds involved were about 50% less. Thus the peak totals of ducks present in each of the four months from July to October were (to the nearest 100) 2,500, 2,400, 3,400 and 1,500 respectively in 1959, and 1,600, 1,600, 2,000 and 1,200 in 1960. The maximum numbers of moulting birds seen in the two years were (1959 total list): August, 1,900 and 1,200; September, 2,900 and 1,800; and October, 800 and 500.

The spring population in Bridgwater Bay is not more than a few hundred birds. The curious decline in numbers during late April and May of 1960 was probably due to the temporary absence of some mature pairs, and particularly females, on nesting duties. The phenomenon was not apparent in 1959, but there was about a month's gap in the observations and a decline might have occurred during this period.

The regions of Bridgwater Bay most favoured by the Shelduck have been assessed from data collected throughout the year. About 94% of the birds were seen west of the mouth of the River Parrett, the area between Hinckley Point and Steart village being the most frequented of all. Most of the moulting Shelduck were found there too.

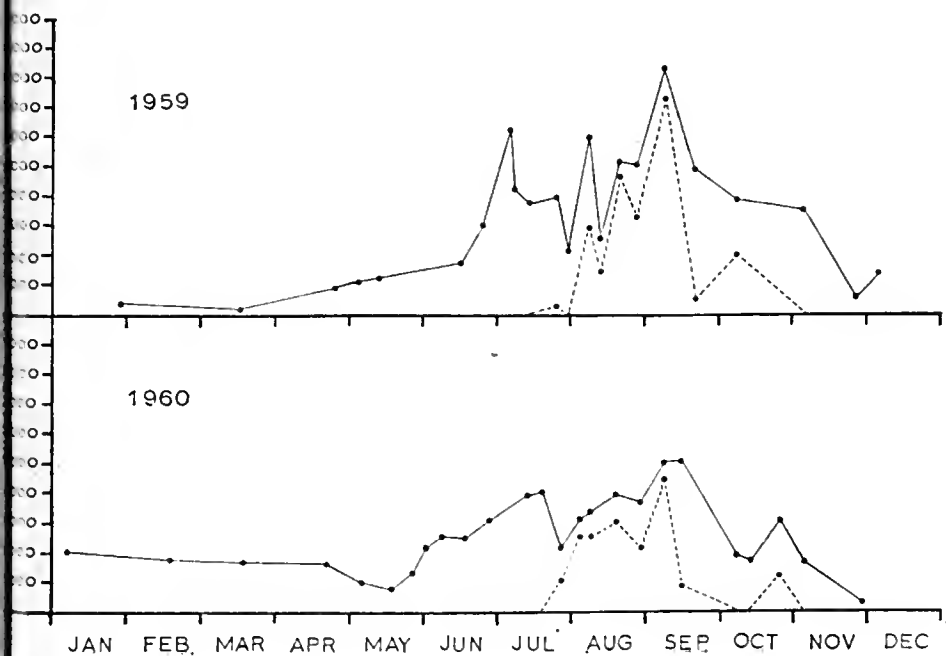


Fig. 2. Numbers of Shelduck (*Tadorna tadorna*) counted in Bridgwater Bay during the aerial surveys. The continuous line shows the total numbers, and the broken line the numbers in moult

BRITISH BIRDS

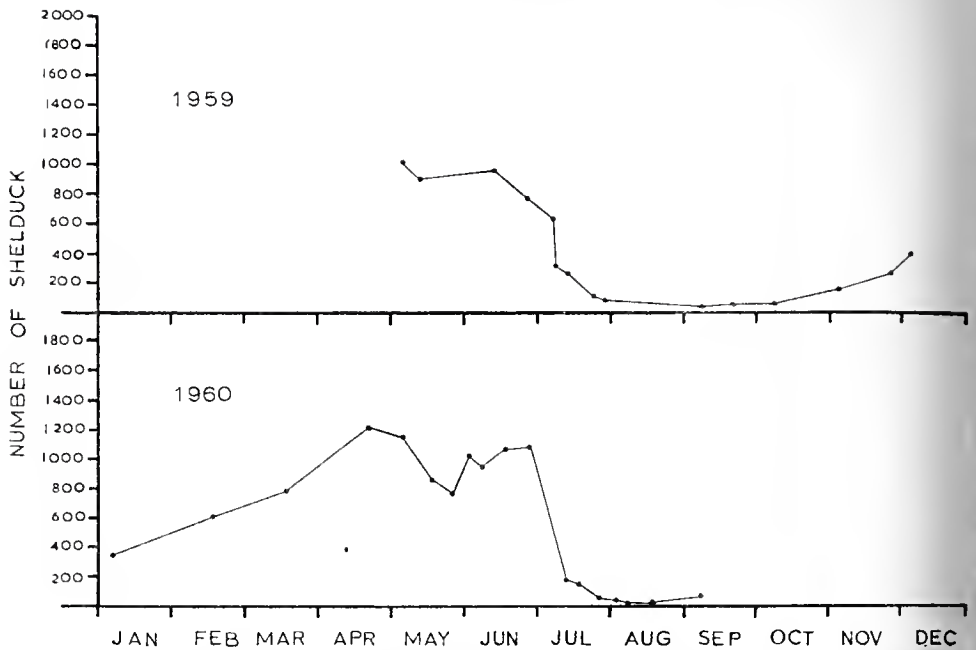


FIG. 3. Numbers of Shelduck (*Tadorna tadorna*) counted in the Bristol Channel and Severn Estuary during the aerial surveys. These totals exclude the records for Bridgewater Bay

COUNTS IN THE BRISTOL CHANNEL

The numbers of Shelduck recorded in the survey area outside Bridgewater Bay are shown in fig. 3. Numbers were at their maximum in April when between 1,000 and 1,200 birds were counted. The 1960 'breeding dip' in May, observed in Bridgewater Bay, is also apparent here. It was most marked in the data for the northern shore, suggesting that this was the more important breeding area. The Shelduck began to leave their breeding grounds, presumably to migrate, in June, the bulk of the population departing in July. The departure was particularly abrupt in 1960, when numbers fell from 1,045 on 27th June to 175 on 12th July. In 1959 the decline, which began between 15th and 26th June, was more gradual and extended over about four weeks. Very few Shelduck were seen in the Bristol Channel during August, September or October, but numbers had begun to increase by November. Throughout the winter the population showed a gradual but steady rise to the April maximum.

COMPARISONS BETWEEN GROUND AND AERIAL COUNTS

A check on the accuracy of the aerial counts is provided in a few localities by data supplied under the National Wildfowl Count scheme. Few of these ground counts coincided with the aerial surveys, but a list of ground and air totals compiled within three days of each other is

MOULT MIGRATION OF SHELDUCK TO BRIDGWATER BAY

Given in table 1. Neither aerial nor ground counts can be taken as absolute standards since each method has its own errors. The respective totals for areas within Bridgwater Bay are much the same, suggesting that here the aerial surveys were at least as reliable as the ground counts. Between the Axe estuary and Sand Bay, however,

Table 1. Ground/air comparisons of counts of Shelduck (*Tadorna tadorna*) in Bridgwater Bay and Bristol Channel, 1959-60

Ground counts are taken from National Wildfowl Count data supplied chiefly by Angles, with other records from P. J. Chadwick, C. Mitchell, J. V. Morley, Miss E. M. Palmer and W. L. Roseveare

Locality		Date of count		Number of Shelduck	
		Ground	Air	Ground	Air
Bridgwater Bay					
Stear Flats	1959	14th June	15th June	1,310	1,225
		9th Aug	7th Aug	2,000	2,250
	1960	18th Feb		150	180
Corrrett Estuary	1960	20th Feb	18th Feb	1,030	131*
Old Steart Is.		19th Mar	17th Mar	165	408
		23rd Apr	21st Apr	120	386
		7th May	5th May	88	197
Ocean Sands	1960	23rd Apr	21st Apr	12	16
Totals Bridgwater Bay				4,875	4,793
Bristol Channel					
Axe Estuary and Weston Bay	1959	3rd May	4th May	64	5
		14th June	15th June	26	0
		12th July	13th July	5	0
		27th Nov	26th Nov	700†	250
		5th Jan	6th Jan	230	84
	1960	29th Jan		128	77
		17th Feb	18th Feb	50	106
		14th Mar	17th Mar	154	101
		22nd Apr	21st Apr	20	26
		17th May		26	51
Sand Bay	1959	5th June	8th June	15	0
		30th Jan	27th Jan	15	0
	1960	3rd Jan	6th Jan	28	33
		21st Feb	18th Feb	263	138
		20th Mar	17th Mar	95	55
24th Apr	21st Apr	53	62		
8th May	5th May	30	21		
15th May	17th May	35	30		
Totals Axe Estuary to Sand Bay				1,937	1,039

*A total of 705 was counted in the whole of Bridgwater Bay

†Only four seen three hours later

the total for all the aerial counts is little more than half the number recorded from the ground, the discrepancy being most marked in winter and spring. It may be that, in this region, Shelduck are more difficult to see from the air, though this seems unlikely, but the birds are known to make frequent movements up and down the coast and, in many areas, numbers can vary greatly from day to day. For example, on 27th November 1959, 700 Shelduck were counted from the ground in Weston Bay, but three hours later the same observer could find only four individuals. However, even if the aerial counts do not represent the total numbers of birds, they should at least provide reliable samples, since with the same technique, and in most cases the same observers, any errors are likely to have been constant. In this investigation, it is not so much the absolute size of the population as the relative change in numbers that is of paramount importance.

DISCUSSION

It is always a problem to decide whether fluctuating data reflect natural phenomena or whether they are the artificial products of inadequate sampling methods. In the present case, it was hoped that photographs would provide a basis for checking the results, but, as shown above, this proved to be impracticable. No doubt repeated counts on successive days would have helped to demonstrate the variability in the data, but the high cost of aircraft operation, coupled with the necessity for suitable tidal conditions, placed a limit on the number of surveys that could be flown. It is felt, however, that the major fluctuations recorded are genuine. There was certainly a subjective impression of a difference in numbers when the population had changed by more than a few hundred. It is unlikely that any sizeable group of birds was overlooked in this relatively small area, so that any errors are probably in the counts themselves. If changes of the magnitudes recorded were due to counting errors, the efficiency of the method would be of a very low order indeed. As the ground/air comparisons give no reason to suppose that the aerial counts in Bridgwater Bay were particularly inaccurate, it will be assumed in this discussion that the recorded variations are an adequate approximation to the truth.

The results for the two years 1959 and 1960 suggest that there are four waves of immigrants into Bridgwater Bay, arriving in July, August, September and October. None of the birds arriving early in July appears to moult there and most of them probably leave before the end of the month. The only Shelduck in moult during July were seen towards the end of the month, and obviously belonged to the second group of birds. The absence of flightless birds in July had been noted during an aerial survey flown in 1958. In July most European Shelduck are *en route* for the German moulting grounds

and it seems very likely that the July concentration in Bridgwater Bay consists of passage birds which use the area as a staging post where they break their journey to rest and feed.

The August arrivals are soon followed by the larger September flocks so that the recorded peaks tend to merge. The 1959 data suggest two peaks in August, but the evidence for the second is very slight on the basis of total numbers, while the estimates of moulting birds are less reliable than those in 1960, which clearly show a single August peak. Both groups remain to moult, but by far the largest number of moulting birds is found early in September. Perrett (1953) obviously recorded the first group when he put the moulting period in 1951 between 20th July and 14th August. He also mentioned a further influx of 'juveniles', presumably birds of the year, in late August, but the number of undoubted juveniles seen in Bridgwater Bay during these surveys was small (<100). The large total of 5,000 birds estimated to be present in 1951 is of interest in view of the differences between the 1959 and 1960 figures. It seems probable that the number of Shelduck visiting the Bay varies considerably from year to year.

There is no direct evidence concerning the composition of the moulting assemblages. By analogy with observations of migrating Shelduck at Tipperne in south-west Denmark (Lind 1957), it is possible that the non-breeders and one-year-olds migrate first to form the bulk of the August population, while the September flocks comprise birds that have bred that year. The smaller gathering of moulting Shelduck in October is more puzzling. They were present at a very late date in 1960 and no flightless Shelduck were seen between 15th September and 25th October. A study of the Wildfowl Count data on the files of the Wildfowl Trust shows that large concentrations of Shelduck, of which some may have been in moult, have often been seen off the coast late in the month, e.g. 1,800 on 28th October 1951, 1,287 on 24th October 1952, 1,000 on 16th October 1956, and 1,600 on 21st October 1958. These birds may be late breeders that have re-nested, but a further possibility is that they include the 'nurses' which remain behind to look after the crèches of young when the parents leave for the moult migration. The evidence suggests that the breeding population of Bridgwater Bay does not remain there to moult; the number present in November, immediately after the moulting season, is low relative to the level in April or May. It is probable that the resident birds migrate with the Shelduck which assemble in July. The Shelduck must begin to moult very soon after their arrival in the Bay, since the number of flightless birds closely follows the total number and the periods of their maximum values coincide. The delayed moult in October 1960 suggests that the moulting period of

individuals can be much less than the usually accepted figure of six weeks (fragmentary studies of captive birds by one of us indicate that the flightless period is more probably $4\frac{1}{2}$ -5 weeks).

No information is available on the origin or history of the Shelduck moulting in Bridgwater Bay. It is clear that they form a distinct population from the other Shelduck in the survey area, since the maximum number of resident birds was only about 1,200 (fig. 3), very much less than the numbers recorded in the Bay. In any case, the local Shelduck in the Bristol Channel seem to undertake a normal migration to the German moulting grounds. The main evidence for this is seen in the pattern of their movements, which is similar to that of other British Shelduck. Thus, there is a slow return to the breeding grounds long after Bridgwater Bay itself is clear of moulting duck, whereas one would expect a sudden reappearance if they had moulted in the Bay. Further evidence is provided by the observed flight lines of migrating Shelduck. Members of the summer population on the upper reaches of the Severn Estuary near the Wildfowl Trust's headquarters at Slimbridge have often been seen to migrate eastwards in July. The belief that these birds are making for the German moulting grounds is supported by the recovery in August 1959 of a dead Shelduck on the Wash very close to the direct line between Slimbridge and the Heligoland Bight. This bird, a female, had been ringed at Slimbridge Decoy in May 1955 and recaptured there in April 1956 as a breeding bird. Taylor (1960) reported eight observations of Shelduck migrating up-river (i.e. north-east, towards Germany) from the north Somerset coast.

It is improbable that the south and east coasts of England can be the breeding grounds of the Bridgwater Shelduck since no westward migration in July has ever been observed in this country. North-west England may also be eliminated, for the Shelduck there appear to migrate to Germany (Coombes 1950, Allen and Rutter 1957). There remains the possibility that the birds come from west Wales, south-west England or Ireland. Perrett (1953) gave some details of the flight lines of Shelduck leaving Bridgwater Bay in November 1952 when they were presumably returning to their breeding areas. Departures were made in most directions, except east or south-east, but over a third of the birds went due west, while another 20% flew in a south-westerly direction. Apart from a few at Porlock, the nearest Shelduck to the west are nearly 60 miles away in the Burry Inlet. At least some Welsh and Irish Shelduck migrate to Germany, however, for two German-ringed Shelduck have been recovered in Ireland and five in Wales (Goethe 1957, 1961b, Leach 1958).

No satisfactory answer to this problem will be reached until a large-scale marking programme is carried out. An unsuccessful attempt

was made to catch a sample from a small boat in 1961, but the chances of ringing any with this approach seem small. Conditions in Bridgewater Bay are different from those in Germany where firm sand forms the substratum and the flightless Shelduck can easily be captured by persons jumping from a boat and wading in the clear, shallow water. Wading is impossible in Bridgewater Bay as the substratum is thick mud, while the turbid water is too deep and subject to dangerous currents. Attempts to take the birds on shore might well be more rewarding.

Many other questions remain. It is not known whether the same birds visit Bridgewater Bay each year nor why they go there instead of to the usual moulting area in Germany. Large-scale ringing should help to elucidate these problems also, while studies of the weight, plumage and gonad development might throw some light on the composition of the various flocks.

Goethe (1961b) listed some features which appear to make the German moulting grounds a suitable habitat for wildfowl that cannot fly. These are (1) freedom from predators, (2) extensive flats of sand or mud exposed at low tide, (3) areas of high drying sand which can always be used for resting, and (4) large system of sandbanks enclosing smooth water even in rough weather. Only the first two of these four characteristics are found in Bridgewater Bay which cannot, therefore, be considered a particularly desirable moulting area. There are certainly many regions around the British coast which appear to be equally, if not more, suitable.

ACKNOWLEDGEMENTS

We are grateful to the Nature Conservancy for their financial support of this work. S. M. Taylor and members of the Bristol Naturalists' Society have co-operated in these surveys by making available counts in the Bristol Channel area carried out by them as part of a study of the breeding biology of the Shelduck. Other persons who have provided useful information include the Rev. J. H. K. Dagger, Dr. S. W. Moore, J. V. Morley, Miss E. M. Palmer, I. Presst and W. L. Roseveare. We are also greatly indebted to Dr. J. V. Beer, M. A. McGillivie and P. J. S. Olney who have acted as observers on a few occasions.

SUMMARY

(1) Most British Shelduck (*Tadorna tadorna*) undertake a moult migration in July to sandbanks off the German North Sea coast. Three subsidiary European moulting areas are known, and one of these is in Bridgewater Bay, Somerset. The movements of the Shelduck in Bridgewater Bay and the upper reaches of the Bristol Channel were studied by aerial surveys in 1959 and 1960.

(2) The resident population in the Bay numbers only a few hundred. The first migrants arrive in July, but do not remain to moult. There is a second influx in August and another larger one early in September. The fourth and smallest

group of immigrants arrives to moult in October. About 50% more birds appeared in 1959 than in 1960, monthly maxima being (1959 totals first): July, 2,500 and 1,600; August, 2,400 and 1,600; September, 3,400 and 2,000; and October, 1,500 and 1,200.

(3) The Shelducks living near-by in the Bristol Channel and Severn Estuary appear to make a normal migration to Germany and do not use Bridgwater Bay as a moulting area. The origins of the ducks moulting in the Bay will not be known until a large sample has been ringed.

REFERENCES

- ALLEN, R. H., and RUTTER, G. (1957): 'The moult migration of the Shelduck from Cheshire in 1956'. *Brit. Birds*, 50: 344-346.
- COOMBES, R. A. H. (1949): 'Shelducks: migration in summer'. *Nature*, London, 164: 1122.
- (1950): 'The moult migration of the Shelduck'. *Ibis*, 92: 405-418.
- ELTRINGHAM, S. K., and BOYD, H. (1960): 'The Shelduck population in the Bridgwater Bay moulting area'. *Wildfowl Trust Ann. Rep.*, 11: 107-117.
- GOETHE, F. (1957): 'Über den Mauerzug der Brandenten (*Tadorna tadorna* L.) zum Grossen Knechtsand'. *Fünfzig Jahre Seevogelschutz*: 96-106.
- (1961a): 'A survey of moulting Shelduck on Knechtsand'. *Brit. Birds*, 54: 106-114.
- (1961b): 'The moult gatherings and moult migrations of Shelduck in north-west Germany'. *Brit. Birds*, 54: 145-160.
- HOOGERHEIDE, J., and KRAAK, W. K. (1942): 'Voorkomen en trek van de Bergeend naar Aanleiding van veld-observaties aan de Gooise Kust'. *Ardea*, 31: 1-19.
- LEACH, E. P. (1958): 'British recoveries of birds ringed abroad'. *Brit. Birds*, 51: 487-496.
- LIND, H. (1957): 'En undersøgelse af Gravandens (*Tadorna tadorna* (L.)) trackforhold'. *Dansk Orn. Foren. Tidsskr.*, 51: 85-114.
- PERRETT, D. H. (1951): 'Observations on Shelduck'. *Rep. Mid-Somerset Nat. Soc.*, 1: 21-22.
- (1953): 'Shelduck observations 1952'. *Rep. Mid-Somerset Nat. Soc.*, 2: 16-47.
- TAYLOR, S. M. (1960): 'Shelduck Survey, 1959'. *Field-work Rev., Orn. Sec. Bristol Nat. Soc.*, 11: 19-23 (duplicated report).

Observations on the Black-winged Kite in Portugal with preliminary notes on its status

By M. D. England

(Plates 65-72)

STATUS

FOR SOME TIME considerable doubt has existed in the minds of many, if not most, ornithologists about the Black-winged Kite (*Elanus caeruleus*) as a European breeding species. Indeed, even a superficial survey of the literature shows that this doubt has always been present, and the majority of books on European birds are either very cautious

and non-committal or content to say that it 'occurs occasionally' in south-west Europe without stating that it breeds there. Whether contemporary or historical, few authors have been sufficiently satisfied to be dogmatic on the subject. For example, Voous (1960) wrote: 'In Europe it probably is one of the rare emigrants from Africa. It is, however, not at all certain that it breeds regularly in Europe; it has been suggested that it may in Portugal.' On the other hand, the authors of the *Field Guide* were confident enough to state—as I now believe, correctly—'Resident Portugal'.

It was this very uncertainty which led me, some years ago, to put this bird high on my list of species which 'require attention'; in particular, I wanted to obtain photographic evidence of its breeding in Europe. It is not, of course, suggested that the photographing of one nest is proof that the species does breed regularly in Portugal, but whether this be true or not it seems worth recording what was learnt during the attempt, always bearing in mind the need to be cautious about drawing conclusions from such limited experience.

Although my interest in the problem, and therefore much reading, began a considerable time ago, it was not until 1959 that I started serious correspondence with ornithologists resident in or very familiar with south-west Europe. The project came near to being abandoned when not a single reply was received from the first six persons I wrote to in Portugal. Even when help was forthcoming, it quickly became evident that I was most unlikely to obtain up-to-date information. In fact, the most recent record of breeding which I was able to find (apart from a reported attempt in southern Spain about 1959) was as long ago as 1944, when the late Henry Coverley found two pairs nesting in a certain plantation (and one at least of them was probably unsuccessful). A 'male' was seen at the same spot in 1948, though it is not known how the observer was able to tell the sex.

This region and four other fairly large areas in the southern half of Portugal were suggested by various people as possible places to search. The latest, and therefore most hopeful, information was given to me by Miss C. M. Acland, who saw the species in June 1956; her locality seemed unsuitable for breeding, however, and I could not establish satisfactory liaison with people on the spot. Despite four years of inquiries, I did not contact anyone of British nationality (whether resident in Portugal or not) who had actually seen the nest of the Black-winged Kite in Europe; if there are such people, perhaps this paper will serve to draw the information which appears to be so sadly lacking. Even leading Portuguese ornithologists seemed unable to suggest places where we could expect with any certainty to find the species, and I do not think for a moment that this was due to reluctance to divulge the whereabouts of a rare bird; indeed, we had every help.

In the end, a small party of us spent five weeks in Portugal in the spring of 1963 with the primary object of learning what we could about this apparently elusive bird. Our eventual success, during May, in locating a breeding pair about ten miles from the site of the 1944 nests was due to great good fortune rather than to any particularly clever efforts on our part. Offers over a wide area of a reward which must have seemed a large sum to the shepherds and foresters produced neither further nests nor even claims of birds seen. The majority of these people knew the species by sight or by repute, but most had not seen one 'for several years'. The head keeper of the estate where attempted breeding was recorded in 1944, who was able to identify a picture of the bird and who described its habit of hovering, had not seen any in that area 'in recent years', although his wife claimed to have had a glimpse of one a few months before. Talks with shepherds and similar people elicited the fact that they considered young Black-winged Kites good to eat—and presumably easy to get at—and one claimed to have found and eaten a family of youngsters in 1962, though all admitted that the birds were very rarely seen.

Our general impression was that the species is not only scarce but decreasing in numbers. It is difficult to avoid the conclusion that its hold as a breeding bird in Europe is precarious and, while it is by no means certain that this has not always been so, the position appears to have deteriorated in the last twenty years. It seems unlikely that the country-folk in the areas which we visited would have been familiar with the bird if it had not previously been more in evidence. However, it must be admitted that the pair we had under observation were extraordinarily inconspicuous in the nesting area. This would be especially so during incubation and is perhaps partially due to their somewhat crepuscular habits. We felt that, contrary to what many observers have noted in other parts of the world (for example, in Africa), this is a species which could be very easily overlooked on its breeding grounds except possibly when feeding young. When disturbed on the nest, the birds usually flew off in a most unobtrusive manner low among the trees and sat waiting at the top of a bush or tree. If the behaviour of our pair is any criterion, it is not impossible that we overlooked and even passed within a few feet of other nests. Unlike many other species of birds of prey, which fly overhead calling in the presence of an intruder, the Black-winged Kites were completely silent when we approached and, as often as not, we did not even see them though we knew where their usual perches were. Until we became used to this, we went in daily fear that they had deserted their nest, though once an observer had been left in the hide one of the pair was usually sitting on the eggs within a very few minutes.

Although it might seem reasonable to suppose that this small south

THE BLACK-WINGED KITE IN PORTUGAL

European population has been kept in existence by the proximity of fair numbers of the species in North Africa, there seems little good evidence of regular migration. Indeed, there are sufficient winter records from Portugal for the bird to be described as resident in that country, even if some of the observations are from places so far removed from likely breeding areas as to show that it is to a certain extent nomadic. However, the possibility of a continual 'interchange' across the Straits of Gibraltar cannot in the present state of our knowledge be completely ruled out.

BREEDING SEASON

Many people had told us that the species nested early and some of our advisers considered our proposed arrival date in Portugal, 24th April, ridiculously late if we wished to photograph a pair with small young. However, the nest at which plates 65-72 were taken contained four eggs when we first saw it on 11th May and we were informed that they were not then more than a week old. Though it proved impossible to discover just when the first was laid, it was evidently about 1st May.

We assumed at first that it must be a replacement clutch, but subsequent research has inclined me to the view that this was not so and that the end of April is the usual laying date in Portugal. I cannot trace any records of eggs before April and Coverley (unpublished) reported watching a bird nest-building in that month, while Tait (1924) recorded 'large young' in June. It is interesting to note that Favier, quoted by Archer and Godman (1937), stated that the species 'breeds in April on the sea-board of Morocco'.

HABITAT, NEST AND EGGS

The breeding habitat was a small, roughly rectangular 'orchard' of low, bushy cork oaks (*Quercus suber*), surrounded on two sides by large areas of flat, open (almost treeless) ground with coarse grass and low, thorny scrub; on the third side was a wood of larger and more densely planted trees, and on the fourth cultivated land. The nest was about seven feet from the ground in a small, rather isolated tree (plate 69a). It was built chiefly of sticks, rather loosely and roughly put together but neatly lined with roots and fine grasses, and was on the south side of the bush, quite open and visible (plate 69b). Sprays of greenery were added by the birds during incubation. The eggs when first seen appeared to be very similar to those of the Kestrel (*Falco tinnunculus*) though with a faint but beautiful purplish 'bloom'. They had not hatched when we had to leave three weeks later and, though worn, some of this bloom was still visible.

A nest height of ten feet from the ground seems to be at or a little

below the usual in many parts of the world. However, some writers suggest that it may be considerably more—for example, Grosvenor and Wetmore (1929) gave 25-50 feet for America, and Archer and Godman (1937) 20-25 feet for Africa—while several mention that old nests of other species may be made use of. In this connection, it is interesting that on the estate where we enquired initially we were shown only two possible nests, both very high up (at least 60 feet). They looked to us, if a little on the small side, like nests of the Carrion Crow (*Corvus corone*); one was unoccupied and the other contained one young Carrion Crow and two young Great Spotted Cuckoos (*Clamator glandarius*). The keeper, however, seemed convinced that if we did find the nest of the Black-winged Kite in that area it would be in a tall tree.

That the species is adaptable so far as nest-sites are concerned is shown by the fact that on the island of Masira in the Arabian Sea, in default of suitable trees, the birds breed in caves (Green 1948).

A number of people have commented upon the partiality of the Black-winged Kite for cultivated land and even villages. John Warham informs me that in certain parts of Australia it is a common sight hovering over built-up areas. We were all the more interested, therefore, to note that our nest was in sight of the only farm buildings to be found within many miles. It is also interesting, in the context of the bird's regularity or otherwise as a Portuguese breeding species, that the place was called Kite Farm!

INCUBATION BEHAVIOUR

A hide was begun at a distance of 150 feet and was then enlarged and moved nearer very gradually and with the greatest possible care. Although such extreme precautions were obviously desirable, I have seldom known birds take less notice of a hide and on my first session in it—at a distance of nine feet from the nest—my notes read: '8.40 a.m., in hide. 8.43 a.m., bird straight on to eggs; no chance of photo.'

I must admit that I was rather sceptical when the first member of the party to occupy the hide, John Norie, thought that he had both sexes incubating alternately at comparatively short intervals throughout the day. I was proved quite wrong, however, since I was quickly to see a change-over at the nest myself, and I was left in no doubt whatever during the next few days that the birds took approximately equal shares on the eggs. On one occasion the sitting bird, the male, refused to respond to the increasingly urgent calls of his oncoming mate, until she landed on the nest and virtually burrowed her way under him as he reluctantly departed.

The pair were very attached to one another and while the female was sitting the male spent a great deal of his time on a bush near-by.

Their behaviour as a pair was in many ways strikingly similar to that of some shrikes, and this likeness was enhanced by their habit of cocking their tails up and down. Much 'conversation' went on between the sitting bird and the other, and the male frequently fed the female either on or off the nest. He once arrived at the nest with food twice within five minutes, on each occasion remaining just long enough for a photograph to be taken. When he was near, and especially when he visited the nest in this way, the female would adopt an 'invitation' posture, flattening herself in the rather shallow nest so much as almost to disappear from sight (plate 65), at the same time raising her tail slightly (see also under VOICE).

It was impossible to identify the food which was brought because it was very small, was carried in the bill and feeding took place quickly. I suspect it consisted of insects such as cockchafers. The birds' interest in insects was evident from the way in which the one incubating would lean over the edge of the nest, with characteristic waving of its head, to watch small creatures like beetles and bees. A careful search beneath the nest failed to reveal any pellets, though the female once spent a long time trying to bring one up. Unfortunately she was called off by her mate before she succeeded.

A Raven (*Corvus corax*) croaking overhead was the cause of a most remarkable change of facial expression in the sitting bird, with great opening of the iris, the whole effect being very owl-like.

VOICE

I have summarised my own notes made in the hide and find that I could distinguish at least five calls. Making allowance for the greatly differing ways in which observers will translate bird noises into words, these are on the whole reconcilable with what has previously been recorded.

Perhaps the most frequent call, used apparently by both sexes, might be written as *gree-ab*, sharp but not loud, with the second syllable rather abrupt; I made a note that it was not at all unlike a miniature version of the call of the Osprey (*Pandion haliaëtus*), and I am interested to find that Grosvenor and Wetmore (1929) described it as 'somewhat like the Osprey'. Another was a hoarse wheeze, somehow reminiscent of a cat and perhaps best described as a nasal purr; the female made this noise whenever the male came near while she was incubating, and it was often associated with the invitatory crouch. This call would be answered by a rapid *chuck, chuck, chuck*, heard only from the male; it was chiefly a calling-off note, but he also used a quiet version at the nest as he fed his mate. A high-pitched whistle was believed to be used mainly as an alarm note (e.g. when we were working on the hide) and my notes read: 'The warning whistle, heard at close quarters,

turns out to be a high-pitched version of *gree-ab*, last syllable only just audible.' The last call I distinguished was a single piping note repeated several times at intervals of about a second—'not unlike the call of a very young wader'. A loud version of this was used by a bird approaching the nest after being disturbed, and a very quiet variation was heard several times from the sitting bird as it raised itself and kept looking down at the eggs, almost as though answering a chick in the shell. This soft piping was also uttered by the sitting bird just before its mate arrived to relieve it, and the change-over was often accompanied by some quiet 'conversation' consisting of variants of the piping from the male and of the nasal purr from the female.

Two additional calls were heard in South Africa by Dr. Geoffrey Beven (*in litt.*), one a 'short, shrill scream' when stooping at a Buzzard (*Buteo buteo*) and the other a 'hoot'. We did not see any event likely to elicit the former, while the latter may be the same as the high-pitched whistle described above.

GENERAL NOTES

One of the most striking things about these birds in the field was the great variation in the colour of the plumage according to light and position. All members of the party noted at different times that they appeared to have everything from completely black wings to wings with no black at all. Even from the hide at a distance of seven feet this was very noticeable. The sexes were similar in colour, but from the hide we became used to distinguishing them fairly easily, because the male was generally cleaner-looking and had darker markings around his eyes which gave him a different facial expression. The female had fleckings of grey on her head and the upper surfaces of her primaries appeared rather less pure grey. The birds could also usually be separated, apart from these small differences, by the fact that each had its individual route to the nest and usually, of course, its characteristic calls.

The habits of hovering kestrel-fashion and of quartering the ground like a harrier have often been described and will not be repeated here in detail, except to note that our birds were never seen to hover or hunt for food within sight of the nest. However, it is worth recording that once, after being disturbed at the nest, one of this pair gave a wonderful display of soaring—circling round and round up to a considerable height on, as I wrote at the time, 'outstretched and unflapping wings with rounded ends'—while we packed up our cameras. The wings were raised above the horizontal and measurement of the rough sketch made at the time shows the angle between them to have been about 130°. Dr. Geoffrey Beven (*in litt.*) has two records of similar behaviour from South Africa.

THE BLACK-WINGED KITE IN PORTUGAL

Although there is doubtless good reason for it, one finds it a little difficult to understand how this species came to be called a kite, a name which seems to sit uneasily on a bird which is so delicate in habit and colour. In the field at various times we likened it to a harrier, a kestrel, a tern and even an owl, but never a kite.

ACKNOWLEDGEMENTS

Detailed or individual acknowledgement of assistance may appear superfluous in a brief paper such as this, but the dearth of published information on the Black-winged Kite, especially in Europe, made me almost entirely dependent on personal help which it would be churlish to ignore.

My thanks are due, first, to Dr. H. M. S. Blair for introducing me to the ornithologists in Portugal whose help led eventually to success. To Mr. and Mrs. Colin Tait, of Estoril, for allowing us the freedom of their hunting lodge and the large estate where breeding was recorded in 1944. To Mr. and Mrs. Victor Reynolds, of Estremoz, for their hospitality and offers of assistance on the spot. To Professor J. R. de Santos, Jr., of the University of Oporto, and Dr. A. P. Passos de Gouveia, Portuguese Consul General in London, for their help and encouragement. To Dr. Geoffrey Beven for the use of his notes and for his kindness in searching the African literature. To Stanley Cramp, who was with the party in Portugal, for criticising and improving this paper in draft. To all those, too many to name, who in this country responded to appeals for information or in Portugal acted as guides and interpreters. Above all, to Mr. and Mrs. Eric Flower, of Oporto, for allowing me access to the invaluable unpublished notes of the late Henry Coverley and for their indefatigable help, without which nothing would have been achieved.

SUMMARY

The status of the Black-winged Kite (*Elanus caeruleus*) in Europe is briefly discussed and the finding of a nest in Portugal in 1963 described. Notes are included on the behaviour of the pair at the nest and on the various calls which they were heard to make.

REFERENCES

- ALI, SALIM (1944): *The Book of Indian Birds*. Bombay.
- ARCHER, G., and GODMAN, E. M. (1937): *The Birds of British Somaliland and the Gulf of Aden*. London. Vol. I.
- CAYLEY, N. W. (1939): *What Bird is That?* Sydney.
- COVERLEY, H. (unpublished): Notes in the possession of Mr. and Mrs. E. Flower.
- GREEN, C. (1949): 'The Black-shouldered Kite in Masira (Oman)'. *Ibis*, 91: 459-464.
- GROSVENOR, G., and WETMORE, A. (1929): *The Book of Birds*. Washington.
- HENRY, G. M. (1955): *A Guide to the Birds of Ceylon*. London.
- PETERSON, R. T., MOUNTFORT, G. R., and HOLLON, P. A. D. (1954): *A Field Guide to the Birds of Britain and Europe*. London.

- PRIEST, C. D. (1933): *The Birds of Southern Rhodesia*. London. Vol. I.
 REIS, J. A., Jnr. (1931): *Catálogo Sistemático e Analítico das Aves de Portugal*. Oporto.
 ROBERTS, A. (1944): *The Birds of South Africa*. London.
 TAIT, W. C. (1924): *The Birds of Portugal*. London.
 VINCENT, A. W. (1945): 'On the breeding habits of some African birds'. *Ibis*, 87: 203-216 (p. 205).
 VOOUS, K. H. (1960): *Atlas of European Birds*. London.

The Pheasant in Wales

By *Colin Matheson*

National Museum of Wales

IN A SERIES OF PAPERS published chiefly in this journal (Matheson 1953-60) an attempt was made to illustrate, by means of records from Welsh gamebooks, the changes and fluctuations in the population of the Partridge (*Perdix perdix*), an indigenous and common bird, in Wales over a period of a century or more. That another gamebird so well-known as the Pheasant (*Phasianus colchicus*) has seldom been mentioned in *British Birds* is obviously due to the fact that its introduction to and status in Britain are mainly the results of human action and not of natural spread. For this very reason, however, it seems desirable to summarise the data now available, from gamebooks and elsewhere, on the history in Wales of this introduced species, as a notable example of the influence of man on the composition of the avifauna.

EARLY RECORDS

Several authors, among them Gladstone (1921-22), have suggested that Pheasants were brought to Britain by the Romans. This idea was based on the reported occurrence of Pheasant bones of Roman date in archaeological excavations, but Lowe (1933) wrote that no authenticated 'Pheasant bone unquestionably contemporaneous with the Roman occupation has been described'; and this is apparently still true. It is not until early in the second half of the eleventh century that any written reference to the Pheasant appears in England, and its introduction or re-introduction may well have been due to the Normans or to Norman influence (Fitter 1945). Although in parts of England, particularly in the south, Pheasants may have become firmly established during the Norman period, their introduction or spread westward and northward was slow. Not until the Tudor period do we hear of them in Ireland (Kennedy 1961, Saunders 1882-84), Scotland (Ritchie 1920) or Wales, and then in terms which indicate that they were of comparatively recent introduction to all three countries.

In Wales, one of the earliest written references to the species is that by Owen (1603) who, describing the Pembrokeshire fauna, wrote that



11-05. Male Black-winged Kite (*Elanus cafer*) standing over the female who crouches low in the nest in an invitation posture (page 449). Portugal, May 3. The species has for years been a mystery in Europe and this was apparently first nest recorded in Portugal since 1944 (pages 444-452) (photo: M. D. Ungvár).



PLATE 68. Black-winged Kite (*Elanus caeruleus*) incubating; the two birds took turns on the eggs (page 448). Note that the grey primaries are black underneath; the eyes are red and, as one expects in a crepuscular species, rather large. This nest was made of sticks, grasses and roots (see plate 69b) (photos: M. D. England)





PLATE 69. Above, breeding habitat of Black-winged Kite (*Elanus cauratus*) in open country with bushy cork oaks; the nest was on the side of the tree in the foreground, quite open and only about ten feet up (page 447). Below, the four eggs are similar to Kestrels' but with a faint purplish 'bloom' (photos: M. D. England)





PLATE 76. Above, another picture of the Black-winged Kite (*Elanus caeruleus*) incubating (photo: M. D. England). Below, coming to the nest from behind, through the foliage of the tree; here the contrast of the black area on the wing with the whitish head and white under-parts shows up particularly well (photo: A. N. H. Peach)





PLATE 71. Black-winged Kite (*Elaenia caerulea*) perched on top of the cork oak right over the open nest (no branches removed for photography) (photo: J. N. H. Peab) 71



PLATE 72. A final look at one of the Black-winged Kites (*Elanus cafer*, 1801) on the edge of the nest, Portugal, May 1963. As the tree was not more than thirteen feet high and the nest only three feet from the top, this shot and plate 71 drive home the small size of the bird—little larger than a Kestrel (photo: E. N. H. Pugh)

As for the Pheasant, in my memorie there was none breedinge within the shire untill about XVJ yeares past Sr Thomas Perrot Knight procured certaine hens and cockes to be transported out of Ireland, which he purposinge to endenize in a pleasant grove of his owne plantinge adioyninge to his house of Haroldston gave them libertie therein, wherein they partely stayed and bredd there, and neere at hand, but afterwarde chose other landlordes in other places, and, as we heare of no great multiplyeinge, so are they not altogether destroyed, but some few are yet to be found in some places of the shire, though but thinne.'

Another reference, to Pheasants near Llanddwywe in Merionethshire, where also they were apparently of recent introduction, occurs in an unpublished poem by the sixteenth-century Welsh writer Gruffydd Idracathog.

THE NINETEENTH CENTURY

We have no further information about these early introductions and, except within the boundaries of one or two big estates, the bird seems to have been quite unfamiliar over most of Wales until the nineteenth century. The long tail and handsome plumage of a cock Pheasant which had strayed from some neighbouring preserve in 1812 gave rise to a story among the peasantry in the Vale of Edeyrnion, Merionethshire, that there was a strange winged viper with a long body and bright scales (Jones 1930).

In Glamorgan the Pheasant was evidently scarce or unknown until towards the close of the eighteenth century, since in 1781 Thomas Mansel Talbot was awarded a gold medal by the Glamorganshire Agricultural Society 'for his spirited endeavours to introduce the English Pheasant into this county'—presumably with some measure of success (Garsed 1890). And Tyler (1923) wrote of Monmouthshire, 'in looking at the very old records, where these survive, it is interesting to note the increase of Pheasants from the days when a day's covert shooting consisted of a bag of four to seven Woodcock and a very occasional Pheasant, up through the moderate days of 50 to 100 of the latter in the 60's to 80's, till the final climax from say 1890 to the year of the war, when bags of 1,000, 1,400 and even more were made annually at places like the Hendre.'

The same is true elsewhere in Wales of the very early years of the nineteenth century, in the few cases where gamebook records go back so far. Thus on the Gogerddan estate in Cardiganshire, for which records are available as far back as 1805, the figures for the ten seasons 1805-14 show that Pheasants totalled only 32 out of 4,231 game shot, or less than 1%. By 1835-44, however, they had increased to 725 out of a total of 7,257, or 10%. During the final decade for which

BRITISH BIRDS

figures are available at Gogerddan, 1855-64, they numbered 1,750 out of a total of 13,616, or 13%.

On one or two estates the proportion of Pheasants during these early years was higher. Thus at Chirk in Denbighshire they already constituted rather over a third of the total game shot in the decade 1827-36.

It was not, however, until the middle of the century and afterwards that the great increase in Pheasant preservation began. Yet by the close of the nineteenth or the early years of the present century Pheasants often accounted for half or more of the total bags. The position is illustrated in passages in the *Report of the Royal Commission on Land in Wales*, published in 1896, in which witnesses who appeared before the Commission in various Welsh counties spoke of the great growth in the preservation of game, particularly Pheasants, 'during the past thirty years'.

Table 1. Totals and percentages of Pheasants (*Phasianus colchicus*) shot in ten-year periods between 1868 and 1917 on five estates in Wales and one in Shropshire, illustrating the general increase in the species.

	BODORGAN, ANGLESEY			VOELAS, DENBIGHSHIRE		
	Total game	Pheasants	% Pheasants	Total game	Pheasants	% Pheasants
1868-77				13,440	680	5%
1878-87	22,680	3,520	16%	9,430	1,010	11%
1888-97	26,460	6,010	23%	13,870	3,010	22%
1898-07	30,360	11,700	38%	20,740	8,230	40%
1908-17	30,170	19,240	64%	26,800	12,060	45%

	STACKPOLE, PEMBROKESHIRE			TYTHEGSTON, GLAMORGAN		
	Total game	Pheasants	% Pheasants	Total game	Pheasants	% Pheasants
1868-77	32,550	6,840	21%			
1878-87	26,900	10,080	37%	2,930	500	17%
1888-97	38,000	15,530	41%	3,330	490	15%
1898-07	34,220	19,960	58%	4,210	1,110	26%
1908-17	23,050	17,290	75%	4,570	1,740	38%

	POWIS AND LYMORE, MONTGOMERYSHIRE			WALCOT, SHROPSHIRE		
	Total game	Pheasants	% Pheasants	Total game	Pheasants	% Pheasants
1868-77	21,690	8,430	39%	17,070	4,220	25%
1878-87	22,040	10,520	48%	13,310	4,930	37%
1888-97	39,560	25,960	66%	13,120	6,600	50%
1898-07	56,510	46,540	82%	32,660	22,960	70%
1908-17	38,500	29,800	75%	36,050	26,600	74%

THE PHEASANT IN WALES

GAME RECORDS 1868-1917

The table shows the growing predominance of the Pheasant on five Welsh estates in Anglesey, Denbighshire, Pembrokeshire, Glamorgan and Montgomeryshire, and on one estate in the English border county of Shropshire, for which gamebook records exist over a sufficiently long period to illustrate the change from the 1860's or 1870's on to the period of the First World War. The figures have been calculated on round numbers correct to the nearest 10. The species included under the heading 'Total game' usually comprise (besides Pheasants) Partridges, Woodcock (*Scolopax rusticola*), Snipe (*Gallinago gallinago*), and fowl and 'various', Rabbits (*Oryctolagus cuniculus*) and Hares (*Lepus capreolus*). At Voelas the totals also include Red Grouse (*Lagopus lagopus*). The figures for Rabbits refer only to ones accounted for by shooting parties and not to the much larger numbers killed by snares or trappers throughout the year.

The efforts of the gamekeeper, in the hey-day of game preservation, in reducing various indigenous birds and mammals for the protection of the Pheasant are too well known to require detailed comment here, and we need only mention Bolam's (1913) reference to a keeper on a Welsh estate for whom 'no trouble was considered too great that might be promised to lead to the destruction of a Weasel, or a Sparrow Hawk's nest.'

Although during the period discussed in this paper the Pheasant became more or less familiar as a wild species in many districts, and in places still is so, one does not expect to find in the figures any significant natural fluctuations, sometimes coinciding over a wide area, such as are suggested by the figures for Partridges. The Pheasant population has, of course, always been dependent to a much greater extent on human supervision and artificial rearing, particularly in the later years.

REFERENCES

- BOLAM, G. (1913): *Wild Life in Wales*. London. p. 321.
BOLAM, R. S. R. (1945): *London's Natural History*. London. p. 57.
BOLAM, J. (1890): *Records of the Glamorganshire Agricultural Society*. Cardiff. p. 16.
BOLAM, H. (1921-22): 'A sixteenth century portrait of the Pheasant'. *Brit. Birds*, 15: 67-69.
BOLAM, G. (1930): *Welsh Folklore and Folk Customs*. London. p. 86.
BOLAM, P. G. (1961): *A List of the Birds of Ireland*. Dublin. p. 32.
BOLAM, P. R. (1933): 'The differential characters in the tarso-metatarsi of *Gallus* and *Meleagris* as they bear on the problem of the introduction of the Pheasant into Europe and the British Isles'. *Ibis*, 13th ser., 3: 332-343.
BOLAM, C. (1953): 'The Partridge in Wales: a survey of gamebook records'. *Brit. Birds*, 46: 57-64.
— (1956): 'Fluctuations in Partridge populations'. *Brit. Birds*, 49: 112-114.

- MATHESON, C. (1956): 'Gamebook records of Pheasants and Partridges in Wales'. *National Library of Wales Journal*, 9: 287-294.
- (1957): 'Further Partridge records from Wales'. *Brit. Birds*, 50: 534-536.
- (1960): 'Additional gamebook records of Partridges in Wales'. *Brit. Birds*, 53: 81-84.
- OWEN, G. (1603): *The Description of Pembrokeshire* (edited by H. Owen, 1892). London. pp. 149-150.
- RITCHIE, J. (1920): *The Influence of Man on Animal Life in Scotland*. Edinburgh. pp. 264-268.
- SAUNDERS, H., editor (1882-84): *A History of British Birds* by William Yarrell. London. vol. 3, pp. 96-98.
- TYLER, J. O. (1923): *Shooting in Monmouthshire*. Pontypool. p. 40.

Obituary

Oliver G. Pike, Hon. F.R.P.S. (1877-1963)

WITH THE DEATH OF Oliver Pike on 17th October 1963, at the age of 86, an era came to an end. He was the last of the great pioneers who, with Richard and Cherry Kearton and R. B. Lodge, began during the 1890's to take pictures of wild life in its natural surroundings and so started a new venture in photography.

He was born in Enfield, Middlesex, on 1st October 1877, and was educated at Enfield Grammar School. At the age of thirteen he obtained a camera and began using this to take photographs of flowers and nests and eggs. His first book, *In Birdland with Field Glasses and Camera*, was published in 1900 and twenty-four more books followed. In those days the existing cameras were very heavy and cumbersome so he constructed a $\frac{1}{4}$ -plate reflex of his own design. This was later put on the market as the 'Birdland' camera and used by many nature photographers in all parts of the world. In 1907 he was awarded the Fellowship of the Royal Photographic Society and he served on the Council of that body from 1924 to 1948 when he was made an Honorary Fellow.

By 1906 he had developed a passion for the cine-camera and in all he produced over fifty films of British mammals, birds, pond life and other natural history subjects. The most famous of these was exhibited in August 1907 in the then Palace Theatre, London, where it ran for a month, but from the scientific point of view his film of a hen Cuckoo laying her egg in the nest of a Meadow Pipit in 1922 was the most important. Some sequences from the latter were reproduced in this journal as recently as July 1959 (*Brit. Birds*, 52: plates 43-44). In the course of his long career he travelled to practically every well-known bird haunt in the British Isles, though his visits to St. Kilda in 1909 and 1910 were probably the most exciting.



Oliver G. Pike with his Newman-Sinclair cine-camera, 1929 (photo: A. S. Newman)

He married Anne Primrose Chapman in June 1914 and throughout life she was his most enthusiastic co-worker. They had two sons and two daughters. In the First World War he joined the Royal Flying Corps, served for two years in France and was demobilised in 1919 with the rank of Captain.

He was a very popular lecturer to societies all over the British Isles throughout half a century, giving his first show in Hackney in 1898 and his last in Bedford in May 1948. Many bird photographers and ornithologists must owe their original interest to Oliver Pike's books and lectures and, although he had not been very active in recent years, his work will long be remembered.

E.H.

Notes

Peregrines rearing young Kestrels.—On 11th April 1963 W. N. Charles and I flushed a Peregrine (*Falco peregrinus*) from its eyrie in an old Raven (*Corvus corax*) nest in the Dumfriesshire hills. There were four eggs, one of which we took (under licence) for chemical analysis because the eggs of this pair had been broken in 1962, apparently by the Peregrines themselves, and it was suspected that the female at the nest was suffering from a sub-lethal dose of toxic chemicals.

On 14th June the female Peregrine again flew from the eyrie, which, however, now contained a clutch of four typical eggs of the Kestrel (*F.*

tinnunculus). As proof that they had been laid there by that species, there were in the nest a Kestrel's tail feather and characteristic castings composed of the fur of Short-tailed Field Voles (*Microtus agrestis*). A search in the litter produced fragments of shell and membrane, apparently from the Peregrine's own eggs. The female Peregrine had presumably destroyed her clutch, as has so often happened during recent years (e.g. *Brit. Birds*, 51: 23-26), and quit the eyrie. A pair of Kestrels must then have taken over the old Raven nest and later, after their eggs were laid, been dispossessed by the Peregrines which carried on as if nothing had happened. A similar instance of a Peregrine appropriating a clutch of Kestrel eggs was reported by the writer from near Inverness in 1961 (*Brit. Birds*, 55: 131-32).

On 19th July both Peregrines came out calling furiously from the crags as I arrived, and on the nesting ledge were four fully-fledged young Kestrels. All but one had lost the nestling down completely; two took wing and flew quite strongly on my approach, though they soon pitched on the adjacent slope. The two Peregrines meantime kept up a tremendous demonstration, the female now and then stooping quite close to me.

On 28th July both Peregrines again flew out when I reached the crags and began calling continuously. One after another, three of the young Kestrels appeared in the air, circling, gliding, diving or winnowing in normal flight. They kept some distance from their disturbed foster-parents and gradually drifted away. After a while the fourth Kestrel appeared and joined the two Peregrines, circling with them and occasionally stooping at one or the other; once it came over to inspect me and called. It was much more inclined than the others to stay with its foster-parents, which quietened down somewhat after it took to the air. The Peregrines showed a strong attachment to the nesting haunt, and when I sat some distance away to watch, they perched on rocks or occasionally circled over instead of drifting away with the Kestrels. At intervals two of the young Kestrels hovered in the proper manner of their kind, so that this instinct remained unimpaired by the strangeness of their upbringing. Incidentally, on this day a pair of adult Kestrels—probably the original owners of the eggs—were hanging about the Peregrines' alternative crag half a mile away.

On 3rd August both Peregrines made the usual din when I reached the top of the crags and all four young Kestrels took to the air together. Again, one of the latter was more inclined than the rest to circle around close to the Peregrines and several times came close to me, adding its own voice to the commotion. When I left, the Peregrines followed me for several hundred yards across the moor, the female calling nearly all the time.

NOTES

Pluckings at and near the eyrie, kindly identified by E. Blezard, showed that the Peregrines had been taking a normal selection of prey. There were the remains of several domestic pigeons (*Columba livia*), two Skylarks (*Alauda arvensis*), two Starlings (*Sturnus vulgaris*) and at least one each of Red Grouse (*Lagopus lagopus*), Redshank (*Tringa caninus*), Dunlin (*Calidris alpina*), Wheatear (*Oenanthe oenanthe*) and Meadow Pipit (*Anthus pratensis*). An unusual additional item, however, was a casting composed largely of the fur of a Rabbit (*Oryctolagus cuniculus*), but mixed with bird remains, which proved that the Peregrines had certainly taken the Rabbit themselves. The young Kestrels appeared to have thrived on this rich fare, though they would presumably turn to the usual voles and lesser fry when the time came to feed for themselves.

The chemical analysis of the egg was undertaken by the Agricultural Scientific Services of the Department of Agriculture and Fisheries for Scotland, Edinburgh, and I am indebted to N. Morgan and G. Hamilton for the results. The egg contents were examined by gas chromatography and contained the following pesticide residues:

	Micrograms	Parts per million
Lindane	1.0	0.025
Heptachlor	2.1	0.05
Heptachlor epoxide	3.8	0.09
Dieldrin	4.2	0.10
D.D.E.	107.0	2.60
D.D.T.	4.2	0.10
Totals	122.3	2.965

The total content of chlorinated hydrocarbon residues was thus about three parts per million. Such a concentration is probably well below the lethal dose for an adult Peregrine, but its physiological significance is just not known. The results nevertheless prove the contamination of the female bird and give strength to the idea that abnormal behaviour is one of the effects induced by sub-lethal doses of pesticide. In this case there was evidently a conflict between the normal maternal urge and the perversion which leads the bird to destroy its own eggs. There was nothing to show what stage of incubation had been reached by the Peregrine before its eggs were taken, or by the Kestrel before it was evicted. In 1959, another Peregrine in the same area broke its eggs when they were fresh and then produced a repeat clutch after the normal interval. Yet Peregrines which are robbed when incubation is advanced seldom lay again. They have not been known to recompense themselves by taking over the eggs of another species. And since nesting Peregrines seldom, if

ever, permit Kestrels even to hang about within close distance of their eyrie, they must have completely deserted the breeding place for a time, or the Kestrels would have had no chance to appropriate the site. The abnormality thus went beyond the mere taking over of the eggs of another species. Whatever their earlier behaviour, however, the Peregrines appeared to react to the young Kestrels exactly as though they were their own offspring, and were presumably still feeding them when they had left the nest. D. A. RATCLIFFE

Inland passage of Oystercatchers in central Wales.—In an article on the migrations of the Oystercatcher (*Haematopus ostralegus*) (*Brit. Birds*, 52: 216-220), D. G. Andrew remarked that the description of this species in *The Handbook* as an irregular and very scarce visitor on passage inland 'may hold true in other parts of Britain, but in autumn it is both regular and abundant as a passage migrant across south Scotland'. It may therefore be of interest to record that an inland passage of Oystercatchers occurs, probably regularly though only in small numbers, through some of the river valleys of central Wales.

The movement may be observed in both spring and autumn, during March-April and late July-August, with one occurrence of three as late as 29th September 1903 (*The Birds of Brecknock*, 1957, p. 215). However, as in the case of south Scotland, the spring passage is very much smaller and less frequently observed than that of the autumn, though we cannot say if an alternative route is used. The numbers recorded so far have not exceeded six in a group, and usually only one to three have been seen. The habitats selected by the birds for resting or feeding are typical: rivers, pools, lakes and reservoirs. If, as D. G. Andrew stated, much of the migration takes place at night and the migrating parties seldom stay long at the reservoirs, then the actual movement may be larger than it seems. There are also few observers in this part of Wales.

Oystercatchers are not the only waders to be seen passing through this area, and preliminary results of a study of the regular though small migration of waders and terns along the inland valleys of the rivers Usk and Wye already indicate a fairly distinct pattern. So far the Oystercatchers have kept fairly close to the main routes. In autumn, they pass down into Radnorshire (and probably Herefordshire), where some may stop at one or other of the reservoirs in the Elan Valley, or at a pool, and hence travel via the Wye Valley as far as the 'central plain' of Breconshire, which they cross southwards to Llangorse Lake. The movement further south is not so clear in this particular case, as some turn up at Tolybont Reservoir in the Brecon Beacons (which has also attracted many other waders and terns), though apparently none has yet been recorded along the more obvious route via the Usk

Valley, through Monmouthshire, to the Bristol Channel (*The Birds of Monmouthshire*, 1963, p. 27).

Although recent records greatly outnumber earlier occurrences, it is felt that this is due to even fewer observers in former years, for such older records as are available fit neatly into the present-day pattern. It therefore seems probable that the Oystercatcher has been a fairly regular autumn migrant and an occasional spring migrant through parts of Breconshire and Radnorshire for many years.

JOHN GRIFFITHS and GWILYM GRIFFITHS

Blue Tit lining and laying in nest of Blackbird.—On 20th April 1962, at Newton-le-Willows, Lancashire, I found the nest of a pair of Blackbirds (*Turdus merula*) some seven feet from the ground in a Pododendron; it contained two eggs. When I next examined the nest, on 12th May, it had been lined at the bottom with hair and feathers and held a single egg of a Blue Tit (*Parus caeruleus*); there was no indication of what had happened to the original eggs. I paid several further visits and then, as no more eggs had been laid and the nest was clearly deserted, I removed the whole structure for closer examination. I found that the lining added by the Blue Tit was 2 cm. in diameter and at the centre was 9 cm. below the nest rim. The structure gave the impression of having been deepened before the lining was added.

F. E. STEPHENSON

Blackbirds fostering nestling Bullfinches.—At noon on 11th June 1963, in his garden near Cranleigh, Surrey, Colin Warner noticed that a pair of Blackbirds (*Turdus merula*) had begun to brood and feed three nearly fledged young Bullfinches (*Pyrrhula pyrrhula*) in a nest in a small but thick clump of bamboo, and on the 12th he invited us in to make observations. It is not clear whether the parent Bullfinches had deserted the nest or the Blackbirds had simply taken over, but the female Blackbird regularly brooded the young until at least the evening of the 14th and both she and her mate fed them continuously with small caterpillars and grubs throughout those four days. The female looked somewhat ungainly on the frail nest; she used to sit towards one side of it and it tended to tip slightly as a result of her weight. She would allow us to approach to within a yard and the young Bullfinches could be seen looking out from under her feathers. The adult Bullfinches used to return to an apple tree near-by for a few minutes at approximately hourly intervals and one of them, usually the male, would approach to within a few inches of the brooding Blackbird before going off calling, but they did not try to chase the fosterers away and the sitting Blackbird showed no reaction to their presence. Both

Blackbirds used to leave the nest completely for about two hours every evening, from 7 p.m. to 9 p.m.

On the evening of 14th June the three young Bullfinches were still in the nest but looking very alert and ready to fly. On the 15th one of them was seen in a tree near-by with the female Blackbird perched not far away, but she made no attempt to feed it. Another of the youngsters had apparently come to grief as there were feathers on the ground, and there was no sign of the third. None was seen after the 16th.

The young in a Blackbird's nest not far away had apparently been taken by Magpies (*Pica pica*) within the previous fortnight and we think it possible that it was the adult Blackbirds from this nest which were fostering the young Bullfinches.

JOHN and ELIZABETH WELLER

Another case of fungus disease affecting a Robin.—On 6th March 1963 the body of a male Robin (*Erithacus rubecula*) was received at the Veterinary Laboratory of the Ministry of Agriculture, Fisheries and Food, at Lasswade, Midlothian, from Dr. A. Jobbling of Woodstock, Oxfordshire. It had been kept under observation at a bird table for some months as it was beginning to show signs of 'baldness'. It was eventually found dead and was thought to have been killed by a cat.

Post-mortem examination showed the bird to be in good bodily condition and the internal findings were consistent with attack by a predator. Externally, the changes in the skin were indistinguishable from those illustrated and described previously (*Brit. Birds*, 54: 289-290). The areas of the head and neck and above the right tarsal joint showed a chronic dermatitis manifested by loss of feathers and off-white dry exfoliation and thickening of the skin. Microscopic examination revealed the typical changes associated with favus which, in the domestic fowl, is caused by *Trichophyton gallinae*. There were numerous resting and vegetative stages of the fungus confined to the horny layer of the skin. No underlying tissue reaction was present. Repeated attempts at isolating the causative organism, both at Lasswade and at two other laboratories, failed and there was unfortunately not enough material for transmission experiments. Nevertheless, the microscopic changes in the skin were sufficiently characteristic to justify a tentative diagnosis of a favus-like condition.

J. W. MACDONALD

Red-eyed Vireos and other American birds in the Isles of Scilly in early October 1962.—Between the afternoon of 30th September and the early morning of 4th October 1962, single individuals of Lesser

Golden Plover (*Charadrius dominicus*), White-rumped Sandpiper (*Calidris fuscicollis*) and Least Sandpiper (*Calidris minutilla*) arrived on Agnes, Isles of Scilly. With a huge and remarkably circular depression centred over the middle of the North Atlantic on 29th September, and considering the exhausted state of the first two birds, there can be little doubt that they had all initially been blown off course and then aided in their trans-oceanic flight by gale-force winds from the west.

This remarkable procession of Nearctic waders did not, however, do anything to prepare the observers concerned for the last arrivals in this period. During the afternoon of 4th October, R. E. Emmett, I. J. Ferguson-Lees and my wife and I were combing the bulb fields and wooded gardens in the centre of the island when, at about 3.45 p.m. ST, a large warbler-like passerine was seen darting about in a manner which was clearly a risk. A moment or two later my wife and I got the first clear view, immediately noting a heavy bill, a striped head and greenish upper-parts. This combination of characters prompted me to shout, 'Vireo!'. The other two observers were quickly clear of cover but before the bird had begun a series of rapid and lengthy flights. Eventually, however, a prolonged watch inside the adjacent parsonage garden gave all four of us excellent views at a few yards in both shadow and sunlight. The bird was then quickly identified, with field reference to Roger Peterson's *A Field Guide to the Birds* (1947), as a Red-eyed Vireo (*Vireo olivaceus*), only the second to be recorded in the British Isles and Europe and the first to be seen alive.

A full description and sketches were made and even when it was not in full view, its progress through the leaf-canopy could be traced by its frequent calls. The note might be written as *tchay* and, with its pronounced nasal twang, was remarkably like that of a Willow Tit (*Parus montanus*). The size and total length were similar to those of a Great Tit (*Parus major*) but with a correspondingly short tail and heavy, blob-like bill. Our first impressions were of a fairly bright greenish bird moving boldly through foliage, showing a dark cap, black and white side-stripes recalling a Firecrest (*Regulus ignicapillus*), and whitish lower-parts. The following detailed description was obtained between about 3.45 p.m. and 5.30 p.m. in a series of short views from a few yards down to a few feet:

Upper-parts: crown grey, looking faded or quite bright blue-grey (and even black when feathers raised) according to angle of light; supercilium conspicuous, pure white bordered with lines of black above and below (the lower line passing through the dark eye); rest of upper-parts, including wing-coverts, olive but fairly bright olive-green (greenish in dull light) with a lighter and very grey-green panel on inner half-dozen secondaries, recalling the panel of the Icterine Warbler (*Hippolais icterina*); primaries and tail-feathers browner

green (but tips of latter paler). *Under-parts:* chin, throat and centre of chest clean off-white; ear-coverts and cheeks washed with olive-green, this extending to sides of chest and flanks; under-tail coverts washed with yellowish-green (appearing yellow in sunlight). Bill dark blackish; legs greyish in sunlight and dark blue-grey in shadow.

The actual colour of the eye was not seen on 4th October, but on the next day, with the bird sometimes in more open surroundings, we frequently caught a glint of red from mid-day onwards.

During the early afternoon of 5th October, I. J. Ferguson-Lees and I were again in the parsonage garden when suddenly not one, but two Red-eyed Vireos appeared within a foot of each other in the same bush. The fact that there were two cleared up some variations in the plumage details which we had noted on the 4th and also probably accounted for the vociferous calling which we had all thought unusual for such a bird on its own. The second one differed from the first in the following respects:

Generally duller with greyer crown (never showing blue) and less intense black borders to the supercilium. Upper-parts less green and wing panel not so obvious. Under-parts duller white. Eye apparently blackish in all lights and at all angles.

For the rest of the 5th, we were able to study the two birds at varying ranges and in all lights, and concluded that we were looking at one adult and one immature. Both remained fairly secretive, taking cover at any movement, but nevertheless they were watched as they worked their way through the leaves of ivy, elm, pittosporum, apple and other trees and shrubs. They picked insects off foliage, both when perched and in hover-flights, and once one was seen fly-catching. They both flicked their tails frequently and clearly kept in contact by calling; at one time a prolonged duet of *tebay, tebay* was heard.

It seems very probable that both were present on the 4th and we saw them regularly up to the 7th, our last full day on the island. On the 6th we were joined by G. J. Harris, R. Khan, N. R. Phillips and B. P. Pickess, all of whom also saw at least one of them during the next few days. They last saw the immature on the 9th and the adult on the 10th, when K. H. Hyatt was also present. Finally, the last-mentioned observer, together with B. S. Milne and F. H. Waters, had a brief view of the immature on the 17th.

D. I. M. WALLACE

Baltimore Oriole in Sussex.—On 5th October 1962, in a fairly dense clump of bushes at Whitbred Hollow, Beachy Head, Sussex, I became aware of a more or less continuous harsh call which was quite unknown to me and which I traced to a bird perched on an elderberry bush some twenty yards away. This bird was about the size of a Starling

Sturnus vulgaris), but its under-parts were of a strikingly brilliant orange, contrasting with a black head, upper back and throat; there was also orange on either side of the black throat-patch, which came down almost to a point, and on the carpal joint; its wings were black with a good deal of white, due to many, perhaps most, of the feathers having white edgings; and its bill was greyish, thick at the base (but coming to a sharp point), somewhat decurved and not quite as long as the head. I had been watching it for three or four minutes when it made a short flight into another bush and disappeared. As it flew I saw that its lower back and rump were also brilliant orange and that its tail was black, with orange at the sides. Owing to the shortness of the flight view, I got no clear impression of the wing-pattern except that it showed a good deal of white.

I did not find the bird again though I heard the call for a short time afterwards, now intermingled with a curious whistling which presumably came from the same source. It was, however, seen briefly by R. H. Charlwood on 6th October, about 200 yards from where I had watched it. He described it as 'size about that of a Starling with a conspicuous double white wing-bar; upper back and whole of head and neck black and then this lovely orange rump and breast'. No other details were noted owing to the briefness of the view.

There can be no doubt that this was an adult male Baltimore Oriole (*Icterus galbula*), and R. G. Wagstaffe of Liverpool Museums has confirmed that the description fits no other species of the American genus *Icterus*. The only previous British occurrence to be accepted as genuinely wild was an immature seen and trapped on Lundy, Devon, from 2nd to 9th October 1958 (*Brit. Birds*, 56: 52-53).

D. D. HARBER

[We are indebted to M. D. England, Derek Goodwin and R. A. Richardson for the information that a few Baltimore Orioles, perhaps less than a dozen, were imported two or three years ago and several others in the autumn of 1962. The possibility of such an origin for the Sussex bird cannot be entirely excluded, therefore, but we have not heard of any escapes and this species often loses its intense orange after moult in captivity. Moreover, the date of the appearance of this individual agrees closely with that of the Lundy record in 1958, while the first fortnight of October 1962 was a period which brought unprecedented numbers of American passerines out over the Atlantic (*Brit. Birds*, 56: 157-164) and two or three other species are known to have reached Britain and Ireland at this time. These included the two Red-eyed Vireos (*Vireo olivaceus*) on St. Agnes, Isles of Scilly (see pages 462-464), and a Rose-breasted Grosbeak (*Phœucticus ludovicianus*) on Cape Clear Island, Co. Cork (details to be published shortly). We should

also draw attention to the conclusions reached by Dr. I. C. T. Nisbet in his paper on 'American passerines in western Europe, 1951-62' (*Brit. Birds*, 56: 204-217).—EDS.]

Immature Goldfinch trapped by seed head of ragwort.—The following observation may be of interest in connection with similar incidents of birds being trapped by the seed heads of plants (*Brit. Birds*, 51: 276; 54: 246 and 362; and 55: 89-90).

On 6th August 1963, on some waste ground at Reading, Berkshire, I found an immature Goldfinch (*Carduelis carduelis*) with its right foot caught in the seed head of a ragwort (*Senecio jacobaea*). The bird was hanging head downwards and had apparently been dead for a day or two. Its outer and middle toes had become ensnared in the involucre or circle of modified leaves beneath the flower head. In the ragwort this forms a cup around the under part of the flower and then, after seeding, folds back in the opposite direction around the stem, thus resembling a many-pronged grapnel. Into this the bird's toes had evidently slipped and been trapped, and I had to use considerable force to free the foot. It was surprising that the thin stalk—less than a thirty-second of an inch thick—had supported the struggling bird.

B. G. HAMBLIN

Reviews

A Mosaic of Islands. By Kenneth Williamson and J. Morton Boyd. Oliver & Boyd, Edinburgh and London, 1963. 183 pages index; 22 black-and-white photographs; text-drawings and maps. 21s.

The more remote islands around our coast have always held a great fascination for naturalists. It is now four hundred years since Donald Monro wrote the MS. for his *Description of the Western Isles of Scotland*, eventually published in 1774; and since then we have had many books about them, varying in style from the quaint and somewhat uncritical pen of Martin Martin to the splendid, humorous and descriptive *Island Going* of Robert Atkinson.

This new book by the authors of *St. Kilda Summer* (1962) is a further and most welcome addition to the literature. With general descriptions of various Scottish islands and the Faeroe Islands, it contains much useful information on their ecology and on the birds, seals and whales.

The authors take it in turn to contribute individual chapters: on the Faeroe Islands; on the research work being carried out by the Nature Conservancy in the 'great open-air laboratory' on Rhum;

on experiences in assessing seal populations on various Hebridean islands and on North Rona in particular; on the early primitive dwellings on Hirta and Boreray of the St. Kilda group; and a general one on various small islands visited by the National Trust for Scotland's 'Islands Cruise', which also covers a trip to Unst in Shetland. On the 'Islands Cruise' Kenneth Williamson was able to see and hear five different subspecies of the Wren in eight days, and he has quite a lot to say about these birds in his chapter on Hirta. Morton Boyd describes the excitement of camping on the remote island of Boreray—the first occasion a party had stayed overnight on the island since St. Kilda was evacuated.

The chapter on Rhum is particularly valuable and includes notes on the remarkable colony of Manx Shearwaters which breed in tens of thousands high up in the interior of the island from about 1,700 feet to the summits of the high tops. Conservationists will also read with interest the details of the various experiments being undertaken on this 'research island'.

This attractively written book can be strongly recommended to everyone with an interest in island birds. GEORGE WATERSTON

Instructions to Young Ornithologists. III. Bird Migration. By Robert Spencer. Museum Press, London, 1963. 126 pages; 17 monochrome plates; line drawings and diagrams. 12s. 6d.

Through the rapid growth of the bird observatory and ringing schemes in recent years, more young bird-watchers are engaged in assisting with migration studies in Britain today than in any other serious ornithological pursuit. Many, however, once their annual observatory holiday is over or their ringed bird is released, take little further interest in the subject. This book, by the secretary of both these schemes, will encourage them to do so, just as it will introduce the complete beginner to the fascination of migration studies.

The book is concerned less with practical instruction or methods (though a few useful hints on trapping birds, making a daily census and recording visible migration are given) than in providing an introduction to present-day knowledge and ideas on various aspects of migration (including irruption) and orientation. The ground is covered adequately, the information is up-to-date and generally accurate, and the whole is presented in a straightforward, readable manner. Emphasis is not unnaturally on migration in the British Isles and a good balance has been maintained between the ordinary and the spectacular, the well-known and the new.

A certain amount of over-generalisation, perhaps justified in the interests of simplicity, has resulted in a number of minor errors and

omissions. A few other mistakes are less explicable. The younger reader may well be puzzled to find that plate 12 (depicting a radar display) is captioned 'Diurnal arrival of Chaffinches in October' when he was told earlier (p. 37) that one of the disadvantages of radar was that 'there seems to be no prospect of separating larks from Chaffinches, Chaffinches from Bramblings, and so on.' And it is not only the younger reader who will be mystified by the odd compass direction—'south-south-east by east'—on p. 61 (south by east would seem to be intended).

Despite these minor faults, Robert Spencer has succeeded well in his task and many of his readers will wish to go more deeply into the subject. For this reason the short bibliography might have been extended and the literature grouped under chapters for easy reference. The book is well produced and illustrated, and very reasonably priced. It cannot fail to interest both the young and the not-so-young beginner in an absorbing aspect of ornithology.

J. L. F. PARSLow

Birdwatching. By E. A. R. Ennion. Pelham Books (Michael Joseph), London, 1963. 138 pages; 8 plates of photographs; many line-drawings in the text. 16s.

A new British book on bird-watching inevitably invites comparison with the late Stuart Smith's excellent *How to Study Birds* (1945), although Dr. Ennion's book, from its style and approach, seems to be intended for less sophisticated readers. The latter's chapter on food, for example, begins 'The in'ards of birds, so far as food is concerned, behave very much like our own', while that on breeding starts 'In the affairs of birds a male without a territory is clearly of little account, and even a male with a territory needs a wife to round it off', compared with Stuart Smith's 'Having secured for himself a territory in which to rear a family, our cock bird, defending it vigorously, awaits the arrival of the hens'. It is not simply a question of literary elegance—the earlier book seems to the reviewer to be better and more concise in its presentation of facts and in its ability to stimulate.

However, it is perhaps unfair to push the comparison too far. Many beginners will find much to interest them in this new book and may well catch the author's infectious enthusiasm. The ten chapters cover identification; the world of birds; flight; migration; dispersion; breeding; communication; food; maintenance; and lastly, birds and men, in which there is mentioned the growing menace of toxic chemicals. There is no index. The text is accompanied by numerous examples of Dr. Ennion's delightful and inimitable sketches, although the great reduction in size and use of unsuitable paper has spoilt the effect of some of them.

RAYMOND CORDERO

LETTERS

ALSO RECEIVED

- Calendar of Birds*. By Austin Hatton. Oldbourne, London, 1963. 18s.
Bird Watching—Nesting Birds along the Coast. By Peter R. Clarke. Jarrold, Norwich, 1963. 5s.
Budgerigars and other Cage Birds. By Jack Aistrop. New English Library, London, 1963. 3s. 6d.
Butterflies in Britain. By George E. Hyde. Jarrold, Norwich, 1963. 5s.
Characters of Age, Sex and Sexual Maturity in Canada Geese (Biological Notes, No. 49). By Harold C. Hanson. State Natural History Survey Division, Urbana, Illinois, U.S.A., 1962. Free on request.
Cong-Sbells. By Michael Prynne. Barrie and Rockliff, London, 1963. 37s. 6d.
People of the Forest. By Hans Lidman. Oliver & Boyd, Edinburgh and London, 1963. 42s.
Peasants and their Enemies. By J. O'C. Fitzsimons. MacDonald & Evans, London, 1963. 15s.
The Budgerigar Owner's Encyclopaedia. By Philip Marsden. Pelham Books (Michael Joseph), London, 1963. 18s.
While Some Trees Stand. By Garth Christian. Newnes, London, 1963. 21s.
Wild Favours. By Eileen A. Soper. Hutchinson, London, 1963. 25s.

Letters

Further remarks on discoloration in House Sparrows

rs,—The observations of C. J. O. Harrison (*Brit. Birds*, 56: 296-297) on 'industrial' discoloration in House Sparrows (*Passer domesticus*) and other birds prompt us to record information on an allied problem. On 22nd to 26th October 1962 one of us, ably assisted by Roger Willey, collected 207 House Sparrows from the city dump at Oxford, England. That sample is being used in a morphological study assessing the existence and degree of geographic differentiation in the House Sparrow in North America. Some 75 Oxford skins are now in our trays and the remainder is yet frozen. It was immediately evident that these sparrows were unusually dark compared with series in comparable feather from Germany and North America. Moreover, this colour was not restricted merely to a few individuals, nor was any one notably dark. In all individuals the dark aspect was uniformly distributed over the feather coat and the plumages were those of normal, healthy birds. We nevertheless assumed that they were discolored as a result of dust-bathing in cinders or ash, and consequently washed skins as they were being prepared. Initially we used a mild detergent in water, following this by soaking and rinsing them in 'white gasoline', drying them in hardwood sawdust and fluffing them in compressed air; later we omitted the detergent, matching the earlier results in cleaning. The washing produced pronounced lightening in all specimens and revealed natural pigments that had been obscured.

On the basis of such a large sample we may also conclude that the entire population around the burning pits at Oxford was discolored. It is notable not merely that all the birds were uniformly discolored but also that such discoloration occurred in a group with as nearly fresh plumage as it is possible to get from a wild population. As a population, the birds, which were collected within a four-day period, were either just finished with or in the terminal stages of the autumn moult; in a few the distal primaries were yet ensheathed, and in none was there any abrasion of the tips of remiges and rectrices.

Thus, not only should records of 'melanism' be subject to scepticism, but also local instances of darkness (or other seeming aberrancy) in plumage, whether or not found uniformly in a population and in spite of the existence of wholly fresh feather. We may add that of ten North American samples of House Sparrows collected in October and November 1962, in various urban and rural localities and of sizes comparable with that taken at Oxford, only the series from Oakland in California likewise requires washing to reveal the natural pigments.

Investigations here in part summarised were supported by the National Science Foundation.

RICHARD F. JOHNSTON and ROBERT K. SELANDER

'Industrial' discoloration of House Sparrows

Sirs,—C. J. O. Harrison's recent note on apparent 'industrial' discoloration of House Sparrows (*Passer domesticus*) and other birds (*Brit. Birds*, 56: 296-297) will make many observers think twice before reporting abnormal plumages. Although Harrison refers specifically to cases of supposed melanism, one is prompted to wonder if some partial albinos do not also owe their coloration to artificial rather than genetic factors.

House Sparrows with numerous plumage variations are seen regularly at the massive I.C.I. chemical factory at Billingham, Co. Durham. In most cases the feathering chiefly affected is that on and around the breast—in fact, the parts of the body most likely to come into contact with the layer of sulphur powder which thickly covers the girders, walls and adjacent ground in these buildings. Similarly, a number of partial albino House Sparrows have been seen at the paper mills at Hemel Hempstead, Hertfordshire, since November 1959. Like the I.C.I. factory, this place is covered on walls and ground, and particularly in crevices, with the various chemicals and bleaches used in the manufacture of paper. Here the most usual pattern of plumage aberration is whitish on the breast and head, covering the same sort of area as the red breast of the Robin (*Eritacus rubecula*).

Whereas soot-covered birds appear to be uniformly affected, these

which I suppose to be discoloured by chemicals are marked only on certain parts of the body. Also, while the former can be tested by treatment with detergents, it will probably be found that any chemical whitening is of a less reversible nature. IAN WOODWARD

News and comment

Edited by Raymond Cordero

Nature Conservancy's new experimental station.—Monks' Wood Experimental Station at Abbots Ripton, Huntingdonshire, was officially opened by Lord Hailsham on 28th October. This major research station has been specifically built for its purpose by the Nature Conservancy and the research programme is designed to meet the responsibilities laid on the Conservancy in their Royal Charter, particularly 'to provide scientific advice on the conservation and control of the natural flora and fauna of Great Britain' and 'to organise and develop research' on all problems related to conservation. About thirty-five scientists and other staff work at the station and this number is expected almost to double by 1970. The largest group represented forms the Toxic Chemicals and Wild Life Section which, under Dr. W.W. Moore, is studying the effects on wild life of insecticides and other chemicals used in agriculture. The Director of Monks' Wood Experimental Station is Dr. M. Mellanby.

News from the Camargue.—At the autumn scientific meeting of the British Ornithologists' Union in London in October, Dr. Luc Hoffman, of the Station Biologique de la Tour du Valat, spoke of the possibility that within the next few years the Camargue might become a national park. At present the biggest threat to habitats there, the spread of rice-growing areas having stopped, is the increasing activities of companies extracting sodium chloride from sea-water for use in the plastics industry. Other problems include the depredations of Wild Boars and Herring Gulls, both of which have had to be controlled recently. Herring Gulls have increased enormously and become a serious threat to the Flamingos, killing thousands of chicks in one season. In 1962 and 1963 no Flamingos bred, but this was largely due to their unfortunate choice of a nesting place. Attempts are being made to reconstitute the island on which they had such success in earlier years. Black-headed Gulls have increased (but do not seem to be doing any damage), but Sandwich Tern numbers have steadily built up to about 100 pairs. On the other hand, Gull-billed Terns have decreased. An exciting new addition to the breeding species in the last few years has been one or two pairs of Slender-billed Terns. Avocets, Night Herons and Purple Herons are holding their own, said Dr. Hoffman, and Squacco Herons have increased to between 40 and 50 pairs, making the Camargue nearly as important a breeding area as the marismas of the Guadalquivir. Little Egrets are also on the increase. Marsh Harrier numbers have held up well despite the disappearance of the Rabbit; they are eating more frogs. Pratincoles may have declined a little, although this is uncertain. The Collared Dove was first seen in 1962, but nesting has not been recorded. The Great Spotted Cuckoo has not yet bred either, but is being noted increasingly during the spring. Bee-eater numbers have been maintained, but the tendency is for the birds to nest in smaller colonies than previously. The Gadwall has lost ground. Dr. Hoffman also stated that in the last ten years 40,000 ducks have been ringed in the Camargue.

Two important conferences on game and wildfowl conservation.—Great Britain was recently the host country for a pair of linked conferences: the first, at Bournemouth from 7th to 12th October, concerned the International Union of Game Biologists, and the second, at St. Andrews from the 16th to 18th, was the first European Meeting on Wildfowl Conservation. In between there were two tours in the Scottish Highlands, during which visits were made to the Osprey nest-site at Loch Garten, to the Culterty Field Station of Aberdeen University, to the Nature Conservancy's Unit of Grouse and Moorland Ecology at Kerloch Moor, and to the new proposed National Nature Reserve at Loch Leven. After the St. Andrews Meeting had been concluded by a government reception in Edinburgh Castle, there was a final excursion to the Loch Lomond and Caerlaverock National Nature Reserves; earlier, trips from Bournemouth had enabled the visitors to see the Wildfowl Trust at Slimbridge, the New Forest and the new Dorset Naturalists' Trust Nature Reserve on Brownsea Island.

The game biologists discussed migratory wildfowl populations, game-birds and certain other topics such as toxic chemicals and narcotics. The standard of this conference has risen encouragingly and this meeting was particularly assisted by the presence of a strong North American contingent, including Prof. G. Swanson, Prof. W. Marshall, Prof. D. Pimlott, W. F. Crissey and J. B. Gollop. The Netherlands contingent was also a strong one, but it seemed to be generally recognised that, after a late start, Great Britain is carrying through a programme of research in these fields which ranks among the most important, and is making an impressive contribution, especially at the more basic levels.

A number of the game biologists were among the nearly fifty overseas participants at St. Andrews, where they were joined by government and sportsmen's representatives, and officers of the international bodies concerned, including the International Wildfowl Research Bureau (which joined with the Nature Conservancy in organising the meeting), the Council of Europe and the Conseil International de la Chasse. The meeting reviewed the European situation regarding wildfowl stocks, the state of existing information, conservation laws, law enforcement and education, plans for wildfowl refuges, liaison between interested parties, adverse and beneficial influences, and future action. Unanimous agreement was reached that, in future, wildfowl investigations, protection, conservation and management should be integrated on a European basis, using the best modern methods and transcending national boundaries. It was also agreed that further European meetings of this kind should be held.

The proceedings of both conferences are to be published next year by the Nature Conservancy.

Resignations from the R.S.P.B.—We learn with great regret of the resignations of P. E. Brown and Miss M. G. Davies from the staff of the Royal Society for the Protection of Birds. During Mr. Brown's long administration of the R.S.P.B.'s affairs, the membership increased nearly three-fold and the scope of the Society's activities grew correspondingly. Under Miss Davies's many years of editorship, *Bird Notes* created and occupied a unique position in ornithological literature. These achievements stand as monuments to their long service.

Colour slides of birds.—Teachers and lecturers who need visual aids will be interested to learn that the sets of 35 mm. slides of bird subjects produced and distributed by Diana Wyllie Ltd., of 3 Park Road, Baker Street, London, N.W.1, have been re-issued following technical improvements in film stocks for reproduction. Two of the sets, each of which contains ten slides with notes and costs 27s. 6d., are 'Fresh Water Birds' by Eric Hosking and 'Sea Birds' by Eric Herbert.

Short index of English names of birds

This simplified index is confined to the numbers of the first pages of papers, notes and letters on the species concerned, together with significant references in contributions of a more general nature. Casual references to other species within the text are not included, however, nor are birds mentioned in reviews or in the 'Recent reports' and 'News and comment'. Such lists as the 'Report on rare birds in Great Britain in 1962' are completely indexed, but on this occasion the delayed Ringing Supplement has had to be omitted

Cuckoo, 330, 336, plate 28b
 Bee-eater, 337, 402
 Cuckoo, 329, 335
 —, Little, 329, 335, 397
 Cuckoo, 191, 219, 222, 308, 315, 337, 378, 412, 420, 461
 —, Rusty, 160, 161
 Cuckoo, 338
 Cuckoo, 205, 406
 Cuckoo, 461
 Cuckoo, Black-headed, 408
 —, Corn, 338
 —, Little, 408
 —, Ortolan, 338
 —, Reed, 331, 338, plate 29b
 —, Rustic, 408
 —, Yellow-breasted, 408
 Cuckoo, Houbara, 399, plate 61
 Cuckoo, 129, 146, 335, plate 33a
 —, Long-legged, 147
 —, Rough-legged, 146
 Cuckoo, 19, plates 1-5
 Cuckoo, 160, 161
 Cuckoo, 308, 321, 338, 341
 Cuckoo, 112, 308, 320
 Cuckoo, 336
 Cuckoo, 334
 —, Double-crested, 160, 161
 —, Pygmy, 329, 335
 Cuckoo, 336
 Cuckoo, Baillon's 336
 —, Little, 336
 —, Spotted, 336
 Cuckoo, 336, 375, 399, plates 55-59
 Cuckoo, Two-barred, 408
 Cuckoo, Carrion, 29, 337
 —, Hooded, 337
 Cuckoo, 28, 336
 Cuckoo, 336
 —, Slender-billed, 294
 —, Stone, 336

Dipper, 73, 152
 Dove, Collared, 114, 336
 —, Mourning, 160, 161
 —, Stock, 336
 Duck, Ferruginous, 329, 335, 397
 —, Ring-necked, 397
 —, Tufted, 22, 335, plates 6-7b
 —, White-headed, 330, 335
 Dunlin, 219, plate 28a
 Dunnock, 308, 320
 Eagle, Bald, 130, 132
 —, Golden, 142, 144, 146, plate 24a
 —, Imperial, 335
 —, Lesser Spotted, 144, 330, 335, plate 24b
 —, Short-toed, 146, plate 22a
 —, Spotted, 144
 —, White-tailed, 142, 144, 330, 335, 396, 399
 Egret, Cattle, 293, 396
 —, Little, 329, 335, 395, 396
 Eider, 273, 280
 —, King, 398
 Falcon, Eleonora's, 148
 —, Gyr, 145, 399
 —, Red-footed, 143, 147, 336, 399
 Flicker, Yellow-shafted, 158, 160
 Flycatcher, Collared, 338, 406
 —, Red-breasted, 331, 338
 —, Spotted, 338
 Fulmar, 2
 Gadwall, 335
 Garganey, 335
 Godwit, Black-tailed, 233, 336
 Goldfinch, 113, 338, 466
 Goose, Brent, 339
 —, Canada, 190
 —, Grey Lag, 329, 335
 —, Lesser White-fronted, 398
 —, Red-breasted, 398

- Goose, Snow, 396, 398
 —, White-fronted, 220
 Goshawk, 131, 142, 335, 398
 Grebe, Black-necked, 334
 —, Great Crested, 330, 334
 —, Little, 334
 —, Red-necked, 330, 334
 Greenfinch, 31, 338, plate 8
 Greenshank, 28
 Grosbeak, Rose-breasted, 205, 465
 —, Scarlet, 407
 Gull, Black-headed, 115, 219, 330, 336,
 377, plate 32b
 —, Glaucous, 263, plates 39-42
 —, Herring, 28, 336, plate 7a
 —, Ivory, 401
 —, Little, 336
 —, Mediterranean Black-headed, 330,
 336, 401
 —, Ross's, 402
 —, Sabine's, 402
 —, Slender-billed, 330, 336
 Harrier, Hen, 137, 145, 147, plates 25a,
 33b
 —, Marsh, 131, 142, 147, 330, 335,
 plate 25b
 —, Montagu's, 131, 134, 144
 —, Pallid, 145, 335, plate 26b
 Hawfinch, 331, 338
 Hawk, Pigeon, 160, 162
 Heron, 329, 335
 —, Great White, 329, 335, plate 53
 —, Night, 329, 335, 395, 397
 —, Purple, 329, 335, 396
 —, Squacco, 329, 335
 Hobby, 137, 143, 147, 335, plate 23b
 Hoopoe, 337
 Ibis, Glossy, 327, 335, 397, plate 47
 Jackdaw, 337, 412
 Jay, 221, plate 27
 —, Blue, 160, 161
 Junco, Slate-coloured, 159, 160, 163
 Kestrel, 125, 133, 145, 336, 457, plate
 26a
 —, Lesser, 143, 146
 Kingfisher, 337
 Kinglet, Golden-crowned, 158, 160
 Kite, 142, 396, 398
 —, Black, 146
 —, Black-winged, 148, 444, plates 65-
 72
 Kittiwake, 101
 Lammergeier, 143
 Lanner, 147
 Lapwing, 330, 336
 Lark, Bimaculated, 403
 —, Calandra, 337
 —, Crested, 337
 —, Horned, 205
 —, Short-toed, 337
 Magpie, 337
 Mallard, 329, 335, 339
 Martin, House, 337
 —, Sand, 337, 378, 419
 Merlin, 131, 137, 142
 Moorhen, 27, 336
 Mynah, Common, 114
 Nightingale, Thrush, 331, 338
 Oriole, Baltimore, 52, 160, 162, 205, 407,
 464
 —, Golden, 337
 Osprey, 133, 142, 158, 160, 335
 Owl, Barn, 129, 336
 —, Eagle, 337
 —, Little, 129, 337
 —, Long-eared, 129
 —, Short-eared, 337
 —, Tawny, 129, 337
 Oystercatcher, 330, 336, 460
 Pelican, Dalmatian, 328, 335
 —, White, 328, 335, plates 50a-51
 Peregrine, 126, 128, 132, 135, 137, 142,
 145, 147, 149, 457, plate 21
 Phalarope, Wilson's, 401
 Pheasant, 419, 452
 Pintail, 335
 Pipit, Blyth's, 285
 —, Richard's, 285, 292, 406, plates
 44a-45
 —, Rock, 295
 —, Tawny, 285, 292, 338, 406, plates
 43-44b
 Plover, Kentish, 330, 336, 399
 —, Lesser Golden, 399, 462
 —, Little Ringed, 330, 336
 —, Ringed, 152
 Pochard, 335, plate 6
 —, Red-crested, 335, 397
 Pratincole, 330, 336, 401, plate 32a

BRITISH BIRDS

- Warbler, Aquatic, 404
 —, Arctic, 405
 —, Barred, 338
 —, Blackpoll, 158, 160, 164
 —, Cetti's, 403
 —, Dartford, 41
 —, Garden, 338
 —, Grasshopper, plate 31
 —, Great Reed, 331, 338, 396, 403
 —, Greenish, 405
 —, Icterine, 331, 338, 404
 —, Magnolia, 158, 160
 —, Marsh, 331, 338, 403
 —, Melodious, 404
 —, Mourning, 158, 160
 —, Moustached, 338
 —, Myrtle, 159, 160, 205
 —, Olivaceous, 338, 405
 —, Pallas's, 112, 405
 —, Palm, 160, 162
 —, Parula, 160, 162
 —, Pine, 159, 160
 —, Radde's, 406, 420, plate 64
 —, Reed, 331, 338
 —, River, 331, 338
 —, Savi's, 331, 338
 —, Sedge, 338
 —, Willow, 111, 308, 319
- Warbler, Wood, 338
 —, Yellow-browed, 405
 Waterthrush, 205
 Waxwing, Cedar, 160
 Wheatear, 337
 —, Desert, 403
 —, Pied, 331, 337
 Whinchat, 337, plate 30
 Whitethroat, 338
 —, Lesser, 338
 Wigeon, American, 397
 Woodpecker, Great Spotted, 337
 —, Green, 228
 —, Grey-headed, 337
 —, Hairy, 158, 160
 —, Lesser Spotted, 337
 —, Middle Spotted, 337
 —, Syrian, 337
 Woodpigeon, 340, 345
 Wren, 308, 314, 337
 —, House, 158, 160
 —, Winter, 158, 160
 Wryneck, 337
- Yellowhammer, 338
 Yellowlegs, Lesser, 400
 Yellowthroat, 158, 160, 205

Books for Christmas available from
WITHERBY'S BOOKSHOP

The Rocks Remain by Gavin Maxwell. A sequel to the author's famous *Ring of Bright Water*. 24 plates of photographs. 30s.

Pictorial Encyclopaedia of the Animal Kingdom by V. J. Stanek. 16 colour plates and over 1,000 remarkable photographs. Magnificent value. 25s.

A Drake at the Door by Derek Tangye. Illustrated. 21s.

King Todd by Norah Burke. The true story of a badger. Illustrated by D. J. Watkins-Pitchford. 21s.

Bird Migration by Robert Spencer. A comprehensive introduction to the subject. 9 plates of photographs and 13 figures. 12s. 6d.

The Birds of the British Isles, Vol. XII, by D. A. Bannerman and G. E. Lodge. 63s.

Birds of the Atlantic Islands, Vol. I, by D. A. Bannerman. 84s.

The Wonders of Wildlife in Europe by Roedelberger and Phillips. Successor to *The Wonderful World of Nature*. 42s.

The Senses of Animals and Men by Lorus J. Milne and Margery Milne. 25s.

Birdwatching by E. A. R. Ennion. 13s. 6d.

A Million Years of Man by Richard Carrington. A unique account of man's biological and cultural development. 36s.

Collins Guide to Mushrooms and Toadstools by Morten Lange and F. Bayard Hora. 96 colour plates. 30s.

Atlanta My Seal by H. G. Hurrell. The fascinating story of a young Atlantic seal. 24 plates. 25s.

Wildfowl in Great Britain edited by G. L. Atkinson-Willes. A complete survey of distribution and habitats. 14-page colour section from paintings by Peter Scott. 28 half-tones, 60 line-drawings and 364 pages. 45s.

The Birds of Hampshire and the Isle of Wight by Edwin Cohen, M.B.O.U. 16 plates of photographs, and line maps and drawings in the 270 pages of text. 30s.

While Some Trees Stand by Garth Christian. Wildlife in our vanishing countryside. 21s.

As the Falcon her Bells by Phillip Glasier. 25s.

Please address all enquiries to

The Manager, Witherby's Bookshop
61/62 Watling Street, London, E.C.4
or telephone City 5405

ALL BOOKS SENT POST FREE

A WONDERFUL NEW BINOCULAR for the bird watcher

Designed with the bird watcher in mind, the new 10 x 40 ROSS SOLAROSS embodies all the features which the bird watcher requires:

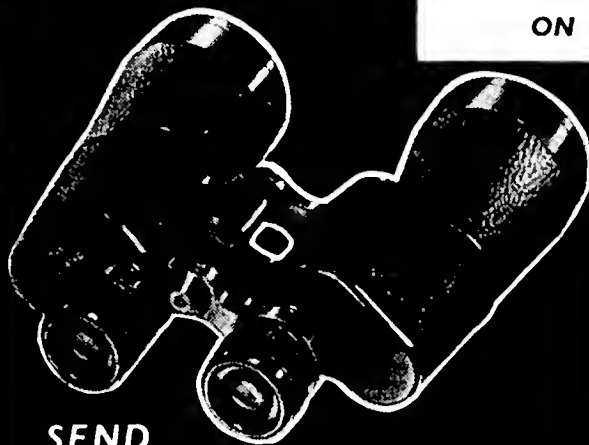
- Adequate magnification (10x)
- 40 mm. object glass and fully coated optics to ensure maximum brightness
- Brilliant performance
- Centre focusing for speedier adjustment
- Streamlined design
- Lightweight—only 28 oz
- Compact with sensibly designed camera-type leather case and straps

BRITISH MADE BY WORLD
FAMOUS ROSS OF LONDON

19 gns



THE PICK OF THE WORLD'S
GREAT INSTRUMENTS
ON 14 DAYS' FREE TRIAL



SEND
FOR NEW
ILLUSTRATED CATALOGUE

CHARLES FRANK LTD.
67-75 Saltmarket Glasgow G1.
Phone. BELL 2106/7 Est. 1907

Britain's greatest stocks of New, Used and Ex-Govt.
Binoculars, Telescopes and Navigational Equipment.

Accredited agents for ROSS, BARR & STROUD,
WRAY and ZEISS (both East and West Zones)

TELESCOPES. The Charles Frank
PANCRATIC 30x to 55x, £7. 17. 6
The Charles Frank 22x OG 50mm.
PRISMATIC with tripod, £22. 10. 0
NICKEL SUPRA 15x to 60x OG
60mm., £36. 12. 0

From the current Japanese quota, we can offer a high quality 10 x 50 glass at £18 10s. and an excellent 8 x 30 at £12 10s. Both models are centre focusing and complete with case and straps. Approval facilities available.

6 x 30 ARMY BINOCULARS
An excellent general purpose binocular of good performance, which will stand up to a great deal of rough usage. Cost approximately £20. £7. 15. 0

The wildfowler who requires maximum brightness in all conditions will do well to consider the Canadian Naval 7 x 50 day and night glass: complete in waterproof rubber case, an amazing glass which will stand up to an inordinate amount of rough usage. £24. Incidentally, current value of a glass of this quality would be about £60.

CHARLES FRANK Large Tripod Mounted TELESCOPE 3" aperture. £57. 10. 0

British Birds

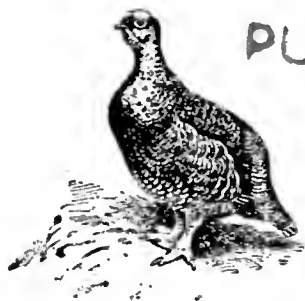
Contents

Report on bird-ringing for 1962

Robert Spencer

Recoveries in Great Britain and Ireland
of birds ringed abroad

E. P. Leach



- 4 MAR 1964
PURCHASED.

Ringling Supplement 1963

British Birds

AN ILLUSTRATED MONTHLY JOURNAL

Edited by Stanley Cramp, I. J. Ferguson-Lees, P. A. D. Hollom, E. M. Nicholson

Hon. Editors W. B. Alexander, N. F. Ticehurst

Editorial Address 30 St. Leonard's Avenue, Bedford

Photographic Editor

Eric Hosking

20 Crouch Hall Road

London, N.8

'News and Comment'

Raymond Cordero

Rohan Lodge, Wadhurst Park

Wadhurst, Sussex

Rarities Committee

D. D. Harber

1 Gorringe Road

Eastbourne, Sussex

Contents of Volume 56, 1963, Ringing Supplement

	<i>Page</i>
Report on bird-ringing for 1962. By Robert Spencer	477
Recoveries in Great Britain and Ireland of birds ringed abroad.	
By Miss E. P. Leach	525

List of bird observatories in Great Britain and Ireland, the addresses of
their organisers, and their charges *Inside back cover*

Map of bird observatories and certain other ringing stations
in Great Britain and Ireland *Outside back cover*

Annual subscription £2 6s. (including postage and despatch)
payable to H. F. & G. Witherby Ltd., 61/62 Watling Street, London, E.C.4

British Birds

Vol. 56, 1963

RINGING SUPPLEMENT



Report on bird-ringing for 1962*

By *Robert Spencer*

Ringling Officer, B.T.O.

Each 'REPORT ON BIRD-RINGING' is inevitably produced many months after the close of the period it chronicles and, in the interests of orderly presentation, is normally confined to the events of a single year. There are occasions when it is desirable to step outside those limits and such is the case now, for on 11th September 1963 the Ringing Office moved to the new headquarters of the British Trust for Ornithology at Beech Grove, Tring, Hertfordshire. So ended a sojourn of twenty-six years at the British Museum (Natural History) and it is a pleasure to place on record our great indebtedness to the Trustees and the staff of the museum, not merely for the privilege of the accommodation there, but for the many facilities and the friendly co-operation we enjoyed throughout that time. The museum was an admirable centre from which to administer our work, but, like a young cuckoo in the nest, the ringing scheme expanded so rapidly that it outgrew the space available and a move became unavoidable. Happily, our link with the museum is only partially severed, for the Trustees have kindly permitted us to retain its address on our rings. This is, in itself, a major asset, for the prestige of the museum must often tip the balance when a finder of a ring is wondering whether to report his find.

One sad feature of the move has been that it has deprived us of the assistance of Miss Elsie Leach. After thirty-three years of unstinting voluntary service to the scheme, she has an unrivalled knowledge of its problems and we relied greatly upon her for counsel and help. We should like to think that we have been infected with something of her own consistently high standards of thoroughness and accuracy, and we wish her a long and happy retirement.

The year 1962, to which this report primarily relates, was a busy one

* This is the twenty-sixth report issued on behalf of the Bird-Ringing Committee and is a publication of the British Trust for Ornithology. For the twenty-fifth report see *Brit. Birds* 55: 493-556.

at headquarters, for the number of birds ringed was 11% higher than in 1961 while the number of recoveries increased by no less than 26%. This somewhat novel trend did not, in fact, portend the golden age of ringing, for the number of recoveries in any one year may be affected by many factors. Most ducks and sea-birds, for example, have relatively high recovery rates, so that an increase of only one thousand in the numbers of these species ringed is likely to produce many more recoveries than an increase of ten thousand in the warbler total.

A feature of particular importance in 1962 was the cold spell, which occupied the first two weeks of the year. Although its duration was short, the onset was sudden and the temperatures low. There were marked cold weather movements, and the increased mortality which occurred was at once apparent in the number of recoveries reported for such species as the Lapwing (*Vanellus vanellus*), Song Thrush (*Turdus philomelos*) and Blackbird (*T. merula*).

The 'natural' recovery rate for a species reflects the likelihood of a ringed bird being found, alive or dead, by a member of the public, and of a report being submitted. It is obviously influenced by the size of the bird, by its ecology and by its economic interest for man. If some allowance is made for the vicissitudes of the weather, this rate appears to be fairly constant over a number of years. It is not, however, immutable. Interest in a species, give him a good reason for examining it, and the number of recoveries will immediately increase. Naturally, this is seldom feasible with the general public, but it is possible to focus the attention of ringers in this way. If enough of them specialise on a selected species, before long they start to catch each other's birds. The recovery rate is thus boosted and there is no longer such absolute reliance for results on the co-operation of the casual finder. Furthermore, as the intensity of the ringing effort is increased, the recovery rate improves accordingly. Simple though it is, this technique has become possible only in very recent years, as the numbers of ringers and the numbers of birds ringed have gradually built up to an adequate level.

An admirable demonstration of the process is to be seen in the records of the Mute Swan (*Cygnus olor*), a species which has been the subject of a special effort for several years. In 1961, a total of 3,092 swans were ringed and 351 were recovered. In 1962 the relevant figures were 2,674 and 696. Thus the total of newly ringed birds actually fell, because it became increasingly difficult to find a swan which was not already ringed, but, for the same reason, the number of recoveries almost doubled. Not every species is suitable for intensive study in this way. Ease of catching, once the appropriate technique has been discovered, and a degree of gregariousness are important attributes for the ideal subject. Further examples of suitable species are the Sand Martin (*Riparia riparia*), Swallow (*Hirundo*

rustica) and Swift (*Apus apus*), for all of which the numbers of recoveries jumped strikingly in 1962. Indeed, specialisation has been so effective in the case of the Sand Martin that in the last six years the recovery rate has improved from roughly one in five hundred to almost one in fifty. There seems no reason to doubt that we shall gradually succeed in applying similar techniques to many species which are at present unrewarding.

With so much material from which to choose, the recovery section is more selective than ever. Even so, not all records are of equal interest and it is easy to overlook some of the more notable ones in the mass of detail. Two of the maps, therefore, are intended to draw attention to a selection of the most spectacular movements, while occasional comments in the text help to indicate the significance of others.

Recoveries of Manx Shearwaters (*Procellaria puffinus*) in South America are of more or less annual occurrence now, but the total of eleven listed in this report is quite unprecedented, as are a Teal (*Anas crecca*) and a White-fronted Goose (*Anser albifrons*) in Greece. The latter are, in fact, the first recoveries of British-ringed birds from the Greek mainland, although there is an earlier record of a Red-backed Shrike (*Lanius cristatus*) in the Dodecanese. Our greatly increased enterprise in wader catching, based largely on a more sophisticated use of mist nets, is abundantly reflected in the map of selected wader recoveries, as well as in the individual records of a Ringed Plover (*Charadrius hiaticula*) and a Dotterel (*Charadrius morinellus*) in the U.S.S.R. and a Whimbrel (*Numenius arquata*) in Nigeria.

Among the sea-birds, evidence of remarkable overland movements is to be seen in the recoveries of a Great Skua (*Catharacta skua*) and an Arctic Tern (*Sterna macrura*) in the U.S.S.R. and a Kittiwake (*Rissa tridactyla*) in Czechoslovakia. Another Arctic Tern, which came aboard a Japanese whaling vessel operating near the pack ice in the South Atlantic, provided us with our most southerly record to date for any species.

Beside such romantic journeys as these, the recoveries of a Stock Dove (*Columba oenas*) in Spain, a Great Spotted Woodpecker (*Dendrocopos major*) in Belgium and a Rock Pipit (*Anthus spiuoletta*) in the Faeroes no doubt seem trivial, but each was a first record and thus a landmark in the history of our work. Even within the confines of the British Isles, there have been some very interesting movements. The recovery of a Dunnock (*Prunella modularis*) in Cambridge a week after being ringed on Fair Isle provides ample scope for speculation, especially as a Lincolnshire-ringed bird was recovered in the Netherlands during the same period of the spring.

Finally, attention may be drawn to some of the seed-eating birds. So great was the volume of recoveries of Linnets (*Carduelis cannabina*) and Goldfinches (*C. carduelis*) that, for the first time, we have been

obliged to resort to tables and maps for these species. Greenfinches (*Chloris chloris*), too, provided many foreign recoveries as a result of the strong cold-weather movement mentioned earlier. It has become clear that ringing can do much to elucidate the effect of severe weather upon our wild birds. Finally, there is the extraordinary record of a Snow Bunting (*Plectrophenax nivalis*) on the shores of the Adriatic, where the species is an occasional visitor only.

Table 2, and especially the second part, offers much for the curious browser. The reader who is pressed for time may like to know that three new species were added to the ringing list in 1962. Two of them, the Bobolink (*Dolichonyx oryzivorus*) ringed by St. Agnes Bird Observatory and the Solitary Sandpiper (*Tringa solitaria*) ringed by A. R. Johnson, were visitors from North America. The third species, the Parrot Crossbill (*Loxia pytyopsittacus*), ringed by no less than five different ringers, may perhaps have a slightly doubtful claim to be counted as new, since the breeding stock in Speyside is sometimes regarded as belonging to this species rather than as a race of the ordinary Crossbill (*L. curvirostra*). However, so far as we can discover, all the Crossbills ringed in former years have had their origin in irruptive movements from the Continent and so it seems proper to regard the 1962 Parrot Crossbills as being a genuine addition to the list.

COMMITTEE

The members of the Bird-Ringing Committee on 31st December 1962 were Sir Landsborough Thomson (Chairman), Miss E. P. Leach, J. S. Ash, E. J. M. Buxton, J. C. Coulson, J. Cudworth, P. R. Evans, P. A. D. Hollom, C. D. T. Minton, J. D. Macdonald (representing the Trustees of the British Museum), C. M. Perrins and R. G. Pettitt; with R. K. Cornwallis, R. A. O. Hickling, J. M. McMeeking, C. A. Norris, G. Waterston and D. R. Wilson (*ex officio*) and Robert Spencer (Secretary).

FINANCE

The work of the Bird-Ringing Committee is done under contract to the Nature Conservancy, an annual grant being received to cover the salaries of four out of the five members of headquarters staff. A grant of £50 from the main funds of the Trust was received towards the cost of the special ringing inquiries, and the publishers of *British Birds* made their annual grant of £25. All other expenses were met from the sale of rings and from the revenue derived from ringing permits.

Full accounts for the year 1962 have been published in the Annual Report of the British Trust for Ornithology.

STAFF

Robert Spencer, R. W. Hudson, C. J. Mead, Mrs. P. Nieman and Miss J. Shearing. Miss E. P. Leach, in an honorary capacity, had charge of

All reports of rings from foreign schemes.

ACKNOWLEDGEMENTS

Grateful acknowledgement is made to the Nature Conservancy for their indispensable financial support and to H. F. and G. Witherby Ltd. for their annual grant. Acknowledgements to the Trustees and staff of the British Museum, and to Miss E. P. Leach, appear at the beginning of this introduction. S. Boddy kindly helped us in the Ringing Office during two difficult periods, and we were splendidly served by our honorary translators, Derek Goodwin, A. G. Hurrell and W. R. Rybotycki.

PUBLICATIONS

The following papers, based wholly or partially on the results of British ringing, have been published:

M. J. Ashmole (1962): 'The migration of European thrushes: a comparative study based on ringing recoveries'. *Ibis*, 104: 314-346, 522-559.
 Hugh Boyd (1962): 'Mortality and fertility of European Charadrii'. *Ibis*, 104: 368-387.
 Peter Davis (1962): 'Robin recaptures on Fair Isle.' *Brit. Birds*, 55: 225-229.
 M. P. Harris (1962): 'Migration of the British Lesser Black-backed Gull as shown by ringing data'. *Bird Study*, 9: 174-182.
 M. P. Harris (1962): 'Recoveries of ringed Great Black-backed Gulls'. *Bird Study*, 9: 192-197.
 K. Murton and M. G. Ridpath (1962): 'The autumn movement of the Wood-pigeon'. *Bird Study*, 9: 7-41.
 C. C. Radford (1962): 'British ringing recoveries of the Black-headed Gull'. *Bird Study*, 9: 42-55.
 D. A. Ratcliffe (1962): 'Breeding density in the Peregrine and Raven'. *Ibis*, 104: 113-39.
 W. Ryzewski (1962): 'Longevity of ringed birds'. *The Ring*, 33: 147-152.

Table 1

NUMBERS OF BIRDS RINGED AND RECOVERED

	Ringed			Recovered
	Juv./Adult	Pullus*	Total	Total
1962	307,924	81,551	389,475	11,689
1961	272,919	77,443	350,362	9,238
1960	219,104	60,085	279,189	7,911
1959	184,837	57,488	242,325	6,949
1958	155,414	45,421	200,835	6,374
1957	137,060	49,286	186,346	5,497
1956	104,665	40,069	144,734	4,808
1955	90,585	35,718	126,303	4,063
Grand total ringed 1909-1962 .. ..	.. ..	.. ..	.. ..	3,271,095
Grand total recovered 1909-1962 .. ..	.. ..	.. ..	.. ..	89,627

*An explanation of the term *pullus* or *pull.* appears on page 487.

BRITISH BIRDS

Table 2

RINGING AND RECOVERY TOTALS TO 31.12.62
 Section 1—Species of which more than 100 have been ringed

	Ringed				Recovered	
	Juv./Adult	Pullus	1962 total	Grand total	1962	Grand total
Little Grebe	21	—	21	217	2	
Leach's Petrel	3	—	3	908	—	
Storm Petrel	626	2	628	8,604	2	
Manx Shearwater	2,837	3,406	6,243	108,823	281	1,4
Fulmar	140	996	1,136	7,413	10	
Gannet	44	1,794	1,838	24,560	92	1,1
Cormorant	33	732	765	6,844	195	1,5
Shag	191	2,797	2,988	15,389	216	1,3
Heron	2	115	117	4,677	39	7
Mallard	4,196	257	4,453	40,045	877	6,1
Teal	2,830	4	2,834	36,240	561	6,2
Garganey	6	—	6	209	5	
Gadwall	3	7	10	197	—	
Wigeon	98	1	99	2,237	25	4
Pintail	71	—	71	631	14	1
Shoveler	56	17	73	631	14	1
Tufted Duck	47	3	50	1,006	6	2
Pochard	6	4	10	234	2	
Eider	191	176	367	2,838	16	1
Shelduck	150	178	328	1,381	8	
Grey Lag Goose	1	—	1	583	7	1
White-fronted Goose	76	—	76	581	11	1
Pink-footed Goose	1	—	1	11,822	264	2,6
Canada Goose	54	28	82	1,326	20	1
Mute Swan	2,448	227	2,675	8,126	696	1,3
Buzzard	—	32	32	1,056	4	
Sparrowhawk	18	13	31	1,401	2	2
Marsh Harrier	—	—	—	123	—	
Hen Harrier	—	53	53	623	4	
Montagu's Harrier	—	4	4	258	—	
Peregrine	—	13	13	186	—	
Merlin	8	32	40	727	6	
Kestrel	43	129	172	3,038	31	3
Red Grouse	—	—	—	1,538	—	1
Partridge	78	—	78	248	4	
Water Rail	125	—	125	676	2	
Corncrake	4	4	8	739	—	
Moorhen	455	26	481	6,582	40	2
Coot	240	5	245	2,052	25	2
Oystercatcher	1,005	424	1,429	8,307	53	3
Lapwing	182	2,410	2,592	77,626	115	1,6
Ringed Plover	198	213	411	5,449	9	
Little Ringed Plover	24	80	104	437	1	
Grey Plover*	12	—	12	107	—	
Golden Plover	22	12	34	722	6	
Turnstone	186	—	186	966	1	
Snipe	1,112	33	1,145	6,965	78	3
Jack Snipe	85	—	85	493	6	
Woodcock	33	7	40	5,776	4	4
Curlew	131	208	339	7,542	31	3
Bar-tailed Godwit	11	—	11	128	1	
Green Sandpiper	48	—	48	214	2	

*Newly promoted from Section 2

REPORT ON BIRD-RINGING FOR 1962

	Ringed				Recovered	
	Juv./Adult	Pullus	1962 total	Grand total	1962	Grand total
SSandpiper*	25	—	25	112	—	1
oon Sandpiper	357	73	430	4,744	4	37
ank	757	201	958	8,225	38	217
hank	42	—	42	151	1	5
.. ..	254	—	254	1,039	4	11
SSandpiper	22	—	22	174	—	—
otint	15	—	15	325	1	7
.. ..	3,618	24	3,642	16,157	55	149
.. Sandpiper	17	—	17	176	—	—
iling	23	—	23	193	1	5
.. ..	176	—	176	496	7	16
CCurlew	—	1	1	367	—	21
SSkua	1	147	148	1,435	4	35
SSkua	—	1,080	1,080	4,077	12	75
BBlack-backed Gull ..	49	466	515	4,179	34	261
BBlack-backed Gull..	275	4,080	4,355	32,238	175	1,334
gg Gull	547	6,867	7,414	44,716	325	1,750
oon Gull	46	223	269	5,097	12	218
aeaded Gull	533	6,663	7,196	64,191	318	3,132
ake	202	1,026	1,228	18,962	38	400
oon Tern	60	2,027	2,087	35,641	55	711
ITern	259	2,767	3,026	25,469	60	384
ee Tern	20	706	726	7,108	15	71
ITern	3	150	153	2,303	2	31
icth Tern	26	2,906	2,932	42,806	63	767
Bill	127	391	518	12,228	30	370
not	84	330	414	8,586	16	285
CGuillemot	5	96	101	716	—	7
.. ..	842	774	1,616	17,077	11	103
DDove	17	29	46	2,178	5	157
DDove.. ..	1	—	1	125	—	5
idgeon	202	467	669	9,337	87	711
DDove	168	67	235	1,973	3	68
o	66	35	101	2,118	2	66
OWl	29	28	57	1,416	15	202
OWl	49	46	95	1,800	8	152
OWl	26	46	72	2,887	8	203
earred Owl	13	6	19	569	2	37
earred Owl	1	24	25	457	2	35
ar	1	12	13	500	—	11
.. ..	7,424	92	7,516	21,972	172	508
ther	163	12	175	1,679	8	59
Woodpecker	59	6	65	647	8	27
Spotted Woodpecker	169	8	177	1,220	12	59
ck	8	—	8	609	—	13
ark	—	5	5	501	—	2
k:	1,056	447	1,503	11,562	8	81
w	14,997	7,261	22,258	143,251	200	993
DMartin	3,787	37	3,824	29,049	33	223
DMartin	27,679	21	27,700	88,958	435	937
.. ..	2	88	90	1,013	13	108
m/Hooded Crow	36	133	169	4,292	17	272
.. ..	130	414	544	10,902	48	728
w	194	220	414	10,587	36	605
e:	45	135	180	3,514	13	168
.. ..	182	26	208	2,408	23	179

*Newly promoted from Section 2

BRITISH BIRDS

	Ringed				Recovered	
	<i>Juv./Adult</i>	<i>Pullus</i>	<i>1962 total</i>	<i>Grand total</i>	<i>1962</i>	<i>Grand total</i>
Chough	4	25	29	312	4	2
Great Tit	4,981	2,309	7,290	74,584	129	1,27
Blue Tit	13,408	3,128	16,536	160,005	319	3,01
Coal Tit	475	181	656	8,654	8	10
Marsh Tit	411	65	476	3,627	4	3
Willow Tit	262	27	289	1,058	1	4
Long-tailed Tit	494	—	494	3,901	9	3
Bearded Tit	282	—	282	1,092	8	1
Nuthatch	147	118	265	2,878	8	7
Treecreeper	291	65	356	1,660	3	8
Wren	1,873	47	1,920	17,564	18	118
Dipper	159	266	425	5,336	4	60
Mistle Thrush	524	289	813	12,083	41	369
Fieldfare	950	—	950	2,504	10	37
Song Thrush	8,489	2,780	11,269	146,666	414	3,917
Redwing	3,334	—	3,334	13,124	38	128
Ring Ouzel	66	103	169	1,944	2	3
Blackbird	26,501	3,730	30,231	250,638	1,346	8,729
Wheatear	1,100	203	1,303	18,310	9	9
Stonechat	280	58	338	3,752	2	29
Whinchat	300	167	467	7,037	2	26
Redstart	768	656	1,424	15,097	14	73
Black Redstart	37	—	37	676	1	17
Nightingale	70	37	107	3,752	1	1
Bluethroat	10	—	10	204	—	2
Robin	7,637	836	8,473	96,065	175	2,250
Grasshopper Warbler	80	17	97	933	—	2
Reed Warbler	1,867	175	2,042	8,510	10	45
Sedge Warbler	2,183	141	2,324	17,232	11	35
Blackcap	845	63	908	6,449	9	35
Barred Warbler	16	—	16	215	—	—
Garden Warbler	592	93	685	6,234	4	14
Whitethroat	4,241	509	4,750	54,451	27	214
Lesser Whitethroat	553	29	582	3,802	6	19
Dartford Warbler	3	—	3	153	1	1
Willow Warbler	5,113	1,147	6,260	68,843	17	181
Chiffchaff	1,721	94	1,815	15,641	6	43
Wood Warbler	12	74	86	2,387	—	11
Goldcrest	1,316	—	1,316	8,144	1	9
Firecrest	50	—	50	279	—	—
Spotted Flycatcher	974	443	1,417	14,611	9	94
Pied Flycatcher	734	510	1,244	17,045	21	72
Red-breasted Flycatcher	14	—	14	138	—	—
Dunnock	9,466	858	10,324	76,992	142	985
Meadow Pipit	3,980	554	4,534	34,664	40	297
Tree Pipit	144	205	349	4,380	1	7
Rock/Water Pipit	550	62	612	9,120	4	64
Pied/White Wagtail	3,060	550	3,610	29,627	114	583
Grey Wagtail	212	175	387	3,392	4	23
Yellow Wagtail <i>ssp.</i>	1,780	136	1,916	13,700	9	107
Waxwing	1	—	1	123	—	4
Red-backed Shrike	39	121	160	2,592	1	20
Starling	32,574	1,087	33,661	331,184	1,103	12,939
Hawfinch	28	1	29	235	—	2
Greenfinch	17,819	426	18,245	128,128	525	2,359
Goldfinch	2,541	156	2,697	10,507	43	128
Siskin	145	—	145	769	2	8
Linnet	12,659	1,652	14,311	62,954	82	409

REPORT ON BIRD-RINGING FOR 1962

	Ringed				Recovered	
	Juv./Adult	Pullus	1962 total	Grand total	1962	Grand total
.. .. .	166	6	172	2,432	—	9
.. .. .	820	20	840	3,452	6	42
.. .. .	2,798	226	3,024	14,638	69	338
.. .. .	73	—	73	272	—	2
.. .. .	9,841	395	10,236	102,071	136	1,191
.. .. .	765	—	765	6,070	8	41
.. .. .	1,945	140	2,085	18,862	15	157
.. .. .	135	12	147	1,201	1	20
.. .. .	6	—	6	182	—	1
.. .. .	4,821	317	5,138	24,044	42	131
.. .. .	194	—	194	2,858	2	22
.. .. .	18,521	319	18,840	142,276	361	2,108
.. .. .	6,342	624	6,966	29,479	46	144

Section 2—Species of which fewer than 100 have been ringed

(1962 total, grand total, 1962 recoveries and grand total recoveries are given in that order)

Black-throated Diver ..	1	3	—	—	Black-tailed Godwit ..	1	10	—	—
.. Northern Diver ..	—	3	—	—	Spotted Redshank ..	27	47	—	1
.. Red-throated Diver ..	4	15	—	3	.. Temminck's Stint ..	1	4	—	—
.. (Crested Grebe ..	7	37	—	—	.. White-rumped Sandpiper ..	2	3	—	—
.. Black-necked Grebe ..	—	2	—	—	.. Pectoral Sandpiper ..	5	15	—	—
.. Herring Gull ..	—	3	—	—	.. Western Sandpiper ..	—	1	—	—
.. Common Shearwater ..	—	1	—	—	.. Buff-breasted Sandpiper ..	—	2	—	1
.. Kinglet ..	—	2	—	—	.. Avocet ..	—	1	—	—
.. Bittern ..	—	1	—	—	.. Grey Phalarope ..	7	40	—	—
.. ..	4	42	2	8	.. Red-necked Phalarope ..	—	24	—	—
.. Crested Pochard ..	—	16	—	4	.. Pomarine Skua ..	—	1	—	1
.. ..	19	48	1	9	.. Glaucous Gull ..	—	5	—	1
.. Marbled Duck ..	—	5	—	—	.. Little Gull ..	—	1	—	1
.. Ring-necked Pheasant ..	9	15	—	—	.. Black Tern ..	1	2	—	—
.. Ring-necked Duck ..	—	4	1	1	.. Gull-billed Tern ..	—	1	—	1
.. Ring-necked Scoter ..	—	3	—	1	.. Little Auk ..	2	19	—	2
.. Common Scoter ..	—	13	—	3	.. Collared Dove ..	17	66	3	7
.. Crested Merganser ..	1	17	—	1	.. Scops Owl ..	—	1	—	—
.. ..	—	64	—	10	.. Snowy Owl ..	—	1	—	—
.. ..	—	2	—	—	.. Hoopoe ..	1	9	—	1
.. (Goose ..	—	7	—	1	.. Lesser Spotted Woodpecker ..	13	97	—	—
.. Canada Goose ..	—	4	—	1	.. Short-toed Lark ..	—	3	—	—
.. Trumpeter Swan ..	3	10	—	2	.. Shore Lark ..	3	19	1	1
.. Whooping Swan ..	2	3	—	—	.. Golden Oriole ..	1	4	—	—
.. ..	—	1	—	—	.. Crested Tit ..	—	65	—	—
.. Red-legged Buzzard ..	—	1	—	—	.. Black-throated Thrush ..	—	1	—	—
.. Bald Eagle ..	3	53	1	4	.. Dusky Thrush ..	—	2	—	—
.. ..	4	61	—	5	.. American Robin ..	—	1	—	—
.. ..	—	1	—	—	.. Siberian Thrush ..	—	1	—	—
.. ..	—	15	1	1	.. Grey-checked Thrush ..	—	3	—	1
.. ..	—	3	—	—	.. Desert Wheatear ..	—	2	—	—
.. ..	—	3	—	—	.. Black-cared Wheatear ..	—	1	—	—
.. ..	10	85	5	17	.. Pied Wheatear ..	—	1	—	—
.. ..	—	6	—	—	.. Thrush Nightingale ..	—	2	—	—
.. ..	—	64	—	4	.. Cetti's Warbler ..	1	2	—	—
.. ..	2	10	—	—	.. River Warbler ..	—	1	—	—
.. ..	—	1	—	—	.. Lanceolated Warbler ..	—	1	—	—
.. ..	2	40	1	1	.. Pallas's Grasshopper ..	—	1	—	—
.. ..	1	1	—	—	.. Warbler ..	—	1	—	—
.. ..	14	68	1	2	.. Great Reed Warbler ..	3	4	—	—

*Added to the list in 1962

BRITISH BIRDS

Marsh Warbler	14	97	—	—	Northern Waterthrush ..	—	—	1	—
Paddyfield Warbler ..	—	1	—	—	Yellowthroat	—	—	1	—
Aquatic Warbler	3	26	—	—	Bobolink*	1	—	1	—
Thick-billed Warbler ..	—	1	—	—	Slate-coloured Junco ..	—	—	1	—
Melodious Warbler	36	89	—	—	Rose-coloured Starling ..	—	—	2	—
Icterine Warbler	6	99	—	—	Baltimore Oriole	—	—	1	—
Olivaceous Warbler	—	3	—	—	Summer Tanager	—	—	1	—
Booted Warbler	—	1	—	—	Arctic Redpoll	1	—	3	—
Orphean Warbler	—	1	—	—	Scrin	—	—	1	—
Sardinian Warbler	—	1	—	—	Scarlet Grosbeak	2	—	28	—
Subalpine Warbler	—	9	—	—	Pine Grosbeak	—	—	1	—
Greenish Warbler	2	18	—	—	Parrot Crossbill*	41	—	41	—
Bonelli's Warbler	3	9	—	—	Black-headed Bunting ..	—	—	1	—
Arctic Warbler	1	9	—	—	Red-headed Bunting	2	—	12	1
Yellow-browed Warbler ..	6	59	1	1	Yellow-breasted Bunting ..	—	—	2	—
Pallas's Warbler	—	3	—	—	Ortolan Bunting	3	—	27	—
Dusky Warbler	—	1	—	—	Rustic Bunting	2	—	9	—
Radde's Warbler	1	2	—	—	Little Bunting	1	—	14	—
Richard's Pipit	2	4	—	—	Fox Sparrow	—	—	1	—
Tawny Pipit	1	3	—	—	Song Sparrow	—	—	1	—
Pechora Pipit	—	1	—	—	Lapland Bunting	4	—	69	—
Red-throated Pipit	—	3	—	—					
Yellow-headed Wagtail ..	1	3	—	—					
Great Grey Shrike	7	53	—	1					
Lesser Grey Shrike	—	5	—	2					
Woodchat Shrike	—	35	—	—					
Myrtle Warbler	—	1	—	—					

Hybrids

Mallard × Wigeon	—	—	—	1	—
Common × Red-crested Pochard	—	—	—	1	—
House × Tree Sparrow ..	—	—	—	3	—

*Added to the list in 1962

Table 3

NUMBERS AND DISTRIBUTION OF RINGERS (AS AT 31.12.62)

ENGLAND <i>County</i>	<i>Category of permit</i>				<i>County</i>	<i>Category of permit</i>			
	A	B	C	Total		A	B	C	Total
Bedfordshire	3	1	1	5	Oxfordshire	26	4	2	32
Berkshire	12	4	—	16	Shropshire	4	—	—	4
Buckinghamshire ..	15	—	—	15	Somerset	17	—	5	22
Cambridgeshire	12	2	2	16	Staffordshire	12	—	1	13
Cheshire	22	3	10	35	Suffolk	14	3	—	17
Cornwall	3	—	—	3	Surrey	55	3	3	61
Cumberland	3	—	2	5	Sussex	24	—	3	27
Derbyshire	8	—	1	9	Warwickshire	24	2	6	32
Devon	13	—	1	14	Westmorland	3	—	—	3
Dorset	7	1	2	10	Wiltshire	10	—	—	10
Durham	13	3	2	18	Worcestershire	4	—	—	4
Essex	32	2	12	46	Yorkshire	78	15	12	105
Gloucestershire	14	1	4	19					
Hampshire	30	—	3	33	Isle of Man	2	—	1	3
Hertfordshire	4	—	—	4					
Hertfordshire	14	—	—	14					
Huntingdonshire	2	—	—	2					
Kent	49	16	—	65					
Lancashire	23	1	8	32					
Leicestershire	7	—	—	7					
Lincolnshire	16	1	8	25					
London	18	3	3	24					
Middlesex	20	1	6	27					
Norfolk	7	4	—	11					
Northamptonshire ..	9	—	1	10					
Northumberland	12	4	3	19					
Nottinghamshire	10	—	1	11					

REPORT ON BIRD-RINGING FOR 1962

	Category of permit				County	Category of permit			
	A	B	C	Total		A	B	C	Total
Flintshire	1	—	—	1	Flintshire	—	—	1	1
Glamorganshire	1	3	—	4	Glamorganshire	10	—	—	10
Montgomeryshire	2	—	—	2	Montgomeryshire	1	—	—	1
Pembrokeshire	1	—	—	1	Pembrokeshire	2	1	—	3
IRELAND									
Antrim	4	—	—	4	Antrim	5	3	3	11
Down	2	—	—	2	Down	4	4	3	11
Dublin	4	—	—	4	Dublin	3	—	—	3
Wexford	1	—	—	1	Wexford	3	—	—	3
	2	—	—	2		1	—	—	1

Selected list of recoveries reported during 1962

The following list is highly selective. To indicate the quantity and nature of the recoveries omitted, the total number of recoveries is stated in brackets after the scientific name of each species, followed by the minimum movement to qualify for inclusion and the longest time lapsed between ringing and recovery. All foreign recoveries are either given in full or mentioned in the summaries. Species which produced only local recoveries are left out, but the individual totals thus obtained are listed in table 2.

Abbreviations and terms

Ring number: Where this is in italics the ring has been returned.

Age: pull. (pullus)—nestling or chick, *not yet flying*;
 juv.—young, *able to fly freely*;
 1stW.—first winter;
 1stS.—first summer (one year old);
 f.g.—full-grown, age uncertain;
 ad.—adult; at least one year old in the case of passerines.

Sex: ♂—male;
 ♀—female.

Manner of recovery: v—caught or trapped, and released with ring;
 +—shot or killed by man;
 ×—found dead or dying;
 ×A—found long dead;
 ()—caught or trapped alive and not released, or released but with ring removed;
 /?/—manner of recovery unknown.

Date of recovery: Where this is unknown the date of the reporting letter is given in brackets.

Distance: The distance, given in miles, and the directions are approximate.

Arrangement of entry: Recoveries are arranged by species, and within the species usually by ringing locality from north to south. Ringing details are given on the first line and recovery data on the second.

Little Grebe (*Podiceps ruficollis*) (2; 30 miles; $\frac{5}{12}$ year)

f.g. 1.9.62 Stoke: 51°27'N. 0°38'E. (Kent) NKRK
 + 4.12.62 Carentan: 49°18'N. 1°14'W. (Manche) France

Manx Shearwater (*Procellaria puffinus*) (281; 9¹⁰/₁₂ years)

AT54651	pull. ()	11.9.58 (10.2.62)	Hallival: 57°00'N. 6°20'W., Rhum, Inner Hebrides off Santurce: 43°20'N. 3°03'W. (Vizcaya) Spain	PW
---------	--------------	----------------------	---	----

Birds ringed on Skokholm were recovered as follows:

Ringed		Recovered		
AT42047	16.8.56	15.11.62	Itapema: 27°06'S. 48°36'W. (Santa Catarina) Brazil	
AT49733	26.7.57	18.10.62	near Joinville: 26°18'S. 48°49'W. (Santa Catarina) Brazil	
2025165	16.7.59	18.10.62	near Joinville, Brazil	
2051196	30.3.60	c. 24.10.62	Tramandaí: 29°50'S. 50°03'W. (Rio Grande do Sul) Brazil	
EC01778	6.4.61	21.10.62	Praia de Lagoinha: 27°48'S. 48°33'W. (Santa Catarina) Brazil	
2052739	28.4.60	23.12.62	Puerto Coronilla: 33°50'S. 53°30'W. (Rocha) Uruguay	
EC07527*	3.9.61	10.4.62	near Macedo: 37°15'S. 57°05'W. (Buenos Aires) Argentina	
EC22608*	2.9.62	12.12.62	São José do Norte: 31°59'S. 52°04'W. (Rio Grande do Sul) Brazil	
EC22110*	30.8.62	25.11.62	Praia de Lagoinha, Brazil	
EC22980*	2.9.62	16.10.62	Caraguatatuba: 23°38'S. 45°32'W. (Sao Paulo) Brazil	
EC23580*	6.9.62	25.11.62	Bay of Guanabara: c. 22°50'S. 43°12'W. (Rio de Janeiro) Brazil	

*Ringed as pullus; the remainder were ringed as adults

AT54651 is the first foreign recovery of a Manx Shearwater ringed in one of the north-western colonies. The finder of EC22110 reported that the species was present in inshore waters in large numbers.

Twenty-four recoveries in French waters between March and August and nine off the north coast of Spain between February and September do not call for comment.

Fulmar (*Fulmarus glacialis*) (10; 150 miles; 6 years)

387418	pull. ()	6.8.54 9.8.60	Handa: 58°23'N. 5°11'W. (Sutherland) RWJS Barents Sea : 71°25'N. 42°40'E.
AT70119	pull. x	29.8.60 18.9.62	Foula: 60°08'N. 2°05'W. (Shetland) EEJ North Sea : 54°36'N. 0°12'E. c. 400m. SE.

Birds ringed as pulli on Fair Isle were recovered as follows:

Ringed		Recovered		
AT64591	7.8.59	26.11.61	off NE. Newfoundland : 51°40'N. 51°00'W.	
AT64602	7.8.59	22.8.62	Vidrejdde: 62°23'N. 6°31'W. Vidrö, Faeroes	
AT90749	6.8.62	15.12.62	Ribadco: 43°32'N. 7°04'W. (Lugo) Spain	

Birds ringed on Eynhallow, 59°08'N. 3°08'W. (Orkney), were recovered as follows:

Ringed		Recovered		
3054871	12.8.59	(20.9.62)	Oldsum: 54°44'N. 8°26'E., Föhr, Germany	
3076908*	13.7.60	c. 10.5.62	North Sea : c. 59°00'N. 3°00'E.	
3076856	10.8.60	20.6.62	off SE. Iceland : 63°50'N. 15°30'W.	

*Ringed as adult; the remainder were ringed as pulli

Gannet (*Sula bassana*) (92; 9 years)

1021794	pull. x	23.7.61 3.7.62	Bass Rock: 56°04'N. 2°38'W. (East Lothian) PY Carnon: 43°32'N. 3°58'E. (Hérault) France
---------	------------	-------------------	---

Carnon lies at the head of the Golfe du Lion. All other recoveries in foreign waters are summarised in table A. Only twelve recoveries in British waters showed movements of more than 150 miles.

REPORT ON BIRD-RINGING FOR 1962

Table A—Countries and months of recoveries of Gannets

Country of recovery	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
(1)	-	1	-	-	-	-	-	-	-	-	-	-
(2)	-	-	-	-	-	-	-	-	-	1	1	-
(2)*	-	-	-	-	-	-	-	-	-	-	-	-
Islands (7)	1	-	1	2	-	1	-	2	-	-	-	-
(1,2)	1	3	3	1	-	-	2	1	1	-	-	-
(6)†	-	2	1	2	-	-	-	-	-	-	-	-
(2)	-	(1)	-	-	-	-	-	-	-	1	-	-
Guinea (9)	-	-	1	4	3	1	-	-	-	-	-	-

*Both reported as '1961'

†Total includes one reported as 'summer'

Tables A-O are subject to error in cases where it has been necessary to assume that the recovery was approximately that of the letter reporting it, whereas the bird may have been for some time before being found or reported. Records of this type are bracketed when they are the only ones for the months concerned, but this treatment is not, of course, possible when there are several records for the same month

Cormorant (*Phalacrocorax carbo*) (195; 11 $\frac{6}{12}$ years)

Foreign recoveries are summarised in table B. 78% of movements over 100 miles within British waters showed a southerly trend, the chief exceptions being those of the Saltee (Wexford) colony. Rather more than half the movements over 100 miles showed northerly trends, especially into estuarine waters.

Table B—Countries and months of recoveries of Cormorants

Country of recovery	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
(5)	-	4	4	1	3	2	1	-	-	-	-	-
(7)	1	-	-	5	-	-	-	-	-	1	-	-

See footnote to table A

Shag (*Phalacrocorax aristotelis*) (216; 8 years)

First-winter birds from the Farne Islands (Northumberland) were recovered in France: 3.3.62, Nord; and 4.3.62, Seine-Maritime. Nine first-year birds from colonies in the Isles of Scilly (Cornwall) were recovered in the Netherlands and Belgium: 8.9.62 and 23.9.62, Noord-Holland; 18.9.62, 20.9.62, 23.9.62, 23.10.62, 1962, 14.3.62 and 1.6.62, Finistère.

During March many immature Shags were recovered inland, especially those from colonies in SE Scotland and NE England. Wrecks of this type have been found to be of almost annual occurrence, although the weather conditions causing them are still not fully understood. The recovery dates in 1962 extend over so long a period that several incursions may have occurred.

Heron (*Ardea cinerea*) (39; 150 miles; 8 $\frac{7}{12}$ years)

pull.	27.4.61	Thorpe Underwood: 54°01'N. 1°18'W. (York)	JRM
×	23.4.62	St. Ninian's Bay, Bute 190m. NW.	
pull.	28.5.61	Moore: 53°21'N. 2°44'W. Runcorn (Cheshire)	MRG
×	14.3.62	Moretonhampstead (Devon) 185m. SSW.	
pull.	28.5.61	Moore	MRG
×	18.3.62	Old Costessy, Norwich (Norfolk) 165m. ESE.	
pull.	7.5.61	Denver: 52°35'N. 0°22'E. (Norfolk)	CBC
×	28.1.62	Le Croisic: 47°18'N. 2°31'W. (Loire-Atlantique) France	

BRITISH BIRDS

500898 pull. 30.4.60 Walthamstow: 51°36'N. 0°02'W. (Essex) AG
 × (20.4.62) Bettws-y-Coed (Caernarvon) 190m. NW.

Mallard (*Anas platyrhynchos*) (877; 8⁹/₁₂ years)

Table C—Countries and months of recoveries of Mallard

Country of recovery	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Summer ringed†
France (17)	—	—	—	5	1	—	1	4	6	—	—	—	5
Belgium (5)	—	—	—	—	—	—	—	1	—	—	4	—	—
Netherlands (36)	—	—	—	2	14	6	3	3	2	5	(1)	—	11
Denmark (28)	—	1	1	—	8	9	3	4	2	—	—	—	5
Germany (13)	—	—	—	—	4	2	6	—	—	1	—	—	2
Poland (4)	1	—	—	—	2	1	—	—	—	—	—	—	2
Norway (3)	—	—	—	—	1	—	1	1	—	—	—	—	—
Sweden (16)	—	1	—	—	8	4	2	1	—	—	—	—	1
Finland (26)	1	—	(1)	—	13	7	3	—	1	—	—	—	1
Baltic States (2)	—	—	—	—	—	1	1	—	—	—	—	—	—
U.S.S.R. (21)	4	3	—	—	7	4	3	—	—	—	—	—	3

† Of the 171 birds included in this table, 30 were ringed in Britain during the summer months (April-August) and these are repeated in the end column to show country of recovery
 See footnote to table A

The most northerly and easterly recoveries are given in full below. Recoveries of British-ringed Mallard in Italy and Czechoslovakia are exceptional.

- 943697 f.g. ♀ 6.12.57 Peakirk: 52°38'N. 0°17'W. (Northampton)
 + 4.3.62 Besate: 45°19'N. 8°56'E. (Milan) Italy
- AJ46473 juv. ♂ 25.9.61 Peakirk
 + 11.8.62 Orsk: 51°12'N. 58°36'E. (Orenburg) U.S.S.R.
- AJ28565 ad. ♂ 15.8.59 Abberton
 + 6.5.62 Kandalakhsha: 67°10'N. 32°25'E. (Murmansk) U.S.S.R.
- AJ42796 juv. ♀ 8.2.62 Abberton
 + 8.9.62 Ruchvald: 49°50'N. 18°23'E. (Ostrava) Czechoslovakia

Teal (*Anas crecca*) (561; 10 years)

Table D—Countries and months of recoveries of Teal

Country of recovery	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Italy (2)	—	—	—	—	—	1	—	—	—	—	1	—
Iberia (14)	—	—	—	—	—	—	—	2	10	1	1	—
France (122)	—	(1)	—	1	1	4	2	5	25	43	23	17
Ireland (55)	—	—	—	—	—	2	4	4	14	23	8	—
Belgium (5*)	—	—	—	—	—	—	—	1	1	—	2	—
Netherlands (12)	—	—	—	—	(1)	2	3	1	2	3	—	—
Denmark (19)	—	—	—	—	7	5	4	2	1	—	—	—
Germany (16)	—	—	—	—	2	5	5	3	1	—	—	—
Poland (5)	—	—	—	1	3	1	—	—	—	—	—	—
Norway (3)	—	2	—	—	—	1	—	—	—	—	—	—
Sweden (15)	1	(1)	—	—	7	4	1	1	—	—	—	—
Finland (25)	1	6	1	—	11	5	1	—	—	—	—	—
Baltic States (3)	—	(1)	—	—	—	2	—	—	—	—	—	—
U.S.S.R. (48†)	4	7	—	1	21	10	3	—	1	—	—	—

*Total includes one reported as 'July/September'
 †Total includes one reported as 'spring'
 See footnote to table A

- 3007652 f.g. ♂ 3.11.58 Peakirk: 52°38'N. 0°17'W. (Northampton)
 × (1.3.62) between Nis and Skopje: c. 42°30'N. 21°40'E. Jugoslavia

REPORT ON BIRD-RINGING FOR 1962

449	ad. ♂	24.8.59	Abberton
	+	10.1.62	Marathon Lake: 38°10'N. 23°54'E. (Attiki) Greece
551	ad. ♂	17.7.60	Abberton
	+	4.8.62	Apaj: 47°05'N. 19°10'E., Kunszentmiklós, Hungary
836	juv. ♂	23.8.60	Abberton
	+	23.12.61	Maykop: 44°37'N. 40°06'E. (Krasnodarsk) U.S.S.R.

of the recoveries listed in full indicate wintering in south-eastern Europe include the first recovery of a British-ringed bird of any species in Greece. Movements of more than 100 miles were recorded within Great Britain.

Garganey (*Anas querquedula*) (5; 3½ years)

ringed at Abberton were recovered as follows:

Ringed		Recovered	
278*	14.10.58	28.7.61	Abberton
		31.3.62	Baie de Somme: c. 50°11'N. 1°43'E. (Somme) France
773	13.8.59	23.2.62	Taglio di Po: 45°01'N. 12°12'E. (Rovigo) Italy
656	3.8.60	20.3.62	near Raismes: c. 50°22'N. 3°25'E. (Nord) France
998	28.6.61	11.9.62	Skopin: 53°50'N. 39°34'E. (Ryazan) U.S.S.R.
119	7.8.61	5.4.62	Atena Lucana: 40°27'N. 15°33'E. (Salerno) Italy

*Ringed as adult; the remainder were ringed as pulli or juveniles

Gadwall (*Anas strepera*) (3; 8½ years)

9947	ad. ♂	24.4.61	Abberton
	+	25.1.62	Sutton Veny, Warminster (Wiltshire) 135m. WSW.
3327	pull.	14.7.61	Abberton
	+	28.3.62	Porto Tolle: 44°57'N. 12°20'E. (Rovigo) Italy
33	f.g. ♀	29.9.54	Slimbridge
	+	c. 20.11.62	Stanley, Wakefield (York) 140m. NNE.

Wigeon (*Anas penelope*) (25; 200 miles; 5½ years)

153	f.g. ♂	5.2.62	Collieston: 57°21'N. 1°56'W. (Aberdeen) EAG
	+	26.11.62	Agero: 56°43'N. 8°35'E. (Jutland) Denmark
117	pull.	2.7.60	Boat of Garten: 57°19'N. 3°44'W. (Inverness) RHD
	+	7.9.60	Audenge: 44°24'N. 1°01'W. (Gironde) France
4180	f.g. ♀	1.4.61	near Sutton Bridge: 52°44'N. 0°11'E. (Lincoln) C&PM
	0	7.10.62	Osmankijärvi: c. 64°15'N. 25°25'E. (Oulu) Finland
116	1stW. ♂	27.9.58	Peakirk: 52°38'N. 0°17'W. (Northampton)
	+	17.10.62	Jobbágyi: 47°50'N. 19°41'E. Hungary
200	juv. ♂	11.1.60	Deeping St. James: 52°40'N. 0°17'W. (Lincoln)
	[?]	11.5.62	Lokhpodgort: 66°02'N. 65°35'E. (Tumen) U.S.S.R.
111	f.g. ♀	15.1.60	Deeping St. James
	+	15.10.62	Rogachëv: 53°08'N. 30°00'E. (Gomelsk) U.S.S.R.

ringed at Abberton were recovered as follows:

Ringed		Recovered	
187	16.11.57	10.3.62	Valli di Comacchio: c. 44°40'N. 12°00'E. (Ferrara) Italy
200	4.1.58	10.1.62	Gort (Galway) 410m. W.
443	28.1.58	23.9.62	Globino: 49°21'N. 33°20'E. (Poltava) U.S.S.R.
999*	5.1.59	1.5.62	Uglitch Reservoir: 57°16'N. 37°50'E. (Kalinin) U.S.S.R.

BRITISH BIRDS

Ringed		Recovered	
3058883	20.12.59	15.10.62	Bezhet'sk: 57°47'N. 36°50'E. (Kalinin) U.S.S.R.
3058893	13.1.60	10.11.61	Morshansk: 53°27'N. 41°58'E. (Tambov) U.S.S.R.
3058907	7.2.60	22.4.62	Belozerskoye: 55°50'N. 65°34'E. (Kurgansk) U.S.S.R.
3058911	10.2.60	0.1.62	Belz: 47°41'N. 3°09'W. (Morbihan) France
AT71377	18.2.62	12.5.62	Ust-Tsilma: 65°26'N. 52°11'E. (Komi) U.S.S.R.
AT71400	14.3.62	24.11.62	Tuam (Galway) 415m. NNW.

*Ringed as adult; the remainder were ringed as first-winter

Pintail (*Anas acuta*) (14; 150 miles; 4 $\frac{7}{12}$ years)

906457	f.g. ♀	24.1.50	Slimbridge
	+	20.11.51	near Salsk: 46°30'N. 41°34'E. (Rostov) U.S.S.R.
3007289	juv. ♀	6.10.59	Slimbridge
	+	8.10.62	Föhr: c. 54°43'N. 8°30'E. Germany
AJ26042	f.g. ♂	27.1.61	Slimbridge
	+	15.4.62	Loukhovitz: 54°58'N. 39°02'E. (Moscow) U.S.S.R.
AT83331	f.g. ♂	20.5.62	Slimbridge
	+	21.12.62	Sucea: 39°13'N. 0°19'W. (Valencia) Spain
3010626	ad. ♀	24.1.58	Abbotsbury: 50°40'N. 2°36'W. (Dorset)
	+	12.8.62	Vologda: 59°13'N. 39°52'E. U.S.S.R.
3010751	f.g.	28.12.61	Abbotsbury
	+	0.9.62	Suhmura: 62°28'N. 29°57'E. (Kuopio) Finland
3010752	f.g.	28.12.61	Abbotsbury
	+	1.9.62	near Yelgava: c. 56°40'N. 23°30'E. Latvian S.S.R.

Shoveler (*Spatula clypeata*) (14; 75 miles; 6 $\frac{4}{12}$ years)

AT83332	pull. ♂	22.6.62	Gartocharn: 56°03'N. 4°33'W. Loch Lomond (Dumbarton)
	+	29.12.62	Ballybraek, Waterville (Kerry) 360m. SW.
3007861	juv. ♀	30.8.61	Peakirk: 52°38'N. 0°17'W. (Northampton)
	!/?	6.9.62	Belyayevka: 46°30'N. 30°14'E. (Odessa) U.S.S.R.
3007862	juv. ♀	30.8.61	Peakirk
	+	6.8.62	Khlevnoye: 52°12'N. 39°06'E. (Lipetsk) U.S.S.R.
3007869	juv. ♀	15.9.61	Deeping St. Nicholas: 52°43'N. 0°12'W. (Lincoln)
	+	24.2.62	St. Renan: 48°26'N. 4°37'W. (Finistère) France
AT70920	juv. ♀	18.9.60	Abberton
	+	29.8.61	Alkmaar: 52°39'N. 4°41'E. (Noord-Holland) Netherlands
AT71433	ad. ♂	6.6.62	Abberton
	+	0.9.62	Veluwemeer: 52°30'N. 5°52'E. IJsselmeer, Netherlands
AT71445	ad. ♀	31.7.62	Abberton
	+	23.8.62	Baie de Somme: c. 50°11'N. 1°43'E. (Somme) France
3007238	ad. ♂	12.12.57	Slimbridge
	+	20.8.62	Nakskov: 54°50'N. 11°10'E. (Lolland) Denmark

Scaup (*Aythya marila*) (1)

AJ26369	ad. ♀	25.2.62	Newburgh: 57°19'N. 2°01'W. (Aberdeen) EAG
	×	spring 1962	Vestmannsvatn: 65°47'N. 17°25'W. Iceland

Tufted Duck (*Aythya fuligula*) (6; 60 miles; 6 $\frac{8}{12}$ years)

AT71307	1stS. ♂	6.5.61	Abberton
	×	11.5.62	Pien-Rautjärvi: 61°40'N. 29°46'E. (Kymi) Finland

REPORT ON BIRD-RINGING FOR 1962

310	ad. ♂	31.5.61	Abberton
	+	25.9.62	Uzha: 56°34'N. 42°00'E. (Ivanovsk) U.S.S.R.
312	ad. ♂	31.5.61	Abberton
	+	22.5.62	Oksino: 67°31'N. 52°15'E. (Arkhangel) U.S.S.R.
	ad. ♀	26.1.55	Orielton: 51°40'N. 4°57'W. (Pembroke)
	v	19.1.58	Orielton
	+	1.10.61	Lake Babite: 56°55'N. 23°45'E. Latvian S.S.R.

Pochard (*Aythya ferina*) (2; $\frac{6}{12}$ year)

	f.g. ♀	5.2.57	Deeping St. James: 52°40'N. 0°17'W. (Lincoln)
	+	2.8.62	Szczecbra: 53°08'N. 23°10'E. (Bialystok) Poland
	f.g. ♂	9.1.59	Deeping St. James
	+	22.4.62	Argayash: 55°25'N. 60°52'E. (Chelyabinsk) U.S.S.R.

Eider (*Somateria mollissima*) (16; 60 miles; $4\frac{2}{12}$ years)

222	ad. ♀	19.5.61	Newburgh: 57°19'N. 2°01'W. (Aberdeen) AU
	x	10.2.62	Monifieth (Angus) 62m. SSW.
227	pull.	28.7.61	Newburgh AU
	/?/	29.10.62	Buddon Ness (Angus) 63m. SSW.

Shelduck (*Tadorna tadorna*) (8; 50 miles; $1\frac{5}{12}$ years)

777	pull. ♀	8.8.62	Newburgh: 57°19'N. 2°01'W. (Aberdeen) AU
	+	(27.10.62)	Ardmore, Lough Neagh (Armagh) 260m. SW.
778	juv.	21.8.60	Holbeach: 52°54'N. 0°04'E. (Lincoln) C&PM
	x	16.1.62	Southport (Lancashire) 140m. WNW.
812	pull.	21.7.62	near Sutton Bridge: 52°44'N. 0°11'E. (Lincoln) C&PM
	+	26.12.62	Bayonne: 43°30'N. 1°28'W. (Basses-Pyrénées) France

Grey Lag Goose (*Anser anser*) (7; 200; 10 years)

	ad.	22.11.52	Montrose: 56°42'N. 2°28'W. (Angus)
	x	7.5.62	Gunnhildargerdi: 65°33'N. 14°23'W. Hróarstunga, Iceland
81	ad. ♂	27.10.59	Braco: 56°16'N. 3°54'W. (Perth)
	+	21.10.61	Eystri-Tunga: 63°47'N. 18°47'W. Iceland

White-fronted Goose (*Anser albifrons*) (11; 9 years)

ringed at Slimbridge were recovered as follows:

	Ringed	Recovered	
	15.2.53	0.2.62	Damgarten: 54°16'N. 12°30'E. (Mecklenburg) Germany
	21.2.58	27.4.62	Nekouzsk: 58°00'N. 38°17'E. (Yaroslavl) U.S.S.R.
	21.2.58	13.1.62	Watervliet: 51°17'N. 3°38'E. (East Flanders) Belgium
87*	4.3.58	10.1.62	Geertruidenberg: 51°43'N. 4°52'E. (Noord-Brabant) Netherlands
82*	4.3.58	14.6.62	Dikson Island: 73°31'N. 80°20'E. (Krasnoyarsk) U.S.S.R.
85	9.3.59	21.4.62	Shilovo: 54°19'N. 40°53'E. (Ryazan) U.S.S.R.
86*	9.3.59	13.2.62	Lake Butkovou: 41°21'N. 22°50'E. (Macedonia) Greece
	9.3.59	10.12.62	Demmin: 53°55'N. 13°03'E. (Mecklenburg) Germany
	9.3.59	0.5.62	Kolguev Island: 69°00'N. 49°00'E. U.S.S.R.
	9.3.59	22.4.62	Pitelino: 54°35'N. 41°43'E. (Ryazan) U.S.S.R.
	9.3.59	10.4.62	Rybaki: 53°11'N. 22°58'E. (Bialystok) Poland

*Ringed as first-winter; the remainder were ringed as adult

Pink-footed Goose (*Anser brachyrhynchus*) (264; 11 $\frac{2}{12}$ years)

Seven birds ringed in Great Britain were recovered in Iceland between July and September. Other recoveries include seven originally ringed in central Iceland in 1951 and 1953 and re-ringed in Britain in subsequent winters; and five originally ringed in Britain and retrapped in Iceland in the summers of 1951 and 1953

Canada Goose (*Branta canadensis*) (20; 200 miles; 9 $\frac{2}{12}$ years)

135883	ad.	21.6.57	Osmaston: 52°59'N. 1°43'W. (Derby)
	irasp.	21.6.57	Lilymere: 54°20'N. 2°42'W. (Westmorland)
	×	(9.1.62)	Farlington (Hampshire) 250m. SSE.

Mute Swan (*Cygnus olor*) (696; 90 miles; 5 $\frac{5}{12}$ years)

Z2881	1stS.	17.3.61	Bedford: 52°08'N. 0°28'W. MB
	v	7.10.62	Potter Heigham (Norfolk) 95m. ENE.

Only 39 of the recoveries showed movements of over 40 miles.

Buzzard (*Buteo buteo*) (4; 20 miles; 5 years)

AJ66161	pull.	27.6.62	New Forest (Hampshire) JWf
	+	28.9.62	La Malmaison: 49°30'N. 4°00'E. (Aisne) France
AF4250	pull.	7.7.62	New Forest (Hampshire) GHR
	×	17.9.62	Rowlston, Hornsea (York) 215m. NNE.

AJ66161 is the first British-ringed Buzzard to be recovered abroad.

Hen Harrier (*Circus cyaneus*) (4; 50 miles; 2 $\frac{3}{12}$ years)

3090428	pull.	6.7.62	(Orkney) EB
	+	c. 31.12.62	Screggan, Tullamore (Offaly) 430m. SSW.
363551	pull.	23.6.61	(Argyll) MOC
	+	7.1.62	Morlaas: 43°21'N. 0°15'W. (Basses-Pyrénées) France

Merlin (*Falco columbarius*) (6; 30 miles; 1 $\frac{3}{12}$ years)

2020931	1stW. ♂	2.10.61	Fair Isle
	×	(11.3.62)	near Edinburgh (Midlothian) 250m. SSW.
2020664	pull.	25.6.61	(Orkney) EB
	+	6.1.62	near Bordeaux: 44°50'N. 0°34'W. (Gironde) France
2020668	pull.	29.6.61	(Orkney) EB
	×	(5.2.62)	Aberlady Bay (East Lothian) 200m. S.

Kestrel (*Falco tinnunculus*) (31; 150 miles; 14 $\frac{5}{12}$ years)

2044371	1stW. ♀	6.10.62	Fair Isle
	×	23.11.62	near Bremerhaven: 53°35'N. 8°45'E. (Niedersachsen) Germany
329142	f.g. ♀	20.9.57	Isle of May
	×	c. 20.4.62	Aremark: 59°15'N. 11°41'E. (Ostfold) Norway
3026836	pull.	3.7.60	Moniaive: 55°11'N. 3°55'W. (Dumfries) TT
	×	(13.3.62)	Riekling, Saffron Walden (Essex) 275m. SE.
3084008	ad. ♀	9.9.61	Bawdsey: 52°01'N. 1°26'E. (Suffolk) AJW
	+	Oct./Nov. 62	St. Martin-de-la-Place: 47°18'N. 0°09'W. (Maine-et-Loire) France
3051665	pull.	26.6.61	Talybont-on-Usk: 51°54'N. 3°17'W. (Brecon) BMN
	+	12.9.62	St. Wandrille: 49°32'N. 0°45'E. (Seine-Maritime) France

REPORT ON BIRD-RINGING FOR 1962

Water Rail (*Rallus aquaticus*) (2; 5 miles; $4\frac{1}{12}$ year)

928	1stW.	7.9.61	Fair Isle
	x	15.1.62	Ballytober, Larne (Antrim) 350m. SSW.

Moorhen (*Gallinula chloropus*) (40; 50 miles; $4\frac{11}{12}$ years)

0952	juv.	17.10.60	Abberton
	x	20.4.62	Masnedø: 55°01'N. 11°55'E. (Sjaelland) Denmark

This is the first recovery of a British-ringed Moorhen in Denmark.

Coot (*Fulica atra*) (25; 100 miles; $7\frac{1}{12}$ years)

445	f.g.	13.11.60	Duddingston Loch: 55°56'N. 3°09'W. (Midlothian) DRA
	x	11.1.62	Burley-in-Wharfedale (York) 150m. SE.
11775	ad.	9.1.55	Abberton
	+	1.12.62	Haarlem: 52°23'N. 4°41'E. (Noord-Holland) Netherlands
22905	ad.	31.1.62	Abberton
	+	11.11.62	Mezière: 48°17'N. 1°23'W. (Ille-et-Vilaine) France
779	juv.	14.7.62	Asheldham: 51°41'N. 0°51'E. (Essex) BBO
	+	18.9.62	Iffendic: 48°07'N. 2°03'W. (Ille-et-Vilaine) France

Oystercatcher (*Haematopus ostralegus*) (53; 300 miles; $6\frac{1}{12}$ years)

77617	pull.	26.6.61	Fair Isle
	x A	27.5.62	Powfoot, Annan (Dumfries) 315m. SSW.
77290	pull.	26.7.61	Fair Isle
	x	22.1.62	Rhosncigr (Anglesey) 450m. SSW.
4420	pull:	28.6.62	Howmore: 57°15'N. 7°26'W., South Uist, Outer Hebrides PLB
	+	10.10.62	Maliaño: 43°25'N. 3°50'W. (Santander) Spain
99354	pull.	2.8.62	Mingulay: 56°48'N. 7°37'W. Outer Hebrides RD
	+	7.10.62	Sanlúcar: 36°46'N. 6°21'W. (Cádiz) Spain
2223	f.g.	24.2.57	Flookburgh: 54°11'N. 2°59'W. (Lancashire) EJMB
	transp.	24.2.57	Slimbridge
	x	9.8.61	Vodmúlastadir: 63°39'N. 20°10'W. Iceland
33155	f.g.	17.8.62	Holbeach: 52°54'N. 0°04'E. (Lincoln) WWRG
	+	16.12.62	Bouznika: 33°49'N. 7°10'W. Morocco

In addition, five birds ringed as pulli in Wales in 1961 and 1962 were recovered in France, as follows: Finistère (September), Manche (November), Loire-Atlantique (August) and Vendée (September and November). The recoveries in Iceland and Morocco are respectively the first and second records of British-ringed Oystercatchers in those countries.

Lapwing (*Vanellus vanellus*) (115; $10\frac{7}{12}$ years)

2118	pull.	8.5.61	Berrick Salome: 51°38'N. 1°07'W. (Oxford) OOS
	+	3.2.62	near Oued Lau: c. 35°30'N. 5°10'W. Morocco

The remaining foreign recoveries, together with those showing movement into the United Kingdom, are summarised in table E. Months in which no Lapwings were recovered in the areas concerned are omitted from the table.

Table E—Countries and months of recoveries of Lapwing

Country of recovery	Jan	Feb	Mar	Nov	Dec
Ireland (7)	4	—	—	1	2
France (41*)	25	4	5	—	7
Spain (23†)	13	6	—	—	3
Portugal (6)	1	2	—	—	3

*Total includes two records for December 1961

†Total includes one undated record

See footnote to table A

Ringed Plover (*Charadrius hiaticula*) (9; 5 miles; 3 $\frac{11}{12}$ years)

80149X	juv.	28.8.62	Sumburgh: 59°52'N. 1°16'W. (Shetland) PPF
	+	14.9.62	Barbâtre: 46°56'N. 2°10'W. (Vendée) France
621568	1stW.	22.8.60	Newton: 55°31'N. 1°37'W. (Northumberland) MHBO
	/?/	13.5.61	Arcachon: 44°43'N. 1°10'W. (Gironde) France
601020	ad.	21.8.58	near Sutton Bridge: 52°44'N. 0°11'E. (Lincoln) C&PM
	+	15.7.62	Severomorsk: 69°05'N. 33°30'E. (Murmansk) U.S.S.R.
45923X	ad.	10.6.60	Shingle Street: 52°04'N. 1°27'E. (Suffolk) PRC
	+	1.3.60	Urville-Hague: 49°41'N. 1°45'W. (Manche) France
32235X	1stW.	17.9.60	Walton-on-the-Naze: 51°53'N. 1°16'E. (Essex) M&S
	+	14.10.62	Villaviciosa: 43°30'N. 5°25'W. (Oviedo) Spain
R88389	pull.	5.7.59	Foulness: 51°37'N. 0°57'E. (Essex) GD
	+	0.12.62	La Toja: 42°29'N. 8°50'W. (Pontevedra) Spain

601020 is the first British-ringed bird of this species to be recovered in the Soviet Union.

Dotterel (*Charadrius morinellus*) (1; $\frac{8}{12}$ year)

583744	f.g.	29.9.61	Great Saltee
	()	9.6.62	near Igarka: 67°31'N. 86°33'E. (Krasnoyarsk) U.S.S.R.

This is the first recovery of a British-ringed Dotterel. As Igarka lies a considerable distance from any known breeding ground, the bird was presumably still on passage.

Golden Plover (*Charadrius apricarius*) (6; 10 miles; 1 $\frac{3}{12}$ years)

Birds ringed at Harty, 51°22'N. 0°55'E., Isle of Sheppey (Kent), were recovered as follows:

Ringed		Recovered	
723799	15.10.60	9.2.62	Bir Jedid: c. 33°30'N. 8°00'W. Morocco
CK11033	7.10.61	1.1.62	Portland (Dorset) 150m. WSW.
CK11044	4.11.61	24.2.62	Queyrac: 45°23'N. 1°00'W. (Gironde) France
P12074	9.12.61	17.11.62	Niekerk: 53°14'N. 6°22'E. (Groningen) Netherlands
P12092	9.12.61	2.1.62	St. Malo de la Lande: 49°05'N. 1°33'W. (Manche) France

These recoveries are the result of the first really successful campaign to catch this species in winter.

Turnstone (*Arenaria interpres*) (1; 2 $\frac{9}{12}$ years)

R44101	ad.	25.7.59	Spurn Point
	x	(3.5.62)	Flectwood (Lancashire) 125m. WNW.

REPORT ON BIRD-RINGING FOR 1962

Snipe (*Gallinago gallinago*) (78; 5 $\frac{1}{12}$ years)

Table F—Countries and months of recoveries of Snipe

Country of recovery	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Summer ringed†
1000 (1)	-	-	-	-	-	-	-	-	(1)	-	-	-	-
105)	-	-	-	-	-	-	-	2	2	-	1	-	2
1000 (2)	-	-	-	-	-	-	-	-	1	-	-	1	1
1000 (12)	-	-	-	-	-	-	-	2	1	3	2	4	2
1000 (7)	-	-	-	-	-	-	-	-	2	4	1	-	3
1000 (1)	-	-	-	-	-	-	1	-	-	-	-	-	-
1000 (1)	-	-	-	-	-	-	1	-	-	-	-	-	-
1000 (1)	1	-	-	-	-	-	-	-	-	-	-	-	1
1000 (1)	-	-	-	1	-	-	-	-	-	-	-	-	-
1000 (1)	-	-	-	-	-	-	-	1	-	-	-	-	-
1000 (3)	1	-	-	-	2	-	-	-	-	-	-	-	-

† of the birds included in this table were ringed in the summer months (April-August) and were presumably of British origin; these are repeated in the end column to show the countries of recovery
See footnote to table A

Woodcock (*Scolopax rusticola*) (4; 20 miles; 1 $\frac{2}{12}$ years)

144	f.g.	3.11.62	Isle of May
	+	4.12.62	Templemore (Tipperary) 310m. SW.
166	f.g.	7.11.62	Isle of May
	+	8.12.62	Cloughjordan (Tipperary) 310m. SW.

Curlew (*Numenius arquata*) (31; 200 miles; 6 $\frac{2}{12}$ years)

1002	pull.	26.5.60	Dalry: 55°06'N. 4°10'W. (Kirkcudbright) ADW
	+	11.10.62	Tuam (Galway) 215m. WSW.
1772	pull.	30.5.61	Warecop: 54°32'N. 2°24'W. (Westmorland) RWR
	×	c. 6.4.62	Oare, Marlborough (Wiltshire) 215m. S.
1112	pull.	15.7.62	Burneside: 54°21'N. 2°46'W. (Westmorland) JWA
	+	15.11.62	Pola de Siero: 43°24'N. 5°39'W. (Oviedo) Spain
1651	pull.	1.7.60	Settle: 54°07'N. 2°21'W. (York) WJE
	+	(3.3.62)	near Gozón: 43°37'N. 5°51'W. (Oviedo) Spain
161	pull.	19.6.55	Stainburn: 53°57'N. 1°37'W. Harrogate (York) WNS
	+	0.9.61	Brideswell (Roscommon) 260m. W.

Whimbrel (*Numenius phaeopus*) (1; $\frac{8}{12}$ year)

1008	f.g.	25.8.61	Chetney: 51°26'N. 0°44'E. (Kent) MKRG
	+	22.5.62	Apapa: 6°27'N. 3°22'E. Lagos, Nigeria

is the first recovery of a British-ringed Whimbrel in Africa.

Common Sandpiper (*Tringa hypoleucos*) (4; 5 miles; 3 $\frac{11}{12}$ years)

1000	pull.	30.6.62	North Nesting: 60°17'N. 1°07'W. (Shetland) CJB
	×	(25.8.62)	Ribeira: 41°31'N. 7°47'W. (Tras os Montes) Portugal
	f.g.	2.9.62	near Portsmouth: 50°49'N. 1°00'W. (Hampshire) DFB
	+	c. 8.9.62	Salvaterra: 39°01'N. 8°47'W. (Ribatejo) Portugal
1001	f.g.	26.8.58	Colchester: 51°53'N. 0°53'E. (Essex) M&S
	▼	31.7.62	Nieuport: 51°08'N. 2°45'E. (West Flanders) Belgium ¹

¹Given Bruxelles ring V23952

Redshank (*Tringa totanus*) (38; 200 miles; 11 $\frac{9}{12}$ years)

82793S	pull.	31.5.62	Penicuik: 55°50'N. 3°15'W. (Midlothian) ATM
	+	15.7.62	Baie d'Authie: 50°23'N. 1°34'E. (Pas-de-Calais) France
26938R	pull.	26.5.62	Ponteland: 55°04'N. 1°41'W. (Northumberland) FC
	[?]	18.12.62	Oosterschelde: c. 51°35'N. 4°00'E. (Zeeland) Netherlands
41959S	pull.	26.5.62	Rockcliffe: 54°57'N. 3°05'W. (Cumberland) RHB
	+	5.8.62	La Tremblade: 45°46'N. 1°08'W. (Charente-Maritime) France
V31988	pull.	2.6.58	Burgh Marsh: 54°54'N. 3°03'W. (Cumberland) RHB
	+	25.12.62	Marenes: 45°50'N. 1°06'W. (Charente-Maritime) France
P1902J	ad.	10.8.60	Holbeach: 52°54'N. 0°04'E. (Lincoln) WWRG
	×	23.3.62	Backies, Golspie (Sutherland) 380m. NW.
DS03214	juv.	15.7.62	Holbeach M&B
	+	16.12.62	Damgan: 47°32'N. 2°34'W. (Morbihan) France
48187S	juv.	1.7.62	Frampton: 52°56'N. 0°01'W. (Lincoln) ARJ
	+	8.9.62	Marinha Velha: 40°38'N. 8°44'W. (Beira Litoral) Portugal
10570R	juv.	29.7.62	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC
	+	2.12.62	Damgan, France

Knot (*Calidris canutus*) (4; 10 miles; 1 $\frac{8}{12}$ years)

R82177	f.g.	9.9.60	Tory Island
	×	27.5.62	Wells (Norfolk) 400m. ESE.

Dunlin (*Calidris alpina*) (55; 5 $\frac{11}{12}$ years)

Table G—Countries and months of recoveries of Dunlin

Country of recovery	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
NW Africa (2)	-	-	-	-	-	-	-	-	-	(1)	1	-
Spain (1)	-	1	-	-	-	-	-	-	-	-	-	-
Portugal (2)	-	-	-	-	-	-	-	-	1	-	1	-
France (21)	9	7	-	1	-	1	(1)	-	-	-	-	2
Germany (2)	-	-	1	-	1	-	-	-	-	-	-	-
Denmark (1)	-	-	-	-	-	-	-	(1)	-	-	-	-
Sweden (2)	-	-	-	-	2	-	-	-	-	-	-	-
U.S.S.R. (1)	-	-	-	-	1	-	-	-	-	-	-	-

See footnote to table A

The recoveries from Africa and the U.S.S.R. are as follows:

630265	f.g.	8.9.61	Boulmer: 55°25'N. 1°35'W. (Northumberland) MHBO
	+	18.2.62	El Aaiún: 27°09'N. 13°12'W. Spanish West Africa
54249S	f.g.	2.9.61	Copeland
	+	(8.1.62)	Oualidia: 33°00'N. 8°50'W. Morocco
11200S	ad.	4.3.61	Lcigh-on-Sea: 51°33'N. 0°40'E. (Essex) GD
	+	12.8.62	Lake Shlino: 57°42'N. 33°23'E. (Novgorod) U.S.S.R.

Sanderling (*Crocethia alba*) (1; $\frac{5}{12}$ year)

63620S	f.g.	21.8.61	Sumburgh: 59°52'N. 1°16'W. (Shetland) CJB
	×	20.1.62	s'Gravenzande: 52°00'N. 4°10'E. (Zuid-Holland) Netherlands

Ruff (*Philomachus pugnax*) (7; 2 $\frac{2}{12}$ years)

P14524	f.g. ♂	1.9.60	Embleton: 55°30'N. 1°37'W. (Northumberland) MHBO
	×	(25.11.62)	Chichester Harbour (Hampshire) 315m. S.
43686R	juv. ♀	31.8.62	Shotton: 53°12'N. 3°02'W. (Flint) MRG
	+	23.9.62	Berrechid: 33°17'N. 7°35'W. Morocco

REPORT ON BIRD-RINGING FOR 1962

994	f.g. ♂	5.9.60	near Sutton Bridge: 52°44'N. 0°11'E. (Lincoln)	C&PM
	+	25.3.62	Manfredonia: 41°37'N. 15°55'E. (Foggia)	Italy
11X	f.g. ♀	23.8.61	near Sutton Bridge	M&B
	+	7.4.62	San Alberto: 44°34'N. 12°10'E. (Ferrara)	Italy
22S	f.g. ♀	14.10.61	near Sutton Bridge	CMR
	+	14.7.62	St. Vigor: 49°29'N. 0°10'E. (Seine-Maritime)	France
333	ad. ♂	4.1.60	Abberton	
	+	21.1.62	Redon: 47°39'N. 2°05'W. (Ille-et-Vilaine)	France
21535	f.g. ♂	2.10.62	Sittingbourne: 51°23'N. 0°43'E. (Kent)	MKRG
	+	24.12.62	Parbayón: 43°23'N. 3°53'W. (Santander)	Spain

Arctic Skua (*Stercorarius parasiticus*) (4; 50 miles; 3½ years)

77064	pull.	8.7.62	Noss: 60°08'N. 1°01'W. (Shetland)	CJB
	×	7.10.62	Tetney Marsh (Lincoln)	460m. S.
3356	pull.	21.7.62	Fair Isle	
	+	26.8.62	Gabol: 55°15'N. 9°09'E. (Jutland)	Denmark

Great Skua (*Catharacta skua*) (12; 200 miles; 1½ years)

31001	pull.	13.7.62	Hermaness: 60°52'N. 0°53'W. (Shetland)	NJG
	×	19.9.62	Jutrijp: 53°00'N. 5°39'E. (Friesland)	Netherlands
20016	pull.	29.6.61	Noss: 60°08'N. 1°01'W. (Shetland)	DRW
	×	27.1.62	Aviles: 43°33'N. 5°55'W. (Oviedo)	Spain
2534	pull.	5.7.62	Mousa: 60°00'N. 1°10'W. (Shetland)	CJB
	+	22.9.62	St. Marie du Mont: 49°22'N. 1°14'W. (Manche)	France
774	pull.	29.7.60	Foula: 60°08'N. 2°05'W. (Shetland)	JCG
	×	end 5.62	St. Hilaire: 47°00'N. 0°57'W. (Vendée)	France
901	pull.	6.8.60	Foula	EEJ
	+	14.1.62	off San Sebastian: 43°19'N. 1°59'W. (Guipúzcoa)	Spain
778	pull.	29.7.61	Foula	BEG
	+	0.12.61	Lohals: 55°08'N. 10°55'E. (Langeland)	Denmark
831	pull.	14.7.62	Foula	BEG
	×	21.12.62	Capbreton: 43°38'N. 1°25'W. (Landes)	France
835	pull.	14.7.62	Foula	BEG
	+	1.9.62	Cherven: 53°41'N. 28°30'E. (Minsk)	U.S.S.R.
815	pull.	20.7.62	Foula	BEG
	×	28.9.62	Makkum: 53°04'N. 5°24'E. (Friesland)	Netherlands
800	pull.	21.7.62	Foula	BEG
	×A	23.9.62	De Vuurtoren: 53°11'N. 4°51'E. Texel,	Netherlands

recovery of 416585 so very far to the east and hundreds of miles inland is remarkable. St. Hilaire, the recovery locality of 415974, is also inland.

Great Black-backed Gull (*Larus marinus*) (34; 150 miles; 8 years)

88	pull.	21.7.58	North Rona: 59°08'N. 5°50'W. Outer Hebrides	TBB
	+	c. 24.1.62	Lough Foyle (Antrim)	270m. S.
81	juv.	28.7.59	Rosemarkie: 57°36'N. 4°07'W. (Ross)	JL
	v	(20.9.59)	off Blyth (Northumberland)	200m. SE.
	×	21.4.62	Kessock (Ross)	195m. NW.

Lesser Black-backed Gull (*Larus fuscus*) (175; 12½ years)

Table H—Regions and months of recoveries of Lesser Black-backed Gulls

Country of recovery	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Belgium (1)	—	—	—	—	—	—	—	—	—	—	1	—
'Biscay' (14)	2	1	1	—	4	2	—	—	2	—	1	1
W Spain and Portugal (38)	1	9	9	8	3	1	—	3	3	—	1	—
Spanish Mediterranean (3)	—	—	—	1	1	—	1	—	—	—	—	—
Morocco (8)	—	—	1	—	1	4	2	—	—	—	—	—
Spanish West Africa (2)	—	—	—	—	1	—	1	—	—	—	—	—
Sénégal (1)	—	—	—	1	—	—	—	—	—	—	—	—

See footnote to table A

AJ65889	pull.	1.8.62	Skomer: 51°44'N. 5°19'W. (Pembroke) MPH
	+	8.12.62	Tenerife: 28°21'N. 16°55'W. Canary Islands
AJ71447	pull.	30.6.62	Flatholm: 51°23'N. 3°07'W. Bristol Channel JDRV
	+	3.11.62	Paestum: 40°24'N. 15°00'E. (Salerno) Italy

Recoveries of this species in the Canary Islands are infrequent. There is no previous recovery of a British-ringed Lesser Black-backed Gull in Italy but one earlier record from Sicily.

Herring Gull (*Larus argentatus*) (325; 10½ years)

AJ37279	ad.	13.12.61	Fair Isle
	+	8.6.62	Honningsvåg: 70°58'N. 25°59'E. (Finnmark) Norway

Five other birds were recovered abroad as follows: Jutland, Denmark (April); Zealand, Netherlands (June); Somme, France (March); and Vendée, France (September and December). Ten movements of more than 150 miles within Great Britain and Ireland were predominantly southwards.

Common Gull (*Larus canus*) (12; 150 miles; 4 years)

3061559	pull.	23.6.61	Loch Trendavoe: 60°25'N. 1°19'W. (Shetland) ADB
	+	late 2.62	Strichen (Aberdeen) 200m. S.
3039958	1stW.	17.1.60	Willerby: 53°46'N. 0°27'W. Hull (York) DJM
	x	3.6.62	Fosenøy: 59°20'N. 5°25'E. (Rogaland) Norway

Black-headed Gull (*Larus ridibundus*) (318; 19 years)

3015723	pull.	24.6.56	Rat Island: 51°49'N. 1°02'E. (Essex) RWA
	+	0.8.62	Hemnes: 59°43'N. 11°26'E. (Akershus) Norway

Other pulli ringed in England were recovered abroad as follows: France, 2 (January and July); north Spain, 2 (January and February); and Portugal, 4 (January, February, March and December). Birds ringed in the winter months were recovered between March and September in Czechoslovakia (1), Germany (2), Denmark (2) and Sweden (2). 72 recoveries show movements between 50 and 430 miles within Great Britain and Ireland.

Kittiwake (*Rissa tridactyla*) (38; 200 miles; 5½ years)

2021636	pull.	c. 17.6.59	North Shields: 55°01'N. 1°26'W. (Northumberland) ND&N
	()	23.4.62	at sea: 49°10'N. 9°55'W.
2059379	pull.	29.6.60	North Shields ND&N
	+	14.10.61	Flatey: 66°10'N. 17°52'W., Skjálfandi, Iceland

REPORT ON BIRD-RINGING FOR 1962

1808	pull.	3.7.60	Scarborough: 54°17'N. 0°24'W. (York) JRM
	×	10.9.62	Zaandam: 52°27'N. 4°49'E. (Noord-Holland) Netherlands
9840	pull.	15.7.60	Calf of Man
	× A	11.10.62	Paris: 48°50'N. 2°20'E. France

birds ringed as pulli on the Farne Islands were recovered as follows:

—Ringed—		—Recovered—	
405	10.7.58	7.11.62	Heligoland: 54°11'N. 7°55'E. Germany
247	9.7.60	13.12.60	off Ondarroa: 43°32'N. 2°25'W. (Vizcaya) Spain
68	29.6.61	c. 10.3.62	Schiermonnikoog: 53°30'N. 6°15'E., Frisian Islands, Netherlands
84	29.6.61	8.2.62	Takonin: 49°40'N. 14°52'E. (Ceske Zeme) Czechoslovakia
96	29.6.61	c. 20.7.62	Deer Harbour: 48°08'N. 53°50'W. Newfoundland
24	1.7.61	20.5.62	Blakeney Point (Norfolk) 200m. SE.
078	3.7.61	16.2.62	Harlingen: 53°11'N. 5°25'E. (Friesland) Netherlands
315	7.7.61	2.2.62	Den Haag: 52°05'N. 4°16'E. (Zuid-Holland) Netherlands
553	16.7.61	15.2.62	off Canary Islands: c. 30°00'N. 12°00'W.
589	16.7.61	26.5.62	Vlichors: 53°14'N. 4°55'E., Frisian Islands, Netherlands
626	23.7.61	24.5.62	Port Talbot (Glamorgan) 290m. SSW.

A special note in the above list is the recovery in Czechoslovakia, although the bird recovered at Paris was also far inland. The bird recovered between the Farne Islands and the neighbouring coast of Africa was near to the southern limit of the species.

Common Tern (*Sterna hirundo*) (55; 100 miles; 7 years)

5R	pull.	2.7.62	Longannet Point: 56°02'N. 3°42'W. (Fife) JH
	+ autumn	62	Galapagar: 40°35'N. 4°00'W. (Madrid) Spain
00	pull.	20.7.60	Coquet Island: 55°20'N. 1°32'W. (Northumberland) JCC
	()	13.7.62	Freetown: 8°30'N. 13°17'W. Sierra Leone

In addition to the above, four birds were recovered in Ghana in late December and one in early January. The recovery locality of 32583R is many hundreds of miles from the sea.

Arctic Tern (*Sterna macrura*) (60; 50 miles; 4 years)

birds ringed on the Farne Islands were recovered as follows:

—Ringed—		—Recovered—	
15	19.7.58	19.7.62	Largo (Fife) 63m. NW.
91	4.7.60	10.6.62	Burayevo: 55°50'N. 55°25'E. (Bashkir) U.S.S.R.
07	7.7.60	1.7.62	Aabenraa: 55°02'N. 9°37'E. (Jutland) Denmark
91	22.7.61	8.12.61	Antarctic Ocean: 56°20'S. 39°30'E.
31	14.7.62	15.8.62	Vikesund: 59°58'N. 9°59'E. (Buskerud) Norway
39	14.7.62	c. 2.9.62	Auchencairn (Kirkcudbright) 100m. WSW.
86	14.7.62	16.8.62	Brodick, Arran (Bute) 135m. W.
114*	27.7.62	18.8.62	Kielder Forest (Northumberland) 43m. WSW.

*Ringed as juvenile; the remainder were ringed as pulli

The recovery locality of 727929 is many hundreds of miles inland and within 200 miles of the Ural Mountains. CK10391 is the most southerly recovery ever recorded for a bird of any species ringed in Britain.

Roscate Tern (*Sterna dougallii*) (15; 2-7½ years)

recoveries were reported from Guinea (one September) and Ghana (five December, two January, one February, one April and one May).

Little Tern (*Sterna albifrons*) (2; 10 miles; 9 years)

R70533	pull.	21.6.59	Foulness: 51°37'N. 0°57'E. (Essex) PR
	×	17.7.62	Schouwen-Duiveland: 51°41'N. 3°59'E. (Zeeland) Netherlands

Sandwich Tern (*Sterna sandvicensis*) (63; 200 miles; 6 $\frac{11}{12}$ years)

265999	pull.	8.7.59	Firth of Forth: 56°02'N. 3°08'W. WJE
	v	28.6.62	Algorita: 43°20'N. 3°00'W. (Bilbao) Spain

The remaining foreign recoveries are summarised in table J.

Table J—Countries and months of recoveries of Sandwich Terns

Country of recovery	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
France (1)	-	-	-	-	-	-	-	1	-	-	-	-
Spain (1)	-	1	-	-	-	-	-	-	-	-	-	-
Portugal (3)	3	-	-	-	-	-	-	-	-	-	-	-
Mauritania (1)	-	-	1	-	-	-	-	-	-	-	-	-
Sénégal (5)	-	-	2	2	1	-	-	-	-	-	-	-
Sierra Leone (5)	-	-	-	-	-	1	1	1	2	-	-	-
Liberia (2)	-	-	-	1	1	-	-	-	-	-	-	-
Ghana (5)	-	-	2	-	-	3	-	-	-	-	-	-
Togo (2)	-	-	-	2	-	-	-	-	-	-	-	-
Nigeria (1)	-	1	-	-	-	-	-	-	-	-	-	-
Angola (2)	-	1	(1)	-	-	-	-	-	(1)	-	-	-
South Africa (1)	-	-	-	-	-	-	-	1	-	-	-	-

See footnote to table A

Razorbill (*Alca torda*) (30; 200 miles; 9 $\frac{9}{12}$ years)

3076071	pull.	18.6.59	Calf of Man
	×	(31.3.62)	Kessingland (Suffolk) 290m. ESE.
AT69151	pull.	22.6.61	Annet: 49°54'N. 6°22'W. Scilly (Cornwall) SABO
	+	c. 5.10.62	Skottning: 59°41'N. 5°03'E. (Hordaland) Norway

Birds ringed on Fair Isle were recovered as follows:

Ringed		Recovered	
AT90139	4.7.62	20.10.62	Oslofjord: c. 59°03'N. 10°32'E. Norway
AT90140	4.7.62	29.10.62	Rövaer: 59°27'N. 5°03'E. (Rogaland) Norway
AT90535	14.7.62	20.11.62	Rövaer, Norway

Birds ringed on Bardsey were recovered as follows:

Ringed		Recovered	
AT22925*	28.6.54	(27.2.62)	Trégastel: 48°49'N. 3°30'W. (Côtes-du-Nord) France
AT76448	28.6.61	0.5.62	Guetaria: 43°18'N. 2°12'W. (Guipúzcoa) Spain
AT71862	19.7.61	23.12.62	Tortosa: 40°49'N. 0°31'E. (Tarragona) Spain

Birds ringed on Skokholm were recovered as follows:

Ringed		Recovered	
AT29589	6.7.55	6.5.62	Otterferry (Argyll) 290m. N.
3064932	28.6.59	(13.4.62)	Pointe du Raz: 48°02'N. 4°44'W. (Finistère) France
AT66090	28.6.60	13.4.62	Biarritz: 43°29'N. 1°34'W. (Basses-Pyrénées) France
AT66099	28.6.60	25.3.62	Kerbrat: 48°41'N. 4°07'W. (Finistère) France
3075321	10.7.60	13.3.62	off Lanloup: 48°43'N. 2°54'W. (Côtes-du-Nord) France
3075269	10.7.60	(10.2.62)	off Santurce: 43°20'N. 3°03'W. (Vizcaya) Spain
3075366	12.7.60	24.1.62	Castro Urdiales: 43°25'N. 3°13'W. (Santander) Spain
AT75142	1.7.61	28.1.62	off Adra: 36°45'N. 3°01'W. (Almería) Spain
AT75324	3.7.61	11.1.62	Hendaye: 43°22'N. 1°46'W. (Basses-Pyrénées) France

* Ringed as adult; the remainder were ringed as pulli

REPORT ON BIRD-RINGING FOR 1962

Guillemot (*Uria aalge*) (16; 100 miles; 2 years)

198	pull.	7.7.62	Fair Isle
	+	27.10.62	Kristiansund: 63°07'N. 7°45'E. (More og Romsdal) Norway
158	pull.	26.6.62	Nigg: 57°42'N. 4°01'W. (Ross) ADBr
	+	5.10.62	off Haugesund: c. 59°25'N. 5°15'E. (Rogaland) Norway
157	juv.	14.7.62	Isle of May
	+	21.11.62	Oslofjord: c. 59°00'N. 10°35'E. Norway
12	pull.	2.7.61	Puffin Island: 53°19'N. 4°01'W. (Anglesey) MRG
	x	3.1.62	Egmond-aan-Zee: 52°37'N. 4°37'E. (Noord-Holland) Netherlands
177	pull.	9.7.61	Skokholm
	x	3.12.61	Querqueville: 49°40'N. 1°42'W. (Manche) France

British-ringed as pulli on the Farne Islands were recovered as follows:

British-ringed	Recovered		
140	24.6.61	30.12.62	Happisburgh (Norfolk) 23om. SE.
10	22.6.61	20.1.62	Noordwijk: 52°15'N. 4°25'E. (Zuid-Holland) Netherlands
12	1.7.61	6.1.62	Texel: c. 53°06'N. 4°46'E. Netherlands
157	23.6.62	17.10.62	Røvaer: 59°27'N. 5°03'E. (Rogaland) Norway
170	23.6.62	mid-12.62	Skudeneshavn: 59°10'N. 5°16'W. (Rogaland) Norway
177	23.6.62	3.12.62	Felixstowe (Suffolk) 275m. SE.
168	9.7.62	25.11.62	Kvitsøy: 59°04'N. 5°22'E. (Rogaland) Norway

Puffin (*Fratercula arctica*) (11; 70 miles; 7 years)

ad.	22.7.58	Skokholm
x	29.6.62	Bardsey 75m. NNE.

Stock Dove (*Columba oenas*) (5; 10 miles; 9 $\frac{2}{12}$ years)

pull.	13.7.62	Thornhaugh: 52°36'N. 0°26'W. (Northampton) PAB
+	28.10.62	Lagrán: 42°38'N. 2°35'W. (Alava) Spain
ad.	14.6.61	Soham: 52°20'N. 0°20'E. (Cambridge) MAFF
x	9.1.62	West Tilbury (Essex) 6om. S.

This is only the second foreign recovery of a British-ringed Stock Dove, the first one having been recorded as long ago as 1933.

Woodpigeon (*Columba palumbus*) (87; 100 miles; 11 $\frac{4}{12}$ years)

pull.	17.8.61	Weston Colville: 52°09'N. 0°20'E. (Cambridge) MAFF
x	(16.1.62)	Montsurs: 48°08'N. 0°33'W. (Mayenne) France
pull.	16.7.61	Foulness: 51°36'N. 0°55'E. (Essex) GD
+	(20.3.62)	Witchampton, Wimborne (Dorset) 13om. WSW.

Cuckoo (*Cuculus canorus*) (2; 40 miles; 1 $\frac{2}{12}$ years)

pull.	15.6.62	Sutton Valence: 51°12'N. 0°36'E. (Kent) MKRG
+	2.9.62	near Albino: 45°46'N. 9°50'E. (Bergamo) Italy

Little Owl (*Athene noctua*) (8; 10 miles; 2 years)

pull.	26.5.62	Ponteland: 55°05'N. 1°44'W. (Northumberland) FC
x	(15.10.62)	New Hailes, Musselburgh (Midlothian) 76m. NW.

Long-eared Owl (*Asio otus*) (2; 10 miles; 1 $\frac{11}{12}$ years)

pull.	9.6.60	Thornhill: 55°14'N. 3°46'W. (Dumfries) RTS
x	(17.5.62)	Inverkeilor, Arbroath (Angus) 105m. NNE.

Short-eared Owl (*Asio flammeus*) (2; 10 miles; 4 $\frac{10}{12}$ years)

<i>AF3860</i>	pull.	9.5.57	Moniaive: 55°11'N. 3°55'W. (Dumfries) TT
	x	20.3.62	Tonyrefail (Glamorgan) 250m. S.

Swift (*Apus apus*) (172; 70 miles; 7 years)

<i>J40007</i>	ad.	28.6.59	Ilkley: 53°56'N. 1°49'W. (York) WNS
	+	(26.1.62)	Kikwit: 5°02'S. 18°51'E. (Leopoldville) Congo
<i>SC14389</i>	f.g.	19.7.62	Hackenthorpe: 53°21'N. 1°21'W. (York) SNHS
	x	29.12.62	Fort Victoria: 20°10'S. 30°49'E. Southern Rhodesia
<i>A44266</i>	ad.	31.5.60	Solihull: 52°25'N. 1°45'W. (Warwick) JFWB
	+	24.11.62	Mlanje: 16°05'S. 35°29'E. Nyasaland
<i>A93357</i>	ad.	26.6.56	West Ewell: 51°21'N. 0°15'W. (Surrey) MJC
	x	4.8.62	Villamanta: 40°18'N. 4°06'W. (Madrid) Spain
<i>A46279</i>	ad.	20.6.62	Littlestone: 50°59'N. 0°58'E. (Kent) DBO
	x	(6.8.62)	Fredericia: 55°34'N. 9°47'E. (Jutland) Denmark

There is only one previous recovery of a British-ringed Swift in Africa.

Kingfisher (*Alcedo atthis*) (8; 10 miles; 1 $\frac{6}{12}$ years)

<i>SC13401</i>	ad. ♀	23.4.62	Kilnhurst: 53°28'N. 1°19'W. (York) FH
	x	(22.8.62)	Barrasford, Hexham (Northumberland) 110m. NNW.
<i>A44774</i>	1stW.	30.9.61	Minworth: 52°30'N. 1°47'W. (Warwickshire) C&PM
	x	(23.1.62)	Beeston (Nottingham) 35m. NE.
<i>SC00614</i>	ad. ♀	7.4.61	Britford: 51°03'N. 1°47'W. (Wiltshire) F&H
	x	c. 8.1.62	Emsworth (Hampshire) 40m. ESE.

Movements of over five miles are rarely recorded for British-ringed Kingfisher. The second and third records almost certainly reflect the severe cold spell.

Great Spotted Woodpecker (*Dendrocopos major*) (12; 10 miles; 4 $\frac{7}{12}$ years)

<i>89643S</i>	1stW.	12.10.62	Spurn Point
	x	(3.12.62)	Burton Pidsea (York) 16m. NW.
<i>2063302</i>	pull.	11.6.62	Addington: 51°22'N. 0°02'W. (Surrey) RNFS
	v	25.7.62	Belvedere, Erith (Kent) 12m. NE.
<i>2010054</i>	juv.	21.6.61	Ewhurst: 51°09'N. 0°26'W. (Surrey) L&JW
	x	(16.2.62)	Datchet, Eton (Buckingham) 25m. N.
<i>14316S</i>	ad. ♂	1.7.61	Stockbury: 51°20'N. 0°41'E. (Kent) MKRG
	x	26.1.62	Yalding, Maidstone (Kent) 11m. SW.
<i>737595</i>	1stW. ♀	6.9.62	Dungeness
	x	c. 17.11.62	Wavre: 50°43'N. 4°37'E. (Brabant) Belgium

Recoveries showing movements of over five miles are exceptional and 737595 is the first foreign recovery of a British-ringed Great Spotted Woodpecker. It may be noted that 1962 was an eruption year for this species on the Continent.

Skylark (*Alauda arvensis*) (8; 5 miles; 5 $\frac{1}{12}$ years)

<i>C67410</i>	f.g.	18.11.56	Elm Park: 51°33'N. 0°12'E. Romford (Essex) RRS
	x	4.1.62	Alderney: 49°43'N. 2°12'W. Channel Islands

Shore Lark (*Eremophila alpestris*) (1; $\frac{1}{12}$ year)

<i>AC96746</i>	ad. ♂	1.11.62	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC
	x	30.11.62	Brightlingsea (Essex) 45m. SW.

This is the first recovery of a British-ringed Shore Lark.

REPORT ON BIRD-RINGING FOR 1962

Swallow (*Hirundo rustica*) (200; 200 miles; 6 years)

7763	pull. ()	7.8.61 4.5.62	Haydon Bridge: 54°58'N. 2°14'W. (Northumberland) Zouiret: 28°38'N. 9°22'E. Algeria	C&L
	ad. v x	21.5.60 (25.7.61) 12.8.62	Copeland Gowerton (Glamorgan) 215m. SSE, Gowerton	
1597	ad. ♂ +	11.5.62 22.5.62	Copeland Löcknitz: 53°28'N. 14°13'E. (Mecklenburg) Germany	
1590	juv. x	22.9.60 21.7.62	Fairburn: 53°45'N. 1°18'W. (York) CW Lochgair, Loch Fyne (Argyll) 230m. NW.	
1773	juv. / ? /	14.9.61 (14.10.62)	Fairburn CW Kasanza: 6°00'S. 18°55'E. (Leopoldville) Congo	
1333	ad. ♀ ()	18.9.61 30.3.62	Fairburn CW Djambala: 2°32'S. 14°43'E. Congo (Fr.)	
1550	juv. v	22.9.61 21.6.62	Fairburn CW near Oban (Argyll) 245m. NW.	
1221	juv. v	28.8.60 c. 3.2.62	Sprotborough: 53°32'N. 1°11'W. (York) RJR Dundee: 28°10'S. 30°15'E. (Natal) South Africa	
1559	juv. x	23.6.62 c. 20.10.62	Ailsworth: 52°35'N. 0°19'W. (Northampton) RVC Valencia: 39°29'N. 0°24'W. Spain	
	1stW. +	2.10.62 9.12.62	Minsmere: 52°14'N. 1°37'E. (Suffolk) HEA Mokué: 3°10'S. 18°06'E. (Leopoldville) Congo	
1556	f.g. v	4.9.61 29.5.62	Bradwell Hooge: 54°35'N. 8°34'E. (Schleswig-Holstein) Germany	
141	pull. v	7.8.57 30.4.62	Romford: 51°35'N. 0°11'E. (Essex) AGH Brasschaat: 51°17'N. 4°30'E. (Antwerpen) Belgium	
1659	1stW. x	2.10.62 9.10.62	Steeple Holme: 51°21'N. 3°07'W. (Somerset) SHT Langeais: 47°21'N. 0°26'E. (Indre-et-Loire) France	
1832	pull. v	7.6.62 18.11.62	Sherfield: 51°18'N. 1°02'W. (Hampshire) PRM Theronsville: c. 32°00'S. 20°50'E. (Cape Province) South Africa	
1202	juv. x	11.9.62 17.11.62	Ewhurst: 51°09'N. 0°26'W. (Surrey) L&JW near Kimberley: c. 28°55'S. 24°20'E. South Africa	
1001	juv. v	3.9.61 13.5.62	Slapton: 50°17'N. 3°39'W. (Devon) FRS Carrigaline (Cork) 225m. WNW.	

1097 is an interesting example of redirected passage.

House Martin (*Delichon urbica*) (33; 30 miles; 2½ years)

122	ad. x	21.5.61 c. 7.8.62	near Bishop's Stortford: 51°53'N. 0°09'E. (Hertford) Tansor, Oundle (Northampton) 50m. NW.	RJD
-----	----------	----------------------	---	-----

Sand Martin (*Riparia riparia*) (435; 3½ years)

184	juv. ()	24.8.62 (18.9.62)	Shincliffe: 54°46'N. 1°33'W. (Durham) PY Mer: 47°43'N. 1°30'E. (Loir-et-Cher) France	
173	ad. x	29.7.61 0.9.61	Toomebridge: 54°45'N. 6°28'W. (Antrim) WR St. Ciers: 45°18'N. 0°36'W. (Gironde) France	
155	ad. v	7.8.61 17.4.62	Fairburn: 53°45'N. 1°18'W. (York) CW Alhabia: 37°00'N. 2°35'W. (Almería) Spain	

BRITISH BIRDS

J50107	f.g.	9.6.60	Wolferton: 52°50'N. 0°28'E. (Norfolk) JLC
	v	23.7.61	Wolferton
	x	27.4.62	St. Philbert: 47°02'N. 1°38'W. (Loire-Atlantique) France
AE57988	ad.	12.7.62	Wittering: 52°37'N. 0°28'W. (Northampton) C&F
	+	11.9.62	Jeréz: 36°41'N. 6°08'W. (Cádiz) Spain
NI1009	juv.	16.8.62	Hartshill: 52°37'N. 1°32'W. (Warwick) HL
	v	9.9.62	Chichester: 50°49'N. 0°46'W. (Sussex) 120m. SSE.
	x	15.9.62	Arès: 44°47'N. 1°08'W. (Gironde) France
AA93676	ad.	7.8.61	Dunwich: 52°16'N. 1°39'E. (Suffolk) DBC
	x	(21.4.62)	Angers: 47°32'N. 0°31'W. (Maine-et-Loire) France
AA55201	juv.	14.8.60	East Malling: 51°18'N. 0°26'E. (Kent) RSP
	v	31.5.62*	Ophoven: 51°06'N. 6°06'E. (Nordrhein-Westfalen) Germany
J58331	ad.	26.7.59	Chartham: 51°16'N. 1°02'E. (Kent) SBBO
	x	0.9.61	St. Ciers, France
AB67169	ad.	13.5.61	Chartham SBBO
	x	(21.5.62)	Bergerac: 44°50'N. 0°29'E. (Dordogne) France
AE38411	juv.	15.7.62	Chartham SBBO
	+	11.9.62	Jeréz, Spain
AC17154	juv.	17.8.61	Dorking: 51°14'N. 0°20'W. (Surrey) L&JW
	v	4.7.62	Tardingham: 50°52'N. 1°37'E. (Pas-de-Calais) France

*Also caught at same colony 2.6.63 and 21.7.63

Raven (*Corvus corax*) (13; 50 miles; 12- $\frac{5}{12}$ years)

414169	pull.	15.4.60	Parys Mountain: 53°22'N. 4°21'W. (Anglesey) PPF
	x	25.3.62	Tantallon, North Berwick (East Lothian) 190m. NNE.
414172	pull.	15.4.60	Parys Mountain PPF
	x	21.5.62	Southport (Lancashire) 55m. ENE.

Rook (*Corvus frugilegus*) (48; 50 miles; 5- $\frac{10}{12}$ years)

3045608	f.g.	11.3.62	Bookham: 51°16'N. 0°23'W. (Surrey) PJH
	x	(15.7.62)	Lumbres: 50°43'N. 2°07'E. (Pas-de-Calais) France

Jay (*Garrulus glandarius*) (23; 10 miles; 9 years)

3032161	1st W.	25.1.58	Romford: 51°35'N. 0°11'E. (Essex) AGH
	+	24.3.62	Dormansland (Surrey) 30m. S.

Great Tit (*Parus major*) (129; 30 miles; 5- $\frac{6}{12}$ years)

AC57446	ad. ♂	31.3.62	Gibraltar Point
	x	15.5.62	Lewes (Sussex) 150m. S.
AA67442	f.g.	4.3.61	Deeping St. Nicholas: 52°43'N. 0°12'W. (Lincoln) WAC
	x	29.5.62	Ely (Cambridge) 30m. SE.
AB14839	f.g. ♂	31.12.60	Kesgrave: 52°04'N. 1°11'E. Ipswich (Suffolk) PRC
	x	12.4.62	Great Baddow (Essex) 38m. SW.
AB41331	ad. ♀	4.3.61	Havering: 51°37'N. 0°11'E. (Essex) JEF
	x	31.5.62	Woodnesborough (Kent) 54m. ESE.
AA41081	pull.	29.5.60	near Uckfield: 50°58'N. 0°12'E. (Sussex) GRM
	v	22.9.62	Stockbury (Kent) 31m. NE.

Blue Tit (*Parus caeruleus*) (319; 30 miles; 10 years)

AA03935	f.g.	25.3.60	near Carnforth: 54°08'N. 2°47'W. (Lancashire) WP&M
	x	6.1.62	Garforth, Leeds (York) 60m. ESE.

REPORT ON BIRD-RINGING FOR 1962

496	ad. ♀	6.12.57	Ackworth: 53°39'N. 1°19'W. (York) AS
	×	29.3.62	East Tanfield (York) 38m. SSE.
444	f.g.	13.1.58	Tiddington: 52°12'N. 1°42'W. (Warwick) JAH
	×	c. 5.4.62	Basingstoke (Hampshire) 67m. SSE.
463	1stW.	26.12.60	Blisworth: 52°11'N. 0°56'W. (Northampton) RJO
	×	c. 20.8.62	Welwyn (Hertford) 37m. SE.
22	f.g.	22.12.60	Sawbridgeworth: 51°49'N. 0°09'E. (Hertford) AD
	×	14.1.62	Dogsthorpe, Peterborough (Northampton) 54m. NNW.
24	pull.	0.5.60	Wytham: 51°47'N. 1°19'W. (Berkshire) EGI
	×	18.3.62	Wigston Magna (Leicester) 55m. N.
27	pull.	0.5.60	Wytham EGI
	×	13.3.62	Brockworth (Gloucester) 35m. W.
32	pull.	5.6.62	Wytham EGI
	×	13.10.62	Earlsdon, Coventry (Warwick) 43m. N.
2669	1stW.	7.1.61	Sherfield: 51°18'N. 1°02'W. (Hampshire) PRM
	×	(5.2.62)	Osmington, Weymouth (Dorset) 73m. SW.
358	1stW.	5.3.62	Sandling Park: 51°06'N. 1°04'E. Hythe (Kent) HS
	×	25.3.62	Wrotham (Kent) 33m. WNW.
37	1stW.	15.1.61	Fordingbridge: 50°56'N. 1°48'W. (Hampshire) JSA
	×	29.3.62	Coombe Vale, Teignmouth (Devon) 75m. WSW.
727	ad.	10.10.61	Portland Bill
	×	(15.4.62)	Woodlands, Southampton (Hampshire) 48m. ENE.

Coal Tit (*Parus ater*) (8; 10 miles; 2½ years)

879	f.g.	9.9.61	Skinburness: 54°55'N. 3°20'W. (Cumberland) RS
	v	5.9.62	Grange-over-Sands (Lancashire) 50m. SSE.

Bearded Tit (*Panurus biarmicus*) (8; 5 miles; 1½ years)

775	juv. ♂	31.7.60	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC
	v	18.2.62	Swanscombe (Kent) 80m. SW.

Other Bearded Tits which had been ringed at the same time and place in Kent and retrapped four months later in Sussex, still together.

Wren (*Troglodytes troglodytes*) (18; 15 miles; 1½ years)

35	f.g.	10.9.61	Dungeness
	[?]	(5.1.62)	Brignoles: 43°25'N. 6°03'E. (Var) France
69	f.g.	24.9.61	Dungeness
	×	c. 1.3.62	St. Aigulin: 45°10'N. 0°01'W. (Charente-Maritime) France

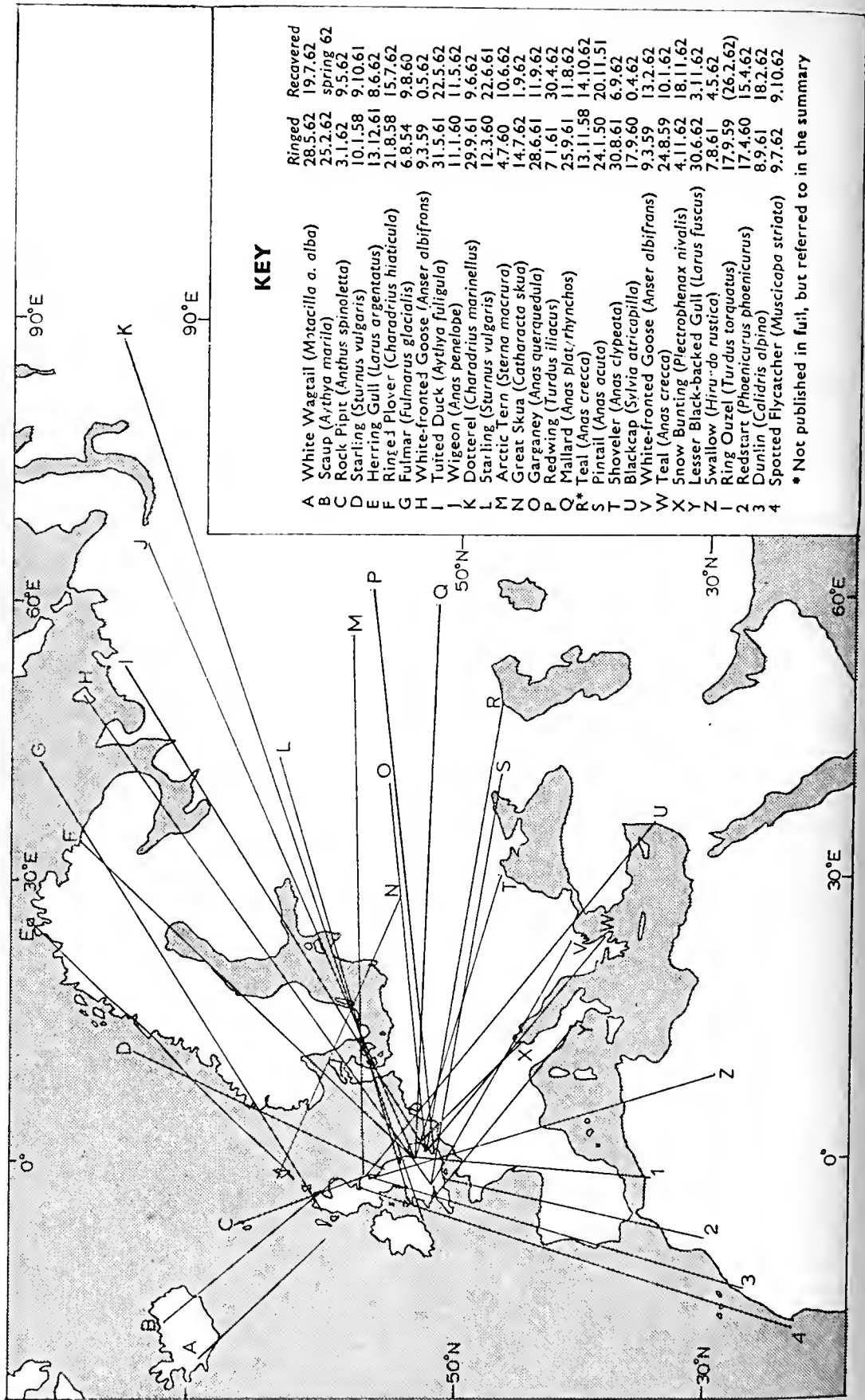
These are only the third and fourth foreign recoveries of British-ringed Wrens, the earlier records having also concerned Dungeness birds.

Mistle Thrush (*Turdus viscivorus*) (41; 15 miles; 5½ years)

5	f.g.	4.11.61	Chattenden: 51°26'N. 0°32'E. (Kent) NKRK
	×	1.3.62	near Launceston (Cornwall) 215m. WSW.
0	f.g.	15.11.59	Littlebourne: 51°16'N. 1°11'E. (Kent) SBBO
	×	(3.6.62)	Wortwell, Harleston (Norfolk) 76m. N.

Fieldfare (*Turdus pilaris*) (10; 30 miles; 4½ years)

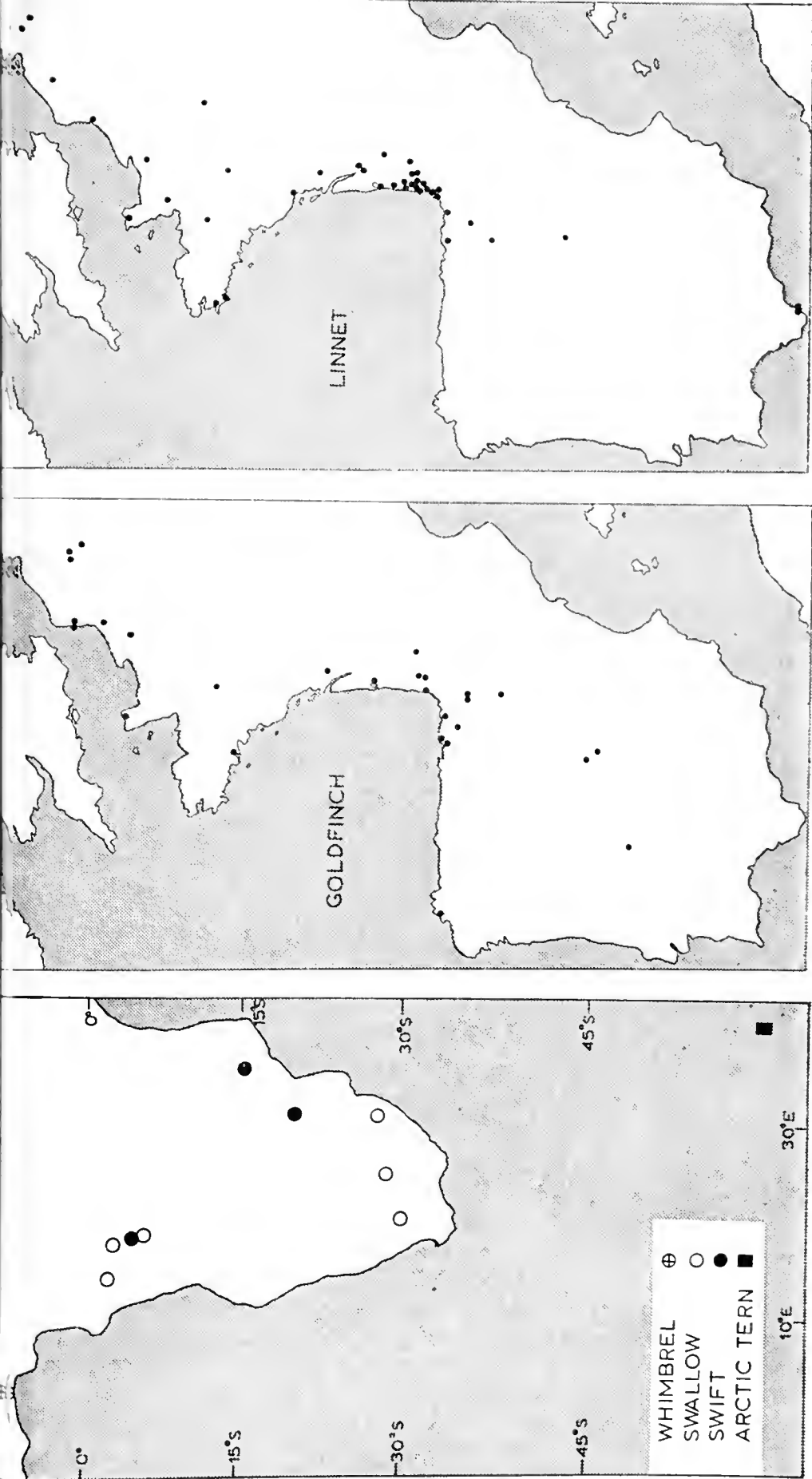
i	ad.	29.12.61	Ossett: 53°41'N. 1°35'W. (York) AF
	×	2.1.62	St. Valéry-en-Caux: 49°52'N. 0°43'E. (Seine-Maritime) France



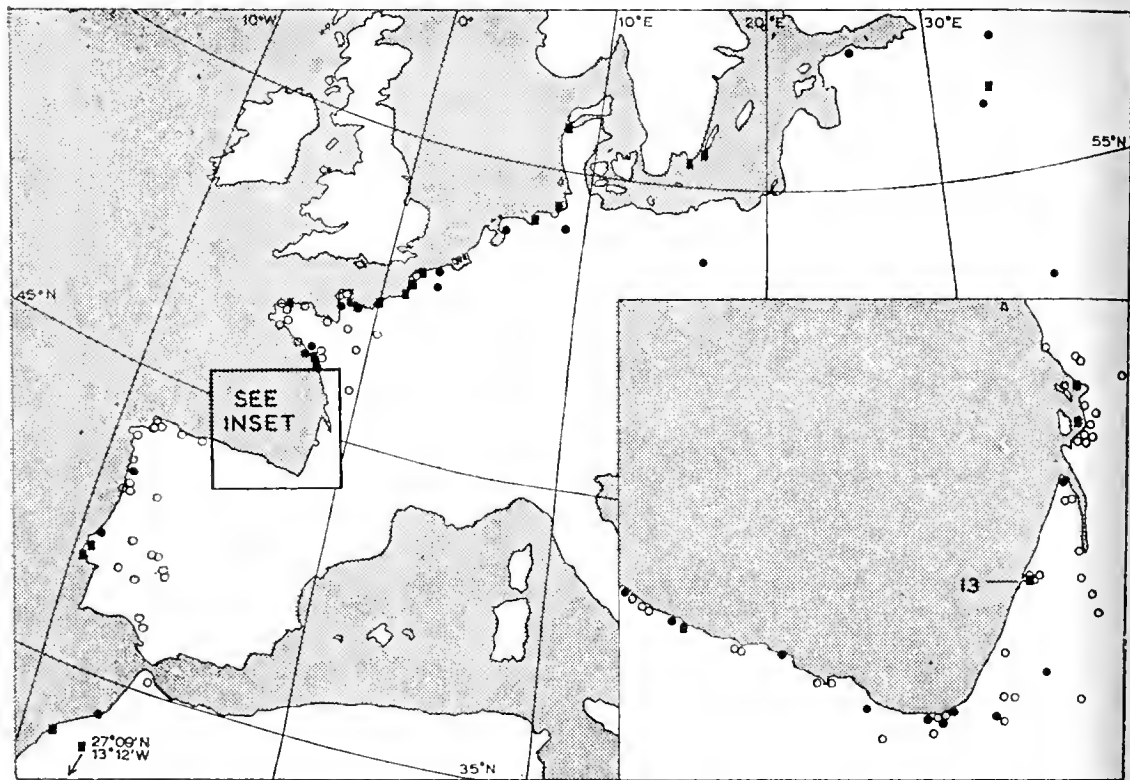
KEY

Letter	Species	Date	Status
A	White Wagtail (<i>Motacilla a. alba</i>)	28.5.62	Recovered
B	Scaup (<i>Aythya marila</i>)	19.7.62	
C	Rock Pipit (<i>Anthus spinoletta</i>)	25.2.62	spring 62
D	Starling (<i>Sturnus vulgaris</i>)	3.1.62	9.5.62
E	Herring Gull (<i>Larus argentatus</i>)	10.1.58	9.10.61
F	Ringed Plover (<i>Charadrius hiaticula</i>)	13.12.61	8.6.62
G	Fulmar (<i>Fulmarus glacialis</i>)	21.8.58	15.7.62
H	White-fronted Goose (<i>Anser albifrons</i>)	6.8.54	9.8.60
I	Tufted Duck (<i>Aythya fuligula</i>)	9.3.59	0.5.62
J	Wigeon (<i>Anas penelope</i>)	31.5.61	22.5.62
K	Dortrel (<i>Charadrius marinellus</i>)	11.1.60	11.5.62
L	Starling (<i>Sturnus vulgaris</i>)	29.9.61	9.6.62
M	Arctic Tern (<i>Sterna macrura</i>)	12.3.60	22.6.61
N	Great Skua (<i>Catharacta skua</i>)	4.7.60	10.6.62
O	Garganey (<i>Anas querquedula</i>)	14.7.62	1.9.62
P	Redwing (<i>Turdus iliacus</i>)	28.6.61	11.9.62
Q	Mallard (<i>Anas platyrhynchos</i>)	7.1.61	30.4.62
R*	Teal (<i>Anas crecca</i>)	25.9.61	11.8.62
S	Pintail (<i>Anas acuta</i>)	13.11.58	14.10.62
T	Shoveler (<i>Anas clypeata</i>)	24.1.50	20.11.51
U	Blackcap (<i>Sylvia atricapilla</i>)	30.8.61	6.9.62
V	White-fronted Goose (<i>Anser albifrons</i>)	17.9.60	0.4.62
W	Teal (<i>Anas crecca</i>)	9.3.59	13.2.62
X	Snow Bunting (<i>Plectrophenax nivalis</i>)	24.8.59	10.1.62
Y	Lesser Black-backed Gull (<i>Larus fuscus</i>)	4.11.62	18.11.62
Z	Swallow (<i>Hirundo rustica</i>)	30.6.62	3.11.62
1	Ring Ouzel (<i>Turdus torquatus</i>)	7.8.61	4.5.62
2	Redstart (<i>Phoenicurus phoenicurus</i>)	17.9.59	(26.2.62)
3	Dunlin (<i>Calidris alpina</i>)	17.4.60	15.4.62
4	Spotted Flycatcher (<i>Muscicapa striata</i>)	8.9.61	18.2.62
		9.7.62	9.10.62

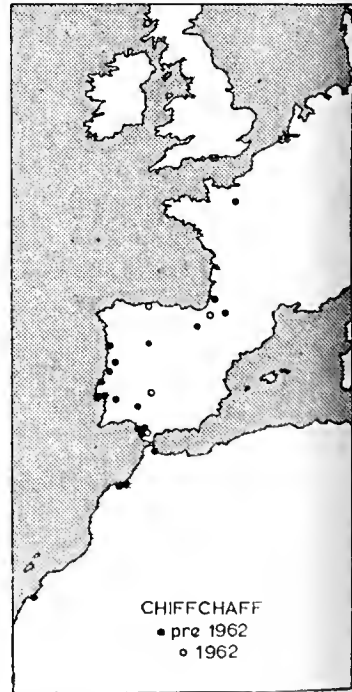
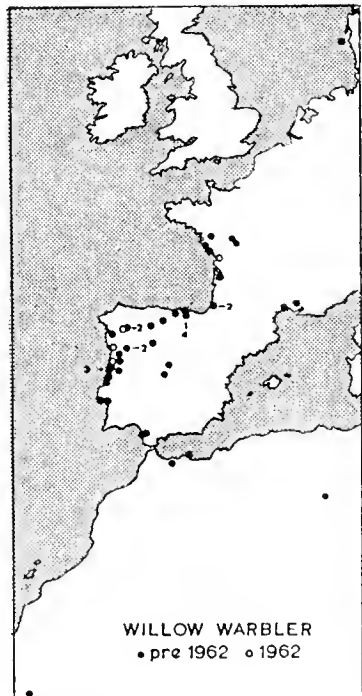
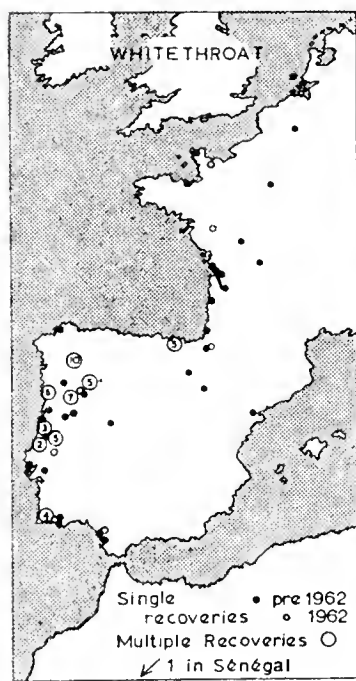
* Not published in full, but referred to in the summary



MAP 2. Recoveries south of the Sahara of Whimbrel *Numenius phaeopus*, Swift *Apus apus*, Swallow *Hirundo rustica* and Arctic Tern *Sterna macrura* MAPS 3 and 4. All foreign recoveries of Goldfinch *Carduelis carduelis* and Linnet *C. cannabina* summarised in tables N and O on page 520 (drawn by C. J. Mead)



MAP 5. All foreign recoveries of Lapwing *Vanellus vanellus* (open circles), Snipe *Gallinago gallinago* (solid dots) and Dunlin *Calidris alpina* (solid squares) reported in 1962 (drawn by C. J. Mead)



MAPS 6, 7 and 8. All foreign recoveries of Whitethroat *Sylvia communis*, Willow Warbler *Phylloscopus trochilus* and Chiffchaff *Pb. collybita* reported between 1909 and 1962 (drawn by C. J. Mead)

REPORT ON BIRD-RINGING FOR 1962

11389X	1st W. ()	17.12.61 8.1.62	Killamarsh: 53°19'N. 1°19'W. (Derby) SNHS Marsquiel: 50°24'N. 1°55'E. (Pas-de-Calais) France
2226X	f.g. +	11.1.61 13.12.61	Leicester: 52°38'N. 1°05'W. GF Pozzuolo: 45°59'N. 13°12'E. (Udine) Italy
7506X	f.g. ×	30.10.60 29.7.62	Peakirk: 52°38'N. 0°17'W. (Northampton) WAC Partaharju: 62°22'N. 27°11'E. (Mikkeli) Finland
3579X	ad. +	15.1.61 0.2.62	Little Wilbraham: 52°12'N. 0°16'E. (Cambridge) M&B Terni: 42°34'N. 12°39'E. Italy
26395	ad. ♀ × A	25.1.58 c. 1.7.62	East Tilbury: 51°28'N. 0°26'E. (Essex) ABO Stella Plage: 50°30'N. 1°38'E. (Pas-de-Calais) France
06553	f.g. +	16.1.60 (7.2.62)	West Malling: 51°18'N. 0°24'E. (Kent) MKRG Pesaro: 43°54'N. 12°54'E. (Marche) Italy

2226X was originally netted from the same flock as a Finnish Fieldfare with *Helsinki* ring A24123 (see *Brit. Birds*, 55: 552).

Song Thrush (*Turdus philomelos*) (414; 7½ years)

9285X	f.g. +	24.9.60 12.1.62	Stockbury: 51°20'N. 0°41'E. (Kent) MKRG Cabrera: 39°07'N. 2°58'E. Balearic Islands
-------	-----------	--------------------	---

The remaining foreign recoveries are summarised in table K. Of the birds included in this table, only eight were ringed on dates when the Continental race was unlikely to be present in Britain. There were 16 movements of over 100 miles within the British Isles, eight of them between Great Britain and Ireland and seven of them clearly associated with the severe weather in early January 1962.

Table K—Countries and months of recoveries of Song Thrushes

Country of recovery	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Ireland (2)	-	-	-	1	-	1	-	-	-	-	-	-
France (21)	1	2	2	10	5	1	-	-	-	10	-	-
Spain (7)	-	1	-	2	2	2	-	-	-	-	-	-
Portugal (3)	-	-	-	(1)	1	1	-	-	-	-	-	-

See footnote to table A

Redwing (*Turdus iliacus*) (38; 200 miles; 3½ years)

76753	f.g. +	14.10.58 11.2.62	Fair Isle Olival de Lobos: 39°42'N. 8°36'W. (Beira Litoral) Portugal
77210	f.g. +	4.12.60 6.3.62	Ponteland: 55°03'N. 1°44'W. (Northumberland) ND&N Pujols: 44°48'N. 0°02'W. (Gironde) France
4435	f.g. +	18.2.61 27.2.62	Kirkby Lonsdale: 54°13'N. 2°36'W. (Westmorland) WP&M Castrolibero: 39°18'N. 16°12'E. (Cosenza) Italy
860X	f.g. +	25.2.61 26.2.62	Newcastle-under-Lyme: 53°00'N. 2°14'W. (Stafford) JN Ponte de Lima: 41°46'N. 8°35'W. (Minho) Portugal
5019	f.g. +	18.12.60 c. 20.1.62	Sandon: 52°53'N. 2°05'W. (Stafford) C&PM Vila Verde: 41°39'N. 8°27'W. (Minho) Portugal
3409	f.g. +	5.1.61 11.2.62	Earlswood: 52°22'N. 1°50'W. (Warwick) CMR Langon: 44°33'N. 0°14'W. (Gironde) France
578X	f.g. +	10.3.61 31.1.62	Earlswood KHT Calasparra: 38°14'N. 1°41'W. (Murcia) Spain
636X	f.g. +	30.10.60 2.1.62	Little Wilbraham: 52°12'N. 0°16'E. (Cambridge) JHP Bibbiano: 43°34'N. 11°50'E. (Arezzo) Italy

BRITISH BIRDS

583594	f.g. ×	6.10.60 8.3.62	Great Saltee Ponferrada: 42°33'N. 6°35'W. (León) Spain
60533X	f.g. +	22.1.61 28.1.62	Ebley: 51°45'N. 2°14'W. (Gloucester) KJG Tresses: 44°50'N. 0°32'W. (Gironde) France
86525X	f.g. +	7.1.61 30.4.62	Cliffe: 51°28'N. 0°30'E. (Kent) NKRK Ilmensk Reserve: 55°07'N. 60°30'E. (Chelyabinsk) U.S.S.R.
86529X	f.g. ×	7.1.61 9.1.62	Cliffe NKRK Plouay: 47°55'N. 3°19'W. (Morbihan) France
69186X	f.g. 0	14.1.62 13.11.62	Mile Oak: 50°51'N. 0°13'W. (Sussex) M&B Borgo a Mozzano: 43°59'N. 10°32'E. (Lucca) Italy

Ring Ouzel (*Turdus torquatus*) (2; 2 $\frac{5}{12}$ years)

89034S	ad. ♀ 0	12.5.62 2.11.62	Spurn Point Cella: 40°27'N. 1°18'W. (Teruel) Spain
W17198	ad. ♂ +	17.9.59 (26.2.62)	Gibraltar Point Oujda: 34°41'N. 1°45'W. Morocco

Blackbird (*Turdus merula*) (1,346; 9 $\frac{1}{12}$ years)

All foreign recoveries are summarised in table L. Published in full below are the extreme recoveries from north, east and south. Of the 58 movements of over 100 miles within the British Isles, 31 involved flights between Great Britain and Ireland, especially at the time of the severe cold spell in early January 1962.

Table L—Countries and months of recoveries of Blackbirds

Country of recovery	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep ¹
Norway (27*)	10	4	—	—	—	2	5	3	1	—	—	1
Sweden (35)	3	4	1	—	—	—	9	3	3	5	5	2
Denmark (14)	—	4	1	1	—	—	7	1	—	—	—	—
Germany (15)	—	—	1	—	1	2	2	2	4	2	1	—
Netherlands (7)	—	—	—	—	—	2	1	—	2	1	—	1
Belgium (5)	1	1	—	—	1	1	—	—	—	—	—	1
France (14)	—	3	2	5	3	1	—	—	—	—	—	—
Ireland (31)	—	1	2	16	6	5	(1)	—	—	—	—	—

*Total includes one recovery reported as 'autumn'
See footnote to table A

725946	ad. ♀ +	19.4.61 11.3.62	Fair Isle St. Savin: 45°09'N. 0°26'W. (Gironde) France
17788S	1stW. ♂ ×	4.1.62 (12.6.62)	Scissett: 53°35'N. 1°38'W. (York) CH Juttilla: 61°07'N. 24°50'E. (Hame) Finland
89619X	f.g. ♀ ×	16.1.61 21.8.62	Swaffham Prior: 52°15'N. 0°18'E. (Cambridge) ADBr Laitisenmäki: 63°18'N. 28°05'E. (Kuopio) Finland
R92626	1stW. ♀ ×	18.4.62 29.6.62	Minsmere: 52°14'N. 1°37'E. (Suffolk) HEA Iffelnäs: 63°09'N. 14°10'E. (Jämtland) Sweden
719212	1stW. ♀ +	15.12.60 0.5.61	Abberton Plyussa: 58°26'N. 29°22'E. (Pskov) U.S.S.R.

Wheatcar (*Oenanthe oenanthe*) (9; 5 miles; 3 $\frac{3}{12}$ years)

Birds ringed on Fair Isle were recovered as follows:

REPORT ON BIRD-RINGING FOR 1962

Ringed		Recovered	
00527	13.7.59	15.10.62	El Viso: 38°29'N. 4°57'W. (Córdoba) Spain
118774*	13.5.61	5.4.62	Puerto Sóller: 39°48'N. 2°41'E. Majorca, Balearic Islands
1A10435	14.8.62	(10.9.62)	Bordeaux: 44°50'N. 0°35'W. (Gironde) France
1A10600	26.8.62	0.9.62	near Rouen: 49°22'N. 1°07'E. (Seine-Maritime) France
1A10668	27.8.62	30.8.62	Knardijk: 52°25'N. 5°29'E. Oost-Flevoland, Netherlands
*Ringed as first-summer; the remainder were ringed as juvenile/first-winter			
1AC41327	1stS. ♂	14.4.62	Calf of Man
	×	20.5.62	Ogmore Vale (Glamorgan) 180m. SSE.
1A64627	ad. ♂	15.4.61	East Tilbury: 51°28'N. 0°26'E. (Essex) ABO
	×	(30.3.62)	La Línea: 36°10'N. 5°21'W. (Cádiz) Spain
Stonechat (<i>Saxicola torquata</i>) (2; 5 miles; 1 $\frac{1}{2}$ years)			
1AE02793	1stW. ♂	15.9.62	Calf of Man
	+	11.11.62	Barrica: 43°23'N. 2°58'W. (Vizcaya) Spain
Whinchat (<i>Saxicola rubetra</i>) (2; 5 miles; 2 $\frac{3}{4}$ years)			
1A02495	pull.	10.6.60	Easdale: 56°18'N. 5°39'W. (Argyll) AEM
	/?/	18.9.62	Castro Marim: 37°13'N. 7°26'W. (Algarve) Portugal
Redstart (<i>Phoenicurus phoenicurus</i>) (14; 5 miles; 6 years)			
1B83520	pull.	16.6.62	Hamsterley: 54°41'N. 1°49'W. (Durham) ND&N
	×	c. 28.9.62	Vila Flôr: 41°18'N. 7°09'W. (Tras os Montes) Portugal
1AC55992	f.g. ♀	22.9.62	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC
	×	10.10.62	St. Brelade's: 49°11'N. 2°13'W. Jersey, Channel Islands
1AE71622	1stW. ♀	19.9.62	Sandwich Bay
	0	14.10.62	Jerez: 36°41'N. 6°08'W. (Cádiz) Spain
1442200	1stW. ♂	11.9.56	Dungeness
	0	(27.9.62)	Gibraleon: 37°23'N. 6°58'W. (Huelva) Spain
1A21479	ad. ♂	17.4.60	near Christchurch: 50°43'N. 1°45'W. (Hampshire) CHRS
	×	15.4.62	Laglab: 29°32'N. 7°37'W. Tata, Morocco
1A21587	f.g. ♀	1.5.60	near Christchurch CHRS
	0	(17.10.62)	Fornos: 40°38'N. 7°32'W. (Beira Alta) Portugal
Black Redstart (<i>Phoenicurus ochrurus</i>) (1; $\frac{1}{2}$ year)			
1173111	1stW. ♂	14.4.62	Dungeness
	/?/	12.5.62	Dortmund: 51°32'N. 7°27'E. (Nordrhein-Westfalen) Germany
Nightingale (<i>Luscinia megarhynchos</i>) (1; $\frac{10}{12}$ year)			
1A67748	ad.	14.6.61	Peakirk: 52°38'N. 0°17'W. (Northampton) NH
	×	21.4.62	Rockland, Attleborough (Norfolk) 50m. E.
Robin (<i>Erithacus rubecula</i>) (175; 60 miles; 4 $\frac{8}{12}$ years)			
1176458	ad.	29.4.62	Fair Isle
	×	c. 23.10.62	Dompierre: 46°12'N. 1°04'W. (Charente-Maritime) France
1B42648	f.g.	22.4.62	Bass Rock: 56°04'N. 2°38'W. (East Lothian) JBN
	×	3.12.62	Tours: 47°23'N. 0°42'E. (Indre-et-Loire) France
1B96977	ad.	30.7.61	Longannet Point: 56°02'N. 3°42'W. (Fife) JH
	×	8.4.62	Stanhope (Durham) 110m. SE.
1A63722	f.g.	5.10.60	Spurn Point
	+	9.2.62	Seville: 37°24'N. 5°59'W. Spain

AB03393	f.g. ×	17.10.60 18.10.61	Spurn Point Koksijde: 51°07'N. 2°38'E. (West Flanders) Belgium
AB31381	f.g. ×	22.9.61 3.1.62	Spurn Point Portslade, Brighton (Sussex) 190m. S.
AC55076	f.g. ×	6.10.61 16.4.62	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC Mannerheimintie: 60°10'N. 24°55'E. (Uusimaa) Finland
AA96653	juv. ×	13.8.61 14.11.62	Sandwich Bay Niort: 46°19'N. 0°27'W. (Deux-Sèvres) France
AC35538	1stW. ×	12.9.61 21.2.62	Sandwich Bay Chobham, Woking (Surrey) 75m. W.
AC17658	f.g. ×	3.9.61 (27.3.62)	Bramley: 51°12'N. 0°34'W. (Surrey) L&JW Winsham, Chard (Somerset) 105m. W.

Reed Warbler (*Acrocephalus scirpaceus*) (10; 5 miles; 2 years)

AE60682	1stW. [?]	29.8.62 10.10.62	near Hoddesdon: 51°47'N. 0°00' (Hertford) RMRG Alcobaca: 39°32'N. 8°59'W. (Estremadura) Portugal
AE40766	juv. ()	27.7.62 9.9.62	Grays: 51°29'N. 0°20'E. (Essex) JEF Urduliz: 43°15'N. 2°56'W. (Vizcaya) Spain
AC42830	ad. +	7.7.62 3.9.62	Sandwich Bay Marinha Grande: 39°45'N. 8°55'W. (Estremadura) Portugal
AE38702	juv. ×	19.8.62 c. 28.9.62	Sandwich Bay Azaruja: 38°42'N. 7°47'W. (Alto Alentejo) Portugal
AA19467	juv. ×	23.7.61 (25.9.62)	Slapton: 50°17'N. 3°39'W. (Devon) AVS Vieux-Boucau: 43°47'N. 1°24'W. (Landes) France

Sedge Warbler (*Acrocephalus schoenobaenus*) (11; 25 miles; 3 $\frac{3}{12}$ years)

AE65684	juv. ×	6.8.62 26.8.62	Sprotborough: 53°32'N. 1°11'W. (York) WGD Guingamp: 48°34'N. 3°09'W. (Côtes-du-Nord) France
---------	-----------	-------------------	---

Blackcap (*Sylvia atricapilla*) (9; 50 miles; 2 $\frac{10}{12}$ years)

H13268	ad. ♂ ()	17.9.60 0.4.62	Seahouses: 55°35'N. 1°39'W. (Northumberland) MHBO Wadi Shahrour: 33°50'N. 35°42'E. Hammana, Lebanon
AA87296	ad. ♂ ×	4.10.60 (9.6.62)	Great Saltee Adderley, Market Drayton (Shropshire) 180m. ENE.
SC04500	ad. ♂ ×	28.5.61 3.3.62	Haversham: 52°05'N. 0°47'W. (Buckingham) DNM Arjona: 37°56'N. 4°04'W. (Jaén) Spain
J47074	ad. ♂ ×	25.7.59 28.5.62	Woldingham: 51°17'N. 0°02'W. (Surrey) GRM Abingdon (Berkshire) 58m. WNW.
AK13673	f.g. ♀ [?]	23.10.62 (22.12.62)	St. Agnes Puebla de los Infantes: 37°47'N. 5°23'W. (Sevilla) Spain

Garden Warbler (*Sylvia borin*) (4; 5 miles; 2 $\frac{10}{12}$ years)

AB21964	ad. ×	2.6.61 7.5.62	Parkend: 51°46'N. 2°33'W. (Gloucester) PAB Hove (Sussex) 120m. SE.
AB75773	1stW. +	6.8.62 9.9.62	Littlestone: 50°59'N. 0°58'E. (Kent) DBO Alagón: 41°46'N. 1°07'W. (Zaragoza) Spain
N07210	1stW. ()	7.10.62 13.10.62	Dungeness Durango: 43°10'N. 2°38'W. (Vizcaya) Spain

Whitethroat (*Sylvia communis*) (27; 100 miles; 3 $\frac{8}{12}$ years)

AB12507	ad. ♀ ×	5.5.61 (18.9.62)	Isle of May Pont Hébert: 49°10'N. 1°08'W. (Manche) France
---------	------------	---------------------	---

REPORT ON BIRD-RINGING FOR 1962

115736	ad. ()	26.6.59 15.10.62	Fenwick: 55°39'N. 1°54'W. (Northumberland) ND&N Bragança: 41°47'N. 6°46'W. (Tras os Montes) Portugal
B44923	pull. ×	6.6.61 (11.5.62)	Aston: 53°21'N. 2°44'W. (Cheshire) MRG Melbourn (Cambridge) 145m. SE.
25406	f.g. ×	23.4.61 (26.9.62)	Bardsey Rota: 36°37'N. 6°21'W. (Cádiz) Spain
53702	f.g. v	23.8.58 12.5.62	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC Silverdale (Lancashire) 220m. NW.
7718	f.g. ♀ ×	9.5.60 29.4.62	Skokholm St. Macaire: 47°07'N. 0°59'W. (Maine-et-Loire) France
E62681	f.g. ()	2.8.62 2.9.62	Ewhurst: 51°09'N. 0°26'W. (Surrey) L&JW Mascarenhas: 41°34'N. 7°09'W. (Tras os Montes) Portugal
C18897	juv. +	6.8.62 c. 28.9.62	Haslemere: 51°06'N. 0°43'W. (Surrey) PGD Sacavem: 38°47'N. 9°06'W. (Estremadura) Portugal
26811	ad. ♀ ×	8.5.58 19.9.59	Dungeness near Abrantes: 39°30'N. 8°05'W. (Ribatejo) Portugal
29531	1st W. ()	22.8.60 (5.11.62)	Dungeness Monforte: 42°32'N. 7°30'W. (Lugo) Spain
339934	f.g. ♂ ×	4.5.61 15.3.62	Dungeness Ascarat: 43°10'N. 1°14'W. (Basses-Pyrénées) France
C98191	juv. ×	28.7.62 26.10.62	Slapton: 50°17'N. 3°38'W. (Devon) SLRS Armacão: 37°06'N. 8°22'W. (Algarve) Portugal
C98265	ad ♂ ×	29.7.62 (26.9.62)	Slapton SLRS Monforte, Spain

Lesser Whitethroat (*Sylvia curruca*) (6; 5 miles; 1- $\frac{8}{12}$ years)

659460	juv. v	27.7.62 2.9.62	Abberton Klagenfurt: 46°39'N. 14°20'E. (Kärnten) Austria ¹
216053	f.g. +	2.9.61 22.3.62	Weston Turville: 51°47'N. 0°46'W. (Buckingham) DNM near Beirut: 33°52'N. 35°28'E. Lebanon
A78722	juv. +	16.8.60 23.4.62	Sandwich Bay Bcirut, Lebanon

¹Given Radolfzell ring H771325

Although it is perhaps too soon to assess the significance of the fact, it is interesting to note that all the autumn recoveries of Lesser Whitethroats have been in the region of northern Italy (the Klagenfurt recovery fitting well into this pattern) while all the spring recoveries have been from the Levant.

Willow Warbler (*Phylloscopus trochilus*) (17; 20 miles; 1- $\frac{5}{12}$ years)

14468	ad. /?/	15.4.61 22.9.62	Calf of Man PRE Barcelos: 41°32'N. 8°37'W. (Minho) Portugal
E44197	juv. ×	19.8.62 29.8.62	Offerton: 53°23'N. 2°08'W. (Cheshire) S&B near Newhaven (Sussex) 195m. SE.
E57740	1st W. v	27.8.62 30.8.62	Gibraltar Point Dungeness 150m. S.
32815	f.g. ()	10.6.62 c. 4.9.62	Stibbard: 52°49'N. 0°56'E. (Norfolk) RWG Cantanhede: 40°20'N. 8°36'W. (Beira Litoral) Portugal
26303	f.g. v	8.9.61 26.8.62	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC Gibraltar Point 78m. NW.

BRITISH BIRDS

AC40632	1stW. ×	31.8.62 8.9.62	Great Saltee Eslandes: 46°16'N. 1°10'W. (Charente-Maritime) France
AE29682	ad. ()	1.9.62 22.9.62	Shoreham: 50°50'N. 0°16'W. (Sussex) DAS Monforte: 42°32'N. 7°30'W. (Lugo) Spain

Chiffchaff (*Phylloscopus collybita*) (6; 30 miles; 1 $\frac{3}{12}$ years)

AC11856	juv. +	17.8.61 (30.11.62)	near Colchester: 51°53'N. 0°54'E. (Essex) RVAM Acedera: 39°04'N. 5°34'W. (Badajóz) Spain
H81288	ad. [?]	29.8.62 (23.10.62)	Stockbury: 51°20'N. 0°41'E. (Kent) MKRG San Fernando: 36°28'N. 6°12'W. (Cádiz) Spain
AC73047	f.g. v	22.9.62 16.10.62	Wembdon: 51°08'N. 3°02'W. (Somerset) EMP St. Etienne: 43°11'N. 1°20'W. (Basses-Pyrénées) France
H84804	f.g. [?]	8.9.62 23.11.62	Portland Bill Oviedo: 43°21'N. 5°50'W. Spain

Spotted Flycatcher (*Muscicapa striata*) (9; 15 miles; 3 $\frac{11}{12}$ years)

AB88056	pull. +	9.7.62 9.10.62	Culross: 56°03'N. 3°35'W. (Fife) JH at sea off Cabo Blanc: 20°40'N. 17°40'W. Spanish West Africa
AB61459	1stW. +	27.8.61 17.9.62	Craster: 55°28'N. 1°35'W. (Northumberland) LC Vila de Rei: 39°41'N. 8°09'W. (Beira Baixa) Portugal
29836	f.g. +	2.5.58 18.4.62	Skokholm Almaden: 38°47'N. 4°50'W. (Cuidad Real) Spain
H19473	ad. ×	31.5.62 11.6.62	Skokholm St. Mellion (Cornwall) 9om. SSE.
AC20611	1stW. ×	16.9.61 5.7.62	Eastbourne: 50°46'N. 0°17'E. (Sussex) DDH Lullymore (Kildare) 345m. WNW.

Pied Flycatcher (*Muscicapa hypoleuca*) (21; 5 miles; 1 year)

AB83548	pull. ()	16.6.62 8.9.62	Hamsterley: c. 54°40'N. 1°50'W. (Durham) ND&N La Guardia: 41°54'N. 8°53'W. (Pontevedra) Spain
D11918	f.g. ×	3.9.62 17.9.62	Gibraltar Point Fuenterrabia: 43°21'N. 1°48'W. (Guipúzcoa) Spain
AE93437	f.g. ()	19.9.62 14.10.62	Gibraltar Point Sanlúcar: 36°46'N. 6°21'W. (Cádiz) Spain
H79581	f.g. v	2.9.62 13.9.62	Bardsey Ushant: 48°28'N. 5°05'W. (Finistère) France
AC40530	1stW. ♂ v	29.8.62 1.9.62	Great Saltee St. Agnes 155m. S.
H94136	pull. ×	7.6.62 23.8.62	Parkend: 51°46'N. 2°33'W. (Gloucester) BC Burgos: 42°20'N. 3°42'W. Spain
AC35188	1stW. [?]	3.9.61 20.9.62	Sandwich Bay Mouriscas: 39°30'N. 8°05'W. (Ribatejo) Portugal
87736	f.g. v	30.8.61 1.9.62	Lundy Ushant, France

Dunnock (*Prunella modularis*) (142; 10 miles; 7 $\frac{1}{12}$ years)

H76454	ad. ×	27.4.62 3.5.62	Fair Isle March (Cambridge) 48om. SSE.
--------	----------	-------------------	---

REPORT ON BIRD-RINGING FOR 1962

00092	f.g.	19.4.62	Tetney: 53°29'N. 0°02'W. (Lincoln) CRG
	v	30.4.62	Oost-Souburg: 51°28'N. 3°36'E. (Zeeland) Netherlands*
652566	f.g.	21.4.62	Holme: 52°58'N. 0°32'E. (Norfolk) F&P
	x	(23.7.62)	Brisley, Dereham (Norfolk) 20m. SE.
299580	f.g.	3.1.62	Elstree: 51°38'N. 0°17'W. (Hertford) C&C
	x	c. 7.5.62	Flamstead (Hertford) 13m. NNW.

*Given *Leiden* ring N59257

Meadow Pipit (*Anthus pratensis*) (40; 100 miles; 2½ years)

6948	f.g.	1.1.62	Offerton: 53°24'N. 2°08'W. (Cheshire) S&B
	x	6.7.62	near Woodhead, Longendale (Cheshire) 14m. ENE.
3342	juv.	17.6.61	Fair Isle
	+	24.1.62	Ecija: 37°33'N. 5°04'W. (Sevilla) Spain
2248	f.g.	28.8.61	Fair Isle
	()	(25.1.62)	Rabat: 34°02'N. 6°51'W. Morocco
8861	1stW.	29.8.62	Fair Isle
	v	c. 20.11.62	Ballingry, Lochgelly (Fife) 240m. SSW.
44224	juv.	2.8.62	Isle of May
	v	19.10.62	Tarnos: 43°33'N. 1°27'W. (Landes) France
4	1stW.	13.9.59	Annstead: 55°33'N. 1°37'W. (Northumberland) MHBO
	x	14.7.62	Arces: 45°34'N. 0°52'W. (Charente-Maritime) France
11	ad.	25.4.60	Knaresborough: 54°01'N. 1°28'W. (York) KRS
	+	mid 9.62	Getafe: 40°18'N. 3°44'W. (Madrid) Spain
1189	f.g.	23.4.61	Bardsey
	x	c. 1.1.62	Cuba: 38°10'N. 7°54'W. (Baixa Alentejo) Portugal
604	1stW.	10.8.62	Minsmere: 52°14'N. 1°37'E. (Suffolk) HEA
	v	15.9.62	Minsmere
	x	(17.11.62)	Carreras: 36°13'N. 5°23'W. (Cádiz) Spain
9936—	f.g.	18.9.61	Great Saltee
	+	c. 18.2.62	Amarante: 41°16'N. 8°05'W. (Douro Litoral) Portugal
88	juv.	28.9.61	Abberton
	+	c. 24.1.62	Evora: 38°34'N. 7°54'W. (Alto Alentejo) Portugal
99216	f.g.	17.9.61	Bradwell
	x	6.6.62	Knuzden, Blackburn (Lancashire) 200m. NW.
88142	f.g.	1.12.62	Ongar: 51°43'N. 0°14'E. (Essex) BE
	x	31.12.62	Chilton Trinity (Somerset) 140m. WSW.
22	1stW.	6.7.60	Skokholm
	x	c. 13.2.62	Calañas: 37°35'N. 6°55'W. (Huelva) Spain
35226	pull.	9.6.61	Frensham: 51°10'N. 0°48'W. (Surrey) PGD
	()	c. 9.1.62	São Marcos: 37°21'N. 8°22'W. (Algarve) Portugal

Birds ringed on the Calf of Man were recovered as follows:

—Ringed—		—Recovered—	
88	4.9.59	25.4.62	North Sea: 52°47'N. 3°25'E.
99	16.9.59	(13.2.62)	San Silvestre: 37°23'N. 7°20'W. (Huelva) Spain
4371*	13.8.61	(27.2.62)	San Sebastian: 43°19'N. 1°59'W. (Guipúzcoa) Spain
4386*	13.8.61	5.1.62	Facinas: 36°09'N. 5°41'W. (Cádiz) Spain
2747	31.8.62	20.12.62	Seville: 37°24'N. 5°59'W. Spain

*Ringed as juvenile; the remainder were ringed as full-grown

It is rarely indeed that a winter-ringed Meadow Pipit recovered in Britain during

the summer months, and vice versa. This may merely reflect a movement to higher moorland during the summer months, as is the case with the first record listed, for the likelihood of recovery is then considerably less.

Tree Pipit (*Anthus trivialis*) (1; $\frac{2}{12}$ year)

AC93805	pull.	29.6.62	Haslemere: 51°06'N. 0°43'W. (Surrey) PGD
	0	20.9.62	Montemor-o-Velho: 40°10'N. 8°41'W. (Beira Litoral) Portugal

Rock Pipit (*Anthus spinoletta*) (4; 5 miles; 2 $\frac{1}{12}$ years)

H60361	f.g.	3.1.62	Seahouses: 55°35'N. 1°39'W. (Northumberland) MHBO
	0	9.5.62	at sea, north of Faeroe Islands : c. 62°30'N. 7°00'W.

Pied/White Wagtail (*Motacilla alba*) (114; 100 miles; 4 $\frac{11}{12}$ years)

E10970	f.g.	28.5.62	St. Kilda: 57°49'N. 8°34'W. (Outer Hebrides) NC
	+	19.7.62	Dalsgardur: 63°11'N. 21°38'W. Mosfellssveit Iceland
E45416	ad. ♂	21.3.58	Bamburgh: 55°36'N. 1°42'W. (Northumberland) MHBO
	×	c. 27.2.62	Slough (Buckingham) 28om. SSE.
AB30048	ad. ♂	24.4.61	Carnforth: 54°08'N. 2°46'W. (Lancashire) WP&M
	×	0.1.62	Ferel: 47°29'N. 2°21'W. (Morbihan) France
AA39238	juv.	25.6.60	Ilkley: 53°56'N. 1°49'W. (York) WNS
	+	0.3.62	Obidos: 39°21'N. 9°11'W. (Estremadura) Portugal
AA39673	juv.	24.7.60	Ilkley WNS
	0	winter 61/62	Ponte de Sor: 39°15'N. 8°01'W. (Ribatejo) Portugal
A49020	juv.	2.7.61	Ilkley WNS
	+	c. 18.1.62	Paião: 38°36'N. 8°15'W. (Alto Alentejo) Portugal
AE54571	juv.	2.8.62	Mexborough: 53°30'N. 1°17'W. (York) RJR
	0	22.10.62	Mafra: 38°57'N. 9°19'W. (Estremadura) Portugal
AE97034	juv.	15.9.62	Milton: 52°14'N. 0°09'E. (Cambridge) F&P
	/?/	21.12.62	Paião: 40°04'N. 8°48'W. (Beira Litoral) Portugal
AA71609	juv.	5.8.60	Holbrook: 51°59'N. 1°10'E. (Suffolk) PRC
	+	0.3.62	Aveiro: c. 40°40'N. 8°40'W. (Beira Litoral) Portugal
AB97525	juv.	31.8.61	Cheltenham: 51°54'N. 2°04'W. (Gloucester) PHD
	0	28.1.62	Llanes: 43°25'N. 4°45'W. (Oviedo) Spain
AA15261	1stW.	7.10.60	Wolvercote: 51°47'N. 1°16'W. (Oxford) OOS
	×	20.5.62	Rothbury, Coquetdale (Northumberland) 24om. N.
AA57625	juv.	13.7.60	Aberthaw: 51°24'N. 3°24'W. (Glamorgan) NH
	+	c. 8.1.62	Viana do Castelo: 41°41'N. 8°50'W. (Minho) Portugal
AE53216	ad. ♀	1.9.62	Idmiston: 51°08'N. 1°44'W. (Wiltshire) FPE
	×	4.12.62	Créon: 44°47'N. 0°22'W. (Gironde) France
AC05767	juv.	29.8.62	Chichester: 50°50'N. 0°48'W. (Sussex) ABW
	×	26.12.62	Etrépany: 49°19'N. 1°37'E. (Eure) France
AC09046	1stW. ♂	31.8.61	Slapton: 50°17'N. 3°39'W. (Devon) PWCE
	0	5.10.62	Mira: 40°26'N. 8°44'W. (Beira Litoral) Portugal

E10970 was identified by the ringer as *M. a. alba*.

Grey Wagtail (*Motacilla cinerea*) (4; 20 miles; 1 $\frac{6}{12}$ years)

FR5940	ad. ♀	2.4.61	Fenwick: 55°39'N. 1°54'W. (Northumberland) ND&N
	×	7.1.62	Honiton (Devon) 34om. S.

REPORT ON BIRD-RINGING FOR 1962

414730 pull. 27.6.60 Rathfarnham: 53°18'N. 6°18'W. (Dublin) RGW
 × (10.1.62) Templeglantine (Limerick) 130m. SW.

Yellow Wagtail ssp. (*Motacilla flava*) (9; 40 miles; 3 $\frac{10}{12}$ years)

0118 ad. ♂ 29.7.61 Gouthwaite: 54°05'N. 1°45'W. (York) SS&W
 () 8.11.62 Campanario: 38°52'N. 5°36'W. (Badajóz) Spain
 21093 juv. 12.8.62 Bradwell
 × 5.10.62 Ilhavo: 40°36'N. 8°40'W. (Beira Litoral) Portugal
 443474 1stW. 22.9.62 Farlington: 50°51'N. 1°02'W. (Hampshire) JKB
 /?/ (7.10.62) Peniche: 39°21'N. 9°23'W. (Estremadura) Portugal
 110582 1stW. ♂ 27.7.62 Stanpit: 50°44'N. 1°44'W. (Hampshire) CHRS
 + 22.9.62 Murtosa: 40°45'N. 8°39'W. (Beira Litoral) Portugal

Starling (*Sturnus vulgaris*) (1,103; 9 $\frac{5}{12}$ years)

Table M—Countries and months of recoveries of Starlings

Country of recovery	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Ireland (3)	—	—	—	—	1	—	—	—	(1)	—	1	—
Belgium (8)	—	—	—	—	—	—	—	3	4	—	1	—
Netherlands (15)	2	—	(1)	1	3	—	2	4	1	—	—	1
Denmark (22)	2	4	3	2	6	2	—	(2)	—	—	—	1
Norway (10)	—	1	2	3	—	—	1	3	—	—	—	—
Sweden (6)	—	4	1	—	1	—	—	—	—	—	—	—
Germany (28*)	3	2	2	4	6	4	2	1	—	1	—	2
Iceland (10†)	2	3	2	—	2	—	—	—	—	—	—	—
Island (5)	—	—	1	3	—	—	1	—	—	—	—	—
Soviet States (13)	—	3	—	2	3	4	—	—	—	1	—	—
U.S.S.R. (16)	1	4	4	3	—	1	1	1	—	1	—	—

*Total includes one recovery reported as 'August/September'

†Total includes one recovery reported as 'spring'

See footnote to table A

Of the 136 foreign recoveries listed in table M, the following six comprise all those ringed as juveniles (and thus probably of British origin) and the extreme recoveries from north, east and south.

151703 f.g. 10.1.58 Thornaby-on-Tees: 54°34'N. 1°20'W. (York) PAR
 × 9.10.61 at sea, SW. of Lofoten Islands: 67°20'N. 10°40'E. Norway
 2203X f.g. 12.3.60 Runcorn: 53°21'N. 2°44'W. (Cheshire) MRG
 × 22.6.61 Kouloi: 61°04'N. 42°32'E. (Arkhangel) U.S.S.R.
 2245S juv. 9.6.61 Clacton: 51°48'N. 1°09'E. (Essex) GF
 × 3.7.61 Renesse: 51°44'N. 3°47'E. (Zeeland) Netherlands
 336087 juv. 22.6.57 Elm Park: 51°33'N. 0°12'E. Romford (Essex) RRS
 + 7.1.62 Bourg Achard: 49°21'N. 0°49'E. (Eure) France
 166780 juv. 16.6.62 Elm Park RRS
 × 6.10.62 Zeebrugge: 51°20'N. 3°12'E. (West Flanders) Belgium
 16654R ad. ♂ 27.2.62 Lewes: 50°54'N. 0°01'E. (Sussex) RRL
 × (16.11.62) St. Philbert: 49°17'N. 0°39'E. (Eure) France

Only 23 movements of over 100 miles were recorded within the British Isles, one of these being by birds of assumed British origin.

Greenfinch (*Chloris chloris*) (525; 6 $\frac{4}{12}$ years)

714S f.g. ♂ 16.11.61 Solihull: 52°25'N. 1°45'W. (Warwick) JFWB
 × c. 3.12.62 Coulonges: 46°29'N. 0°36'W. (Deux-Sèvres) France

BRITISH BIRDS

V62110	f.g.	26.10.58	Walberswick: 52°18'N. 1°41'E. (Suffolk) DBC
	v	4.3.62	Watermael: 50°48'N. 4°24'E. Brussels, Belgium ¹
628628	ad. ♂	29.9.61	Minsmere: 52°14'N. 1°37'E. (Suffolk) HEA
	x	(26.2.62)	near Douai: 50°23'N. 3°13'E. (Nord) France
617929	juv. ♂	9.3.61	Abberton
	x	c. 5.1.62	Trumilly: 49°15'N. 2°50'E. (Oise) France
236995	f.g. ♂	4.11.61	Garsington: 51°44'N. 1°10'W. (Oxford) TTF
	x	1.1.62	Dieppe: 49°55'N. 1°05'E. (Seine-Maritime) France
92442X	1st W. ♀	4.2.61	Havering: 51°37'N. 0°11'E. (Essex) JEF
	v	10.2.62	Brussels: 50°50'N. 4°21'E. Belgium ²
98072X	1st W. ♀	17.2.61	Addington: 51°22'N. 0°02'W. (Surrey) DS
	x	0.1.62	Le Rozel: 49°40'N. 1°42'W. (Manche) France
BA0388—	f.g.	10.10.61	Dungeness
	v (=♂)	4.1.62	Carentan: 49°18'N. 1°14'W. (Manche) France
BA03965	ad. ♂	12.10.61	Dungeness
	x	c. 30.1.62	Authie: 50°07'N. 2°29'E. (Somme) France
BA17342	ad. ♂	3.11.61	Dungeness
	x	18.12.62	near Boulogne: 50°43'N. 1°37'E. (Pas-de-Calais) France
68982X	ad. ♀	5.11.61	Shoreham: 50°50'N. 0°16'W. (Sussex) DTML
	x	11.6.62	Etretat: 49°40'N. 0°12'E. (Seine-Maritime) France

This unprecedented series of foreign recoveries was due in part to the severe weather at the beginning of 1962, at which time a number of long-distance movements from the Midlands into southern England were also recorded.

¹Ring Bruxelles A30891 added
²Given Bruxelles ring 38B4649

Goldfinch (*Carduelis carduelis*) (43; 2 ²/₁₂ years)

Table N—Countries and months of recoveries of Goldfinches

Country of recovery	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Belgium (3)	3	—	—	—	—	—	—	—	—	—	—	—
France (13)	—	6	2	3	2	—	—	—	—	—	—	—
Spain (11)	—	4	—	3	—	—	4	—	—	—	—	—

See footnote to table A

The distribution of these recoveries is shown in map 3 on page 509.

Siskin (*Carduelis spinus*) (2; ²/₁₂ year)

AE69260	1st W. ♂	26.9.62	Isle of May
	v	(21.11.62)	Lovendegem: 51°06'N. 3°36'E. (East Flanders) Belgium
AC50124	1st W. ♂	19.11.61	Chapel-en-le-Frith: 53°19'N. 1°55'W. (Derby) S&B
	v	4.2.62	Oostkamp: 51°09'N. 3°15'E. (West Flanders) Belgium

Linnet (*Carduelis cannabina*) (82; 4 ⁵/₁₂ years)

Table O—Countries and months of recoveries of Linnets

Country of recovery	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Belgium (3)	1	1	—	—	—	1	—	—	—	—	—	—
France (30*)	13	3	1	6	—	4	—	2	—	—	—	—
Spain (8)	3	—	—	3	1	—	1	—	—	—	—	—

*Total includes one recovery reported as '1962'
 See footnote to table A

The distribution of these recoveries is shown in map 4 on page 509. A noticeable cold-weather movement into NW France occurred in January 1962, at which time there were also several long southerly movements within Britain.

Redpoll (*Carduelis flammea*) (6; 20 miles; 2 $\frac{6}{12}$ years)

8281—	f.g.	25.8.60	Craster: 55°28'N. 1°35'W. (Northumberland) MHBO
	v	9.9.62	Darlaston (Stafford) 195m. S.
8275988	ad.	6.10.62	Newmillerdam: 53°41'N. 1°28'W. (York) AF
	v	28.10.62	Thuin: 50°17'N. 4°18'E. (Hainaut) Belgium
838765	1stW. ♂	21.4.62	Spurn Point
	x	24.5.62	Memmert: 53°38'N. 6°52'E. East Frisian Islands, Germany
AA57291	f.g.	15.12.60	Rednal: 52°23'N. 2°02'W. (Worcester) E&E
	v	1.11.61	Passendale: 50°53'N. 3°01'E. (West Flanders) Belgium
82718	f.g. ♀	12.3.60	near Christchurch: 50°47'N. 1°47'W. (Hampshire) RFH
	x	7.9.62	Ulrika: 58°06'N. 15°32'E. (Östergötland) Sweden

838765 and 82718 were reported by the finder and ringer respectively as belonging to the race *C. f. flammea*. AA57291 was identified by the finder as *C. f. cabaret*.

Bullfinch (*Pyrrhula pyrrhula*) (69; 15 miles; 3 $\frac{1}{12}$ years)

82521	f.g. ♂	5.1.62	Elm Park: 51°33'N. 0°12'E., Romford (Essex) RRS
	0	c. 3.3.62	Wilburton, Ely (Cambridge) 54m. N.
85420	f.g.	10.12.60	Cliffe: 51°28'N. 0°30'E. (Kent) NKRG
	0	24.4.62	Rough Common, Canterbury (Kent) 28m. ESE.
83887	juv. ♂	2.9.61	Cliffe NKRG
	x	21.11.61	Chessington (Surrey) 35m. WSW.
8032X	juv.	23.7.60	Brinkworth: 51°34'N. 1°59'W. (Wiltshire) PJR
	x	2.1.62	Yattendon (Berkshire) 33m. E.

Chaffinch (*Fringilla coelebs*) (136; 10 $\frac{1}{12}$ years)

82775	f.g. ♂	26.1.57	Caldecote: 52°33'N. 1°29'W. (Warwick) JW
	x	(21.9.62)	Skålan: 62°40'N. 14°10'E. (Jamtland) Sweden
83895	ad. ♂	2.1.61	Minsmere: 52°14'N. 1°37'E. (Suffolk) HEA
	x A	(29.4.62)	St. Martin-Boulogne: 50°44'N. 1°39'E. (Pas-de-Calais) France
850604	f.g. ♂	1.1.62	Margam: 51°34'N. 3°44'W. (Glamorgan) RGK
	x	(4.5.62)	Rijen: 51°35'N. 4°55'E. (Noord-Brabant) Netherlands
8299	ad. ♂	22.3.60	Elm Park: 51°33'N. 0°12'E. Romford (Essex) RRS
	x	23.4.62	Halmstad: 56°41'N. 12°55'E. (Halland) Sweden
84450	f.g. ♂	6.3.60	Northfleet: 51°27'N. 0°20'E. (Kent) REI
	x	27.6.62	Lädja: 57°05'N. 14°55'E. (Kronoberg) Sweden
811191	ad. ♂	4.2.62	Saltford: 51°24'N. 2°19'W. (Somerset) MpRG
	+	25.5.62	Baadalen: c. 63°00'N. 7°40'E. (Møre og Romsdal) Norway
88697	f.g. ♂	15.1.59	Betteshanger: 51°13'N. 1°21'E. (Kent) SBBO
	x	22.8.62	Virserum: 57°21'N. 15°34'E. (Kalmar) Sweden

In addition to the above, 19 birds ringed in the British Isles between October and March were recovered in Belgium, 14 in October, four in November and one in December. Five movements of over 100 miles within the British Isles were recorded.

Brambling (*Fringilla montifringilla*) (8; 60 miles; 3 years)

K77255	ad. ♂	8.11.58	Spurn Point	
	v	10.11.61	Wortal: 51°24'N. 4°48'E. (Antwerpen)	Belgium
J83141	ad. ♂	11.10.59	Spurn Point	
	v	26.3.61	Brasschaat: 51°17'N. 4°30'E. (Antwerpen)	Belgium
	/?/	14.10.62	Booischoot: 51°02'N. 4°42'E. (Antwerpen)	Belgium
J85070	f.g.	28.10.59	Spurn Point	
	/?/	21.10.61	Herentals: 51°11'N. 4°50'E. (Antwerpen)	Belgium
AB89495	ad. ♂	28.1.62	Burton: 53°16'N. 3°02'W. (Cheshire)	MRG
	v	6.11.62	Micheroux: 50°37'N. 5°42'E. (Liège)	Belgium
AC40362	ad. ♂	9.4.62	Great Saltee	
	v	11.4.62	Calf of Man 150m. NE.	
ABJ1775	ad. ♀	26.3.61	High Wycombe: 51°37'N. 0°48'W. (Buckingham)	DNM
	+	12.2.62	Leuy: 43°50'N. 0°38'W. (Landes)	France

Yellowhammer (*Emberiza citrinella*) (15; 5 miles; 4 $\frac{1}{12}$ years)

614845	1stW. ♂	31.1.60	Elm Park: 51°33'N. 0°12'E. Romford (Essex)	RRS
	x	17.8.62	Kirtling (Cambridge) 45m. N.	

This is one of the longest movements ever reported for a British-ringed Yellowhammer.

Reed Bunting (*Emberiza schoeniclus*) (42; 50 miles; 4 $\frac{11}{12}$ years)

AC52422	f.g. ♀	26.11.61	Walcot: 52°42'N. 2°36'W. (Shropshire)	JML
	x	3.1.62	Brislington, Bristol (Somerset) 85m. S.	
59947	f.g.	4.9.59	Benacre: 52°21'N. 1°43'E. (Suffolk)	AGH
	v (= ♂)	19.1.62	Scolt Head (Norfolk) 58m. NW.	
AB26592	ad. ♂	5.3.61	Great Hallingbury: 51°52'N. 0°11'E. (Essex)	RJD
	x	1.12.61	Comines: 50°46'N. 3°00'E. (West Flanders)	Belgium
K29167	1stW. ♂	28.10.58	Dungeness	
	v	31.12.62	Hove (Sussex) 50m. W.	
AB13328	f.g. ♂	28.1.62	Stanpit: 50°44'N. Christchurch (Hampshire)	CHRS
	x	(5.4.62)	Birdingbury, Rugby (Warwick) 110m. N.	

Snow Bunting (*Plectrophenax nivalis*) (2; 5 miles; 21 days)

AC96749	1stW. ♂	4.11.62	Walberswick: 52°18'N. 1°41'E. (Suffolk)	DBC
	+	18.11.62	Codigoro: 44°50'N. 12°07'E. (Ferrara)	Italy

This recovery is so remarkable as to seem improbable, but the ring was returned and the shooter described the bird as being sparrow-like and not familiar to him.

House Sparrow (*Passer domesticus*) (361; 30 miles; 7 $\frac{1}{12}$ years)

BA18134	ad. ♂	29.10.61	Knaresborough: 54°01'N. 1°28'W. (York)	KRS
	x	23.8.62	Bognor Regis (Sussex) 225m. S.	
AB03214	f.g. ♂	12.10.60	Spurn Point	
	x	4.10.62	near Peterborough (Northampton) 70m. S.	
AB04785	f.g. ♂	8.3.61	Spurn Point	
	x	18.4.62	Dersingham (Norfolk) 52m. SSE.	
AB05575	f.g. ♂	9.6.61	Spurn Point	
	x	18.5.62	Wolferton (Norfolk) 56m. SSE.	

REPORT ON BIRD-RINGING FOR 1962

333938	f.g. ♂	8.10.61	Gibraltar Point
	×	24.6.62	Caistor (Lincoln) 37m. NW.
6627	ad. ♂	10.10.57	Dungeness
	×	9.1.62	Ramsgate (Kent) 34m. NE.

Tree Sparrow (*Passer montanus*) (46; 30 miles; 3½ years)

333422	f.g.	28.10.61	Gibraltar Point
	+	18.4.62	Ellerton (York) 70m. NW.
0275	f.g.	3.1.59	Elmers End: 51°24'N. 0°03'W. (Kent) HPM
	/?/	30.6.60	Uitkerke: 51°18'N. 3°09'E. (West Flanders) Belgium
171187	f.g.	15.12.51	Redhill: 51°14'N. 0°10'W. (Surrey) DMB
	×	11.5.62	near Bourne (Lincoln) 100m. N.
9986	f.g.	2.12.60	Dungeness
	×	5.6.62	Wicken Fen (Cambridge) 96m. NNW.
77308	f.g.	14.1.62	Barcombe: 50°54'N. 0°01'E. (Sussex) RRL
	+	3.6.62	Coxtie Green, Brentwood (Essex) 50m. N.
338480	f.g.	4.11.61	Shorcham-by-Sea: 50°50'N. 0°16'W. (Sussex) DTML
	×	1.6.62	South Ockendon (Essex) 52m. NNE.
58227	f.g.	7.1.62	Shorcham-by-Sea DTML
	×	(4.6.62)	Hemel Hempstead (Hertford) 63m. N.

KEY TO RINGERS' INITIALS IN LIST OF RECOVERIES

DRA	D. R. Anderson	GD	G. Downey
HEA	H. E. Axell	PGD	P. G. Davis
JSA	J. S. Ash	PHD	P. H. Dymott
JWA	J. W. Allen	RD	R. Douthwaite
RWA	R. W. Arthur	RHD	R. H. Dennis
ADB	A. D. Bateman	RJD	R. J. Dowsett
ADBr	A. D. Brewer	WGD	W. G. Dye
CJB	C. J. Booth	BE	B. Ebert
DFB	D. F. Billett	FPE	F. P. Errington
DMB	D. M. Broom	PRE	P. R. Evans
EB	E. Balfour	PWCE	P. W. C. Ellicott
EJMB	E. J. M. Buxton	WJE	W. J. Eggeling
JFWB	J. F. W. Bruhn	AF	A. Frudd
JKB	J. K. Bowers	GF	G. Felstead
MB	M. Boddy	JEF	J. E. Flynn
PAB	P. A. Banks	MAFF	Ministry of Agriculture, Fisheries and Food
PLB	P. L. Britton	PPF	P. P. Feeny
RHB	R. H. Brown	TTF	T. T. Freeston
TBB	T. B. Bagenal	AG	A. Gibbs
BC	B. Campbell	BEG	Brathay Exploration Group
CBC	Cambridge Bird Club	CRG	Clethorpes Ringing Group
DBC	Dingle Bird Club	EAG	the late Miss E. A. Garden
FC	F. Colley	JCG	J. C. Gittins
JLC	J. L. Cutbill	KJG	K. J. Grearson
LC	Mrs. L. Cave	MKRG	Mid-Kent Ringing Group
MJC	M. J. Carter	MRG	Merseyside Ringing Group
MOC	Midlothian Orn. Club	NJG	Miss N. J. Gordon
NC	Nature Conservancy	NKRG	North Kent Ringing Group
PRC	P. R. Catchpole	RMRG	Rye Meads Ringing Group
RVC	R. V. Collier	RWG	R. W. George
WAC	W. A. Cook	WWRG	Wash Wader Ringing Group
AD	A. Darlington		

BRITISH BIRDS

AGH	A. G. Hurrell	AVS	A. V. Smith
CH	C. Hodgkinson	CHRS	Christchurch Harbour Ringing Station
DDH	D. D. Harber	DS	D. Shepherd
FH	F. Horner	DAS	D. A. Stone
JH	J. Hoy	FKS	F. R. Smith
JAH	J. A. Hardman	HS	H. Schreiber
MPH	M. P. Harris	KRS	Knaresborough Ringing Station
NH	N. Henson	OOS	Oxford Ornithological Society
PJH	P. J. Hewitt	RS	R. Stokoe
RFH	R. F. Hemsley	RNFS	R. N. F. Simpson
EGI	Edward Grey Institute	RRS	Romford Ringing Station
REI	R. E. Ingram	RTS	R. T. Smith
ARJ	A. R. Johnson	RWJS	R. W. J. Smith
EEJ	E. E. Jackson	SLRS	Slapton Ley Ringing Station
RGK	R. G. Knight	SNHS	Sorby Natural History Society
DTML	D. T. M. Lloyd	WNS	Wharfedale Naturalists' Society
HL	H. Lapworth	KHT	K. H. Thomas
JL	the late Rev. J. Lees	SHT	Steep Holme Trust
JML	J. M. Langford	TT	T. Todd
RRL	R. R. Lovegrove	AU	Aberdeen University
AEM	A. E. Male	JDRV	J. D. R. Vernon
ATM	A. T. Macmillan	ABW	A. B. Watson
DJM	D. J. Millin	ADW	A. D. Watson
DNM	D. N. Makepeace	AJW	A. J. Waller
GRM	G. R. Mountfort	CW	C. Winn
HPM	H. P. Medhurst	DRW	D. R. Wilson
JRM	J. R. Mather	JW	J. Wagstaff
PRM	P. R. Marshall	JWr	J. Wright
RVAM	R. V. A. Marshall	PW	P. Wormell
BMN	Mrs. B. M. Nash	RGW	R. G. Wheeler
JN	J. Noonan	PY	P. Yeoman
JBN	J. B. Nelson	C&C	Card & Card
ABO	A. B. Old	C&F	Collier & Forster
BBO	Bradwell Bird Observatory	C&L	Clissold & Little
DBO	Dungeness Bird Observatory	C&PM	C. & P. Minton
MHBO	Monks' House Bird Observatory	E&E	Evans & Edwards
RJO	R. J. Olliver	F&P	Fenn & Palmer
SABO	St. Agnes Bird Observatory	F&H	Fry & Horner
SBBO	Sandwich Bay Bird Observatory	L&JW	L. & J. Weller
EMP	Miss E. M. Palmer	M&B	Mead & Boddy
JHP	J. H. Phillips	M&S	Mann & Syer
RSP	R. S. Pitcher	ND&N	Northumberland, Durham & Newcastle NHS
CMR	C. M. Reynolds	S&B	Sorensen & Burgess
GHR	G. H. Rees	SS&W	Sanderson, Summerville & Walker
PR	P. Rudge	WP&M	Wilson, Ponting & McLean
PAR	P. A. Rayfield		
PJR	P. J. Roberts		
RJR	R. J. Rhodes		
RWR	R. W. Robson		
WR	W. Russell		
AS	Ackworth School		

Recoveries in Great Britain and Ireland of birds ringed abroad

By *E. P. Leach*

Selected list of recoveries reported

The symbols and terms are the same as those used in the 'Report on bird-ringing' (see page 487), with the exception that the term 'juv.' cannot always be relied upon to signify a young bird that is able to fly freely: owing to lack of unanimity in the various ringing schemes, this term may sometimes mean a nestling or chick.

Abbreviations used for ringing stations

	Brussels	O.S.V.	Oslo Statensviltundersökelse
	Copenhagen		(State Game Research)
	Gothenburg	P.	Paris
	Heligoland	Port.	University of Oporto
juv.	Helsinki	Rk.	Reykjavik
juv. R.Si	Helsinki Rūsta Säätiö (Game Research Institute)	San S.	San Sebastian (Grupo Aranzadi)
B.O.	Jersey Bird Observatory	Stav.	Stavanger
	Leiden	St.	Stockholm
	Moscow	St.Orn.	Stockholm 'Ornis' (Sveriges Ornithologiska Förening)
ad.	Madrid	S.J.F.	Svenska Jägare Förbundet
	Oslo		

Little Grebe (*Podiceps ruficollis*)

	1stW.	6.9.61	Amager: 55°40'N. 12°38'E. Denmark
83687	×	10.1.62	Sawbridgeworth: 51°50'N. 0°09'E. (Hertford)

Heron (*Ardea cinerea*)

	pull.	7.6.61	Callantsoog: 52°49'N. 4°41'E. (Noord Holland) Netherlands
7140	×	23.9.61	Hanmer: 52°57'N. 2°48'W. (Shropshire)
	pull.	15.4.61	Middenbeemster: 52°33'N. 4°55'E. (Noord Holland) Netherlands
11293	×	26.8.61	Burnham-on-Crouch: 51°38'N. 0°50'E. (Essex)

White Stork (*Ciconia ciconia*)

	ad.	16.4.61	Skaerback: 55°10'N. 8°47'E. (Jutland) Denmark
76	×	(2.2.62)	Whitlingham: 52°38'N. 1°20'E. (Norfolk)

This bird was caught alive in Denmark at the end of 1960 and was kept in a barn throughout the winter before being ringed and released in April 1961. It was then strong and fit. It was first seen at the sewage-farm at Whitlingham, near Norwich, on 23rd December 1961 and remained there until it was found dead in one of the tanks.

Spoonbill (*Platalea leucorodia*)

	pull.	12.6.62	Zwanenwater: 52°51'N. 4°42'E. (Noord Holland) Netherlands
9705	×	16.12.62	Terrington Marsh: 52°48'N. 0°18'E. (Norfolk)

Mallard (*Anas platyrhynchos*)

juv. R.S.	pull.	1.6.61	near Pori: 61°30'N. 21°45'E. Finland
338	+	0.1.62	Billingshurst: 51°01'N. 0°27'W. (Sussex)

BRITISH BIRDS

<i>Rk.</i>	pull.	22.8.58	Hornafjörður: 64°18'N. 15°11'W. Iceland
36638	+	15.12.62	South Ronaldshay: 58°50'N. 2°55'W. (Orkney)
<i>B.</i>	ad.	18.6.61	Meetkerke: 51°14'N. 3°09'E. (West Flanders) Belgium
2K2968	+	30.12.62	River Medway estuary: c. 51°25'N. 0°40'E. (Kent)

According to recent custom, the published recoveries of foreign-ringed Mallard are restricted to those which show the place of origin (i.e. the breeding area). As in other years, there have also been large numbers of recoveries of birds from Holland and Belgium which were probably only passage-migrants when they were ringed.

Teal (*Anas crecca*)

<i>M.</i>	ad. ♂	23.7.61	Lake Ilmen: 58°15'N. 31°20'E. (Novgorod) U.S.S.R.
E109760	+	7.1.62	Shapinsay: 59°03'N. 2°50'W. (Orkney)
<i>Hki.</i>	juv.	9.7.58	Björköby: 63°25'N. 21°10'E. Valsörarna, Finland
C64296	v	27.12.61	Abbotsbury: 50°40'N. 2°36'W. (Dorset)
<i>Stav.</i>	pull.	3.7.60	near Stavanger: 58°58'N. 5°46'E. (Rogaland) Norway
536234	+	19.1.62	Athlone: 53°25'N. 7°56'W. (Westmeath)
<i>Stav.</i>	pull.	10.7.61	I.ista: 58°05'N. 6°37'E. (Vest-Agder) Norway
534812	+	15.11.62	Inehyra: 56°22'N. 3°20'W. (Perth)
<i>B.</i>	pull.	8.7.56	Brasschaat: 51°17'N. 4°30'E. (Antwerp) Belgium
4E119	+	2.10.61	Icklingham: 52°20'N. 0°38'E. (Suffolk)

As in the case of the Mallard, the published recoveries of foreign-ringed Teal are restricted to those which show the place of origin (i.e. the breeding area). Among the numerous others whose native areas are unknown have been thirteen which were ringed in the Camargue, southern France.

Wigeon (*Anas penelope*)

<i>M.</i>	juv. ♂	19.7.61	River Svir estuary: 60°28'N. 32°51'E. (Leningrad) U.S.S.R.
D389068	+	23.12.61	Cosheston: 51°42'N. 4°53'W. (Pembroke)
<i>M.</i>	juv.	29.7.60	River Ponoy: 67°03'N. 41°01'E. (Murmansk) U.S.S.R.
D528358	+	11.12.62	Foulness Island: 51°36'N. 0°55'E. (Essex)
<i>Rk.</i>	pull.	26.8.61	Skípalón: 65°47'N. 18°12'W. Iceland
48705	+	16.2.62	River Findhorn estuary: c. 57°38'N. 3°37'W. (Moray)
<i>Rk.</i>	pull.	2.8.60	Skípalón, Iceland
48655	+	14.1.62	River Little Brosna: c. 53°09'N. 8°04'W. (Offaly)
<i>L.</i>	♂	15.3.58	Haarsteeg: 51°43'N. 5°13'E. (Noord Brabant) Netherlands
381219	+	5.1.62	Montrose: 56°42'N. 2°28'W. (Angus)
<i>L.</i>	1stW. ♂	10.2.61	Haarsteeg, Netherlands
4008929	+	15.2.62	near Kingsbridge: 50°17'N. 3°44'W. (Devon)
<i>L.</i>	f.g.	5.11.60	Haarsteeg, Netherlands
4005428	+	8.12.62	Aldeburgh: 52°09'N. 1°36'E. (Suffolk)
<i>L.</i>	1stW. ♂	7.11.60	Wanneperveen: 52°42'N. 6°08'E. (Overijssel) Netherlands
389918	x	30.9.62	Stoke: 51°28'N. 0°39'E. (Kent)
<i>B.</i>	f.g.	4.2.62	Meetkerke: 51°14'N. 3°09'E. (West Flanders) Belgium
4H1044	+	4.11.62	Grainthorpe: 53°28'N. 0°05'E. (Lincoln)
<i>L.</i>	f.g. ♀	15.3.58	Haarsteeg, Netherlands
381240	x	30.1.60	near Soham: 52°20'N. 0°15'E. (Cambridge)
<i>L.</i>	1stW. ♂	14.1.60	Haarsteeg, Netherlands
250463	+	29.9.60	Preesall: 53°55'N. 2°58'W. (Lancashire)

FOREIGN-RINGED RECOVERIES

3393	f.g. ♂	15.3.58	Haarsteeg, Netherlands
	+	17.10.60	Christchurch: 50°44'N. 1°44'W. (Hampshire)
3825	f.g. ♂	6.2.58	Haarsteeg, Netherlands
	+	0.1.60	Waterford: 52°10'N. 7°30'W.
1197	ad. ♀	11.12.58	Haarsteeg, Netherlands
	+	2.11.61	Castle Douglas: 54°56'N. 3°55'W. (Kirkcudbright)
443	f.g. ♂	7.1.60	Haarsteeg, Netherlands
	+	14.12.60	Chichester Harbour: 50°48'N. 0°55'W. (Sussex)
7794	juv. ♀	5.2.58	Haarsteeg, Netherlands
	+	28.1.61	Stoke (Kent)
3382	juv. ♂	15.3.58	Haarsteeg, Netherlands
	+	21.1.61	Whittlesey: 52°34'N. 0°08'W. (Cambridge)
9021	juv. ♀	4.3.61	Haarsteeg, Netherlands
	+	24.9.61	Fricston: 52°57'N. 0°05'E. (Lincoln)
11471	f.g. ♀	14.10.60	Brabantse Biesbosch: 51°45'N. 4°48'E. Netherlands
	+	19.2.61	Southampton: 50°53'N. 1°25'W. (Hampshire)
4462	juv.	11.10.55	Amager: 55°38'N. 12°34'E. Denmark
	+	21.1.57	near Gloucester: 51°53'N. 2°14'W.
4426	juv. ♂	20.9.56	Amager, Denmark
	+	18.1.57	Duncornick: 52°14'N. 6°39'W. (Wexford)
5902	juv. ♀	6.10.56	Amager, Denmark
	+	c. 1.12.57	near Ballinrobe: 53°37'N. 9°13'W. (Mayo)
44043	ad.	27.2.59	Meetkerke, Belgium
	+	10.1.62	Boston: 52°59'N. 0°01'W. (Lincoln)

Pintail (*Anas acuta*)

9976	1stW. ♂	1.11.61	Texel: 53°06'N. 4°48'E. Netherlands
	+	27.1.62	Faringdon 51°40'N. 1°35'W. (Berkshire)
11370	1stW. ♂	8.10.62	Texel, Netherlands
	+	0.11.62	South Suffolk
0521	1stW. ♂	24.10.62	Texel, Netherlands
	+	15.11.62	near Athlone: 53°25'N. 7°56'W. (Westmeath)
11584	1stW. ♂	21.12.62	Texel, Netherlands
	+	24.12.62	River Medway estuary: c. 51°25'N. 0°40'E. (Kent)
9779	juv. ♀	19.9.61	Texel, Netherlands
	+	23.10.61	Humberstone: 53°32'N. 0°03'W. (Lincoln)
8027	f.g. ♂	4.2.61	Haarsteeg: 51°43'N. 5°13'E. (Noord Brabant) Netherlands
	+	6.12.61	River Dee estuary: 53°22'N. 3°15'W. (Cheshire)
1348	f.g. ♂	31.10.60	Brabantse Biesbosch: 51°45'N. 4°48'E. Netherlands
	+	25.10.61	Lochfoot: 53°03'N. 3°43'W. (Kirkcudbright)

Shoveler (*Spatula clypeata*)

1309	ad. ♀	22.11.62	Texel: 53°06'N. 4°48'E. Netherlands
	+	17.12.62	near Bridgwater: 51°08'N. 3°00'W. (Somerset)
13509	1stW.	16.8.60	De Dulver: 51°41'N. 4°58'E. (Noord Brabant) Netherlands
	+	1.9.62	near Ince: 53°17'N. 2°50'W. (Cheshire)
12741	♂	15.3.62	Haarsteeg: 51°43'N. 5°13'E. (Noord Brabant) Netherlands
	+	27.11.62	Longnewton Marsh: 54°54'N. 3°17'W. (Cumberland)
4794	♂	22.3.62	Merkem: 50°57'N. 2°52'E. (West Flanders) Belgium
	+	0.9.62	Lough Gowna: 53°51'N. 7°32'W. (Longford)

BRITISH BIRDS

B.	ad. ♀	22.3.62	Merkem, Belgium
3G4795	+	22.12.62	Ashton Vale: 51°26'N. 2°39'W. Bristol
L.	juv.	31.7.61	Brabantse Biesbosch: 51°45'N. 4°48'E. Netherlands
4007443	×	29.10.61	Combermere Abbey: 53°00'N. 2°36'W. (Cheshire)
L.	juv.	26.7.61	Brabantse Biesbosch, Netherlands
4007434	/?/	22.10.61	Little Brosna River: 53°08'N. 7°57'W. (Offaly)
L.	f.g. ♀	30.9.61	Naardermeer: 52°18'N. 5°08'E. (Noord Holland) Netherlands
4011812	+	2.12.61	Stanwell: 51°28'N. 0°28'W. (Middlesex)
C.	f.g. ♂	5.5.60	Amager: 55°38'N. 12°34'E. Denmark
485683	+	28.11.61	Knockroghevy: 53°35'N. 8°06'W. (Roscommon)

Tufted Duck (*Aythya fuligula*)

C.	f.g. ♀	20.9.59	Selsö: 55°45'N. 12°02'E. (Sjælland) Denmark
485551	+	12.11.61	Miltown: 54°04'N. 7°28'W. (Cavan)

Pochard (*Aythya ferina*)

M.	juv. ♂	30.8.61	Okski Reserve: 54°45'N. 40°50'E. (Ryazan) U.S.S.R.
D73295	+	23.1.62	East Somerton: 52°43'N. 1°40'E. (Norfolk)
L.	imm. ♂	19.12.58	Lekkerkerk: 51°54'N. 4°39'E. (Zuid Holland) Netherlands
406982	+	20.12.59	Wexford: 52°20'N. 6°27'W.

Goldeneye (*Bucephala clangula*)

S.J.F.	ad. ♀	10.5.59	Täxan-Stamsle: 63°43'N. 15°49'E. (Jämtland) Sweden
060473	+	18.1.62	Ardo: 57°06'N. 2°10'W. (Aberdeen)

Shelduck (*Tadorna tadorna*)

<i>St. Orn.</i>	pull.	1.7.59	Ottenby: 56°13'N. 16°25'E. Öland, Sweden
831457	×	10.1.62	Wigborough: 51°48'N. 0°51'E. (Essex)
H.	juv.	15.8.61	Mellum: 53°44'N. 8°10'E. North Sea, Germany
3011836	×	23.12.61	Scolt Head: 52°59'N. 0°41'E. (Norfolk)
H.	ad.	4.8.58	River Weser estuary: c. 53°50'N. 8°20'E. Germany
367375	×	0.2.62	Emsworth: 50°51'N. 0°56'W. (Hampshire)
H.	juv.	9.8.59	River Weser estuary, Germany
366766	×	18.3.62	River Kent estuary: c. 54°13'N. 2°49'W. (Westmorland)
H.	♂	23.8.59	River Weser estuary, Germany
381051	×	10.1.62	Newburgh: 57°19'N. 2°00'W. (Aberdeen)
H.	ad.	14.8.60	River Weser estuary, Germany
3008012	×	4.2.62	River Medway Estuary: c. 51°25'N. 0°40'E. (Kent)
H.	ad.	11.9.60	River Weser estuary, Germany
3008246	+	0.12.62	Dovercourt: 51°56'N. 1°16'E. (Essex)

White-fronted Goose (*Anser albifrons*)

L.	ad. ♂	6.1.61	Oudega: 53°07'N. 6°00'E. (Friesland) Netherlands
8001105	+	6.1.62	Eastchurch: 51°24'N. 0°53'E. Sheppey (Kent)
L.	1st W. ♂	26.1.60	Luchtenveld: 53°00'N. 5°50'E. (Friesland) Netherlands
8001431	+	12.2.62	Slimbridge: 51°45'N. 2°24'W. (Gloucester)
	1st W. ♂	20.1.61	Nijkerk: 52°14'N. 5°26'E. (Gelderland) Netherlands
8001385	+	7.1.62	Harty: 51°22'N. 0°55'E. Sheppey (Kent)
L.	ad. ♂	4.2.61	Nijkerk, Netherlands
8001678	+	6.1.62	River Severn, Lydney: 51°44'N. 2°30'W. (Gloucester)

FOREIGN-RINGED RECOVERIES

Bean Goose (*Anser arvensis arvensis*)

ad. ♀	22.8.58	Hoge Warren: 53°06'N. 5°56'E. (Friesland) Netherlands
+	2.1.62	Holbeach Marsh: 52°52'N. 0°05'E. (Lincoln)

Barnacle Goose (*Branta leucopsis*)

ad. ♀	20.7.62	Hornsund: 77°00'N. 14°30'E. Spitsbergen
()	16.12.62	Rockcliffe Marsh: 54°58'N. 3°04'W. (Cumberland)
ad.	20.7.62	Hornsund, Spitsbergen
× (oiled)	0.9.62	Coquet Island: 55°20'N. 1°32'W. (Northumberland)
ad.	24.7.62	Hornsund, Spitsbergen
+	12.11.62	Fair Isle: 59°32'N. 1°37'W. (Shetland)
ad. ♀	1.8.61	Flemingdalen: 71°30'N. 23°20'W. Greenland
×	0.2.62	Inishkea Islands: 54°08'N. 10°13'W. (Mayo)
pull.	1.8.61	Flemingdalen, Greenland
×	0.2.62	Inishkea Islands (Mayo)

One recovered on Rockcliffe Marsh was badly wounded and its wing permanently useless. It was otherwise in good condition, however, and so was released on an ornamental water in a park at Carlisle.

Whooper Swan (*Cygnus cygnus*)

pull.	15.8.62	Ulfsvatn: 64°54'N. 20°35'W. Iceland
× A	6.12.62	Downpatrick: 54°19'N. 5°43'W. (Down)
(wires)		

Bewick's Swan (*Cygnus columbianus bewickii*)

f.g.	25.3.57	Nyköbing: 55°55'N. 11°41'E. (Sjaelland) Denmark
×	8.2.58	near Holymount: 53°40'N. 9°07'W. (Mayo)

Sparrowhawk (*Accipiter nisus*)

♀	27.4.61	Mellum: 53°44'N. 8°10'E. North Sea, Germany
×	0.1.62	Bozeat: 52°14'N. 0°41'W. (Northampton)

Hen Harrier (*Circus cyaneus*)

ad. ♂	11.11.61	Brasschaat: 51°17'N. 4°30'E. (Antwerp) Belgium
[?]	9.2.62	Wretham: 52°29'N. 0°48'E. (Norfolk)

Osprey (*Pandion haliaëtus*)

pull.	16.7.52	Mässvik: 59°13'N. 13°09'E. (Värmland) Sweden
[?]	10.6.54	Dawyck: 55°36'N. 3°20'W. (Peebles)
pull.	19.6.53	Vestra Tunhem: 58°20'N. 12°25'E. (Västergötland) Sweden
[?]	28.10.53	Wetton Mill: 53°06'N. 1°51'W. (Stafford)

Kestrel (*Falco tinnunculus*)

pull.	26.6.57	Den Helder: 52°58'N. 4°45'E. (Noord Holland) Netherlands
×	2.3.61	Spalding: 52°47'N. 0°10'W. (Lincoln)

Moorhen (*Gallinula chloropus*)

1st W.	9.9.61	Nakskov: 54°50'N. 11°09'E. (Lolland) Denmark
×	2.1.62	Harrietsham: 51°15'N. 0°41'E. (Kent)
1st W.	20.9.62	Nakskov, Denmark
×	6.11.62	Rathfarnham: 53°18'N. 6°18'W. (Dublin)

BRITISH BIRDS

C. 586370	ad. ×	28.4.61 (5.4.62)	Nakskov, Denmark Wendover: 51°46'N. 0°46'W. (Buckingham)
C. 488837	juv. v	27.8.61 29.10.61	Nakskov, Denmark Stockbridge: 51°07'N. 1°29'W. (Hampshire)
C. 488872	juv. +	12.9.61 5.11.61	Nakskov, Denmark near Brecon: 51°57'N. 3°24'W.
L. 4002078	1stW. ♀ ×	25.9.62 9.11.62	Oudesluis: 52°50'N. 4°49'E. (Noord Holland) Netherlands Cullompton: 50°52'N. 3°23'W. (Devon)
L. 4011179	1stW. ()	27.9.62 30.9.62	Texel: 53°06'N. 4°48'E. Netherlands Haisboro' Light-vessel: 52°58'N. 1°34'E. (Norfolk)
L. 296883	f.g. ×	12.4.57 29.2.60	Haarsteeg: 51°43'N. 5°13'E. (North Brabant) Netherlands Thurtaston: 53°20'N. 3°06'W. (Cheshire)
L. 379370	juv. ×	5.8.61 18.11.61	Reeuwijk: 52°03'N. 4°42'E. (Zuid Holland) Netherlands Whissington: 52°03'N. 0°25'E. (Norfolk)

Coot (*Fulica atra*)

L. 5008646	pull. ×	9.7.62 6.12.62	Zandvoort: 52°22'N. 4°31'E. (Noord Holland) Netherlands Hawkhurst: 51°03'N. 0°31'E. (Kent)
---------------	------------	-------------------	--

Oystercatcher (*Haematopus ostralegus*)

Rk. 54024	pull. ×	18.6.59 summer 1961	Westmann Islands: 63°24'N. 20°17'W. Iceland Truro: 50°16'N. 5°03'W. (Cornwall)
L. 207775	pull. ×	3.6.61 9.1.62	Heerenveen: 52°57'N. 5°56'E. (Friesland) Netherlands Selsey Bill: 50°43'N. 0°47'W. (Sussex)
L. 4008266	ad. ×	29.10.60 26.6.61	Oppenhuizen: 53°01'N. 5°42'E. (Friesland) Netherlands Cunningsburgh: 60°03'N. 1°13'W. (Shetland)
L. 4008274	ad. +	29.10.60 21.11.61	Oppenhuizen, Netherlands Flookburgh: 54°12'N. 2°58'W. (Lancashire)

Lapwing (*Vanellus vanellus*)

L. 1004451	pull. /?/	25.5.59 5.1.60	Aarle Rixtel: 51°30'N. 5°39'E. (Noord Brabant) Netherlands The Lizard: 49°58'N. 5°12'W. (Cornwall)
L. 263799	pull. /?/	27.5.59 14.1.60	Petten: 52°46'N. 4°40'E. (Noord Holland) Netherlands Carn Brea: 50°13'N. 5°15'W. (Cornwall)
L. 241486	ad. × A	15.3.54 3.2.60	Reeuwijk: 52°03'N. 4°42'E. (Zuid Holland) Netherlands Parson Drove: 52°40'N. 0°02'E. (Cambridge)
L. 264016	pull. +	21.6.56 9.12.61	Ureterp: 53°06'N. 6°10'E. (Friesland) Netherlands Banagher: 53°11'N. 7°59'W. (Offaly)
C. 695576	ad. ♀ +	9.6.53 12.1.57	Amager: 55°38'N. 12°34'E. Denmark near Bungay: 52°28'N. 1°26'E. (Suffolk)
C. 687855	pull. +	16.5.59 26.11.61	Bramsnaesvig: 55°41'N. 11°48'E. (Sjælland) Denmark near Weymouth: 50°36'N. 2°00'W. (Dorset)

Ringed Plover (*Charadrius hiaticula*)

St. Orn. 226551	pull. v	18.6.59 1.9.62	Falsterbo: 55°23'N. 12°50'E. (Skåne) Sweden Stoke: 51°28'N. 0°39'E. (Kent)
C. 704603	pull. ×	9.6.57 2.2.58	Nordre Rønner: 57°22'N. 10°56'E. Kattegat, Denmark near Sheringham: 52°57'N. 1°12'E. (Norfolk)
C. 852105	ad. ×	18.6.58 23.2.61	Amager: 55°38'N. 12°34'E. Denmark Birkenhead: 53°24'N. 3°02'W. (Cheshire)

FOREIGN-RINGED RECOVERIES

Golden Plover (*Charadrius apricarius*)

11365	f.g. +	21.10.57 0.1.62	Midnes: 64°04'N. 22°43'W. Iceland Broughton: 53°10'N. 2°59'W. (Flint)
11406	f.g. +	17.9.58 6.1.62	Midnes, Iceland Inch Island: 55°04'N. 7°30'W. Lough Swilly (Donegal)
12159	f.g. +	18.8.60 29.12.62	Midnes, Iceland Kilkeel: 54°04'N. 6°01'W. (Down)
16020	ad. +	14.1.52 15.12.62	Dongjum: 53°13'N. 5°33'E. (Friesland) Netherlands near Stow: 53°19'N. 0°41'W. (Lincoln)
113728	f.g. +	18.4.62 20.12.62	Hallum: 53°18'N. 5°48'E. (Friesland) Netherlands Newlyn East: 50°22'N. 5°03'W. (Cornwall)
12378	f.g. ×	14.3.59 6.1.60	Avenhorn: 52°37'N. 4°56'E. (Noord Holland) Netherlands Brome: 52°21'N. 1°09'E. (Suffolk)
12929	f.g. ×	12.3.59 17.1.60	Burum: 53°16'N. 6°14'E. (Friesland) Netherlands Jarrow Slake: 54°54'N. 1°28'W. (Durham)
11448	f.g. +	31.3.56 22.10.60	Ferwerd: 53°21'N. 5°49'E. (Friesland) Netherlands Tuam: 53°33'N. 8°55'W. (Galway)

Snipe (*Gallinago gallinago*)

1220587	f.g. +	24.8.60 0.1.62	near Pori: 61°30'N. 21°45'E. Finland near Stockbridge: 51°08'N. 1°29'W. (Hampshire)
12261	ad. +	17.4.61 24.11.62	Midnes: 64°04'N. 22°43'W. Iceland Brandon: 51°45'N. 8°45'W. (Cork)
12536	juv. +	14.8.60 5.12.62	Skanör: 55°24'N. 12°50'E. (Skåne) Sweden Easthorpe: 51°52'N. 0°47'E. (Essex)
125059	f.g. +	4.9.62 24.11.62	Amager: 55°40'N. 12°38'E. Denmark near Kington: 52°12'N. 3°02'W. (Hereford)
125259	f.g. +	9.10.62 1.12.62	Amager, Denmark Irvine: 55°36'N. 4°39'W. (Ayr)
111387	1stW. +	26.9.62 26.12.62	Zwarte Meer: 52°38'N. 6°00'E. (Overijssel) Netherlands West Hoathly: 51°05'N. 0°04'W. (Sussex)
125428	f.g. v	2.9.62 6.10.62	Noorden: 52°10'N. 4°50'E. (Noord Holland) Netherlands Hersham: 51°22'N. 0°24'W. (Surrey)
127180	ad. +	13.3.61 22.12.62	Le Zoute: 51°21'N. 3°22'E. (West Flanders) Belgium Clara: 53°21'N. 7°36'W. (Offaly)
1269	f.g. +	1.9.61 22.11.58	Amager, Denmark near Valley: 53°19'N. 4°38'W. (Anglesey)
12087	f.g. +	25.8.56 c. 12.1.57	Utterslev Mose: 55°43'N. 12°30'E. Copenhagen, Denmark Redruth: 50°13'N. 5°14'W. (Cornwall)
12815	f.g. +	10.8.57 8.12.58	Amager, Denmark Pwllheli: 52°53'N. 4°25'W. (Caernarvon)
12878	f.g. +	29.8.57 30.1.58	Amager, Denmark Prestatyn: 53°20'N. 3°24'W. (Flint)
12404	f.g. +	4.10.61 27.12.61	Nakskov: 54°50'N. 11°10'E. (Lolland) Denmark near Rye: 50°57'N. 0°44'E. (Sussex)

Jack Snipe (*Lymnocyptes minimus*)

125413	ad. +	12.4.58 5.2.62	Merkplas: 51°22'N. 4°52'E. (Antwerp) Belgium Tralee: 52°16'N. 9°42'W. (Kerry)
--------	----------	-------------------	---

Woodcock (*Scolopax rusticola*)

<i>Hki.</i>	pull.	5.6.61	Ylöjärvi: 62°40'N. 23°40'E. Finland
B31152	+	24.12.62	Hothfield: 51°10'N. 0°49'E. (Kent)
<i>O.S.V.</i>	pull.	13.7.62	Hurdal: 60°20'N. 11°02'E. (Akershus) Norway
1549	+	26.12.62	Pontrhydfendigaid: 52°17'N. 3°53'W. (Cardigan)

Curlew (*Numenius arquata*)

<i>Hki.</i>	pull.	20.6.56	Oulunlahti: c. 65°00'N. 25°27'E. Finland
C14530	×	3.1.62	near Maughold: 54°19'N. 4°20'W. Isle of Man
<i>Hki.</i>	pull.	14.6.61	Tjök: 62°19'N. 21°31'E. Finland
C96300	+	(31.1.62)	North Wootton: 52°48'N. 0°27'E. (Norfolk)
<i>Hki.</i>	pull.	2.6.61	near Kristinestad: 62°17'N. 21°20'E. Finland
C96313	+	0.12.62	North Wootton (Norfolk)
<i>Hki.</i>	pull.	7.6.59	Nakkila: 61°22'N. 22°00'E. Finland
C81361	+	29.9.62	Conway: 53°17'N. 3°50'W. (Caernarvon)
<i>S.J.F.</i>	juv.	10.7.59	Alfta: 61°22'N. 16°07'E. (Hälsingland) Sweden
83738	×	0.1.62	Larne Lough: 54°50'N. 5°47'W. (Antrim)
<i>B.</i>	ad.	2.9.62	near Knokke: 51°20'N. 3°17'E. (West Flanders) Belgium
3G4425	+	17.10.62	Pagham: 50°46'N. 0°43'W. (Sussex)

Bar-tailed Godwit (*Limosa lapponica*)

<i>C.</i>	ad.	20.5.58	Amager: 55°40'N. 12°38'E. Denmark
586263	v	8.1.62	Dawlish Warren: 50°37'N. 3°27'W. (Devon)

Redshank (*Tringa totanus*)

<i>Rk.</i>	f.g.	20.8.62	Reykjavik: 64°08'N. 21°56'W. Iceland
713419	×	5.11.62	Glencaple: 55°01'N. 3°35'W. (Dumfries)

Knot (*Calidris canutus*)

<i>Stav.</i>	f.g.	0.9.52 or 53	Revtangen: 58°45'N. 5°30'E. (Rogaland) Norway
72-319	×	21.4.62	Sunderland Point: 54°00'N. 2°53'W. River Lune (Lancashire)

The third figure of this ring-number was illegible, but the alternative dates given are the only possibilities.

Temminck's Stint (*Calidris temminckii*)

<i>Hki.</i>	ad.	4.8.60	near Pori: 61°30'N. 21°45'E. Finland
K46408	v	21.7.62	Stoke: 51°28'N. 0°39'E. (Kent)

This is the first foreign-ringed Temminck's Stint to be recovered in Britain.

Dunlin (*Calidris alpina*)

<i>M.</i>	ad.	27.8.60	Kandalaksha: 67°02'N. 32°35'E. (Murmansk) U.S.S.R.
X716655	×	c. 10.1.62	Benington: 53°00'N. 0°07'E. (Lincoln)
<i>M.</i>	ad.	10.6.61	Great Ainov Islands: 69°50'N. 31°35'E. U.S.S.R.
X716988	v	17.8.62	Terrington Marsh: 52°48'N. 0°18'E. (Norfolk)
<i>Hki.</i>	f.g.	26.7.61	Pori: 61°30'N. 21°45'E. Finland
P50619	v	6.1.62	Dawlish Warren: 50°37'N. 3°27'W. (Devon)
<i>Hki.</i>	ad.	15.7.62	Pori, Finland
P50731	×	27.10.62	near Hull: 53°45'N. 0°20'W. (York)
<i>Hki.</i>	ad.	25.5.58	Gamlakarleby: 63°50'N. 23°08'E. Finland
A80883	v	17.8.62	Holbeach Marsh: 52°52'N. 0°05'E. (Lincoln)

FOREIGN-RINGED RECOVERIES

0578	1stW. v	11.10.61 4.8.62	Ledskär: 60°30'N. 17°38'E. Lövsta Bay, Sweden Grove Ferry: 51°19'N. 1°13'E. (Kent)
11230	1stW. +	4.10.62 10.11.62	Ledskär, Sweden Budle Bay: 55°37'N. 1°46'W. (Northumberland)
55002	ad. x	19.8.61 13.1.62	Ottenby: 56°13'N. 16°25'E. Öland, Sweden Cumminess: 58°59'N. 3°15'W. Stenness (Orkney)
11560	ad. v	10.8.61 4.1.62	Ottenby, Sweden River Medway estuary: c. 51°25'N. 0°40'E. (Kent)
44834	f.g. v	6.8.61 16.3.62	Ottenby, Sweden East Tilbury: 51°28'N. 0°26'E. (Essex)
77869	ad. v v	4.8.62 16.8.62 19.8.62	Ottenby, Sweden Terrington Marsh (Norfolk) Dawsmerc: 52°52'N. 0°08'E. (Lincoln)
22314	ad. v	14.8.61 17.8.62	Ottenby, Sweden Holbeach Marsh (Lincoln)
66971	ad. v	28.7.62 8.11.62	Ottenby, Sweden Kemsley Marsh: 51°22'N. 0°46'E. (Kent)
Orn. 1184	ad. v	28.7.60 16.8.62	Falsterbo: 55°23'N. 12°50'E. (Skåne) Sweden Terrington Marsh (Norfolk)
Orn. 4468	f.g. v	23.8.61 8.11.62	Falsterbo, Sweden Kemsley Marsh (Kent)
83542	ad. v	26.7.62 22.11.62	Torhamn: 56°04'N. 15°50'E. (Blickinge) Sweden East Tilbury (Essex)
G74548	ad. v	6.8.58 26.11.62	Faludden: 57°00'N. 18°23'E. Gotland, Sweden Kemsley Marsh (Kent)
.. 882	f.g. x	15.10.61 24.3.62	Revtangen: 58°45'N. 5°30'E. (Rogaland) Norway near Grimsby: 53°35'N. 0°04'W. (Lincoln)
.. 728	f.g. v	18.9.60 17.8.62	Revtangen, Norway Terrington Marsh (Norfolk)
.. 597	f.g. v	7.10.61 29.11.62	Revtangen, Norway Kemsley Marsh (Kent)
.. 001	f.g. v	31.8.60 30.12.62	Revtangen, Norway Spurn Point: 53°35'N. 0°06'E. (York)
.. 861	ad. +	2.8.52 13.1.57	Amager: 55°40'N. 12°38'E. Denmark Holbrook Bay: 51°58'N. 1°10'E. (Suffolk)
.. 000	ad. +	27.7.53 13.1.57	Amager, Denmark Loughill: 52°40'N. 8°38'W. (Limerick)
.. 88627	1stW. +	15.9.62 7.10.62	Heligoland: 54°11'N. 7°55'E. Germany Killingholme Marshes: 53°38'N. 0°16'W. (Lincoln)
.. 5409	f.g. v	12.9.60 8.11.62	Rostock: 54°06'N. 12°08'E. (Mecklenburg) Germany Kemsley Marsh (Kent)
.. 003	1stW. v	26.9.61 25.10.62	Braakman: 51°20'N. 3°44'E. (Zeeland) Netherlands East Tilbury (Essex)

Great Black-backed Gull (*Larus marinus*)

.. 2946	pull. x	20.6.61 27.1.62	Great Ainov Islands: 69°50'N. 31°35'E. U.S.S.R. Winfarthing: 52°26'N. 1°06'E. (Norfolk)
.. 9341	pull. x	21.6.61 7.2.62	Great Ainov Islands, U.S.S.R. Walton Reservoir: 51°24'N. 0°23'W. (Surrey)

BRITISH BIRDS

M. D489082	pull. ×	21.6.61 10.2.62	Great Ainov Islands, U.S.S.R. Walton Reservoir (Surrey)
M. D429693	pull. ×	17.6.59 24.3.62	Great Ainov Islands, U.S.S.R. <i>near</i> Gosport: 50°47'N. 1°08'W. (Hampshire)
M. D489172	pull. +	22.6.61 17.3.62	Great Ainov Islands, U.S.S.R. <i>near</i> Leyland: 53°42'N. 2°42'W. (Lancashire)
M. D487953	pull. ×	28.6.60 3.12.61	Great Ainov Islands, U.S.S.R. Teessmouth: <i>c.</i> 54°38'N. 1°10'W. (Durham)
M. D489495	pull. × A	30.6.61 20.8.62	Great Ainov Islands, U.S.S.R. Annan: 55°02'N. 3°16'W. (Dumfries)
M. D489913	pull. ×	30.6.61 11.1.62	Great Ainov Islands, U.S.S.R. Dennington: 52°15'N. 1°24'E. (Suffolk)
M. D486871	pull. ×	26.6.62 26.11.62	Great Ainov Islands, U.S.S.R. Chester-le-Street: 54°52'N. 1°34'W. (Durham)
M. D429443	pull. ×	23.5.60 <i>spring</i> 1962	Great Ainov Islands, U.S.S.R. Panshanger: 51°48'N. 0°07'W. (Hertford)

Lesser Black-backed Gull (*Larus fuscus*)

Rk. 36627	pull. ×	28.7.57 26.9.62	Arnanes, Hornafjordur: 64°17'N. 15°14'W. Iceland Rosness: 58°53'N. 2°50'W. (Orkney)
--------------	------------	--------------------	--

Herring Gull (*Larus argentatus*)

M. D488663	pull. ()	9.7.60 6.12.62	Great Ainov Islands: 69°50'N. 31°35'E. U.S.S.R. <i>10 miles off</i> Berwick-on-Tweed
M. D486080	pull. ×	6.7.61 13.5.62	Great Ainov Islands, U.S.S.R. Pitsea: 51°34'N. 0°31'E. (Essex)
M. D486182	pull. ×	15.7.61 5.1.62	Great Ainov Islands, U.S.S.R. Canvey Island: 51°32'N. 0°35'E. (Essex)
M. D502553	pull. +	0.7.60 9.12.62	Murmansk coast: 68°49'N. 37°20'E. U.S.S.R. Wraysbury: 51°27'N. 0°33'W. (Buckingham)
M. C50014	pull. ×	7.7.61 17.6.62	Murmansk coast, U.S.S.R. Dungeness: 50°55'N. 0°59'E. (Kent)
C. 483529	juv. ×	3.8.58 2.9.58	Mikladali: 62°21'N. 6°46'W. Faeroes Scapa Flow: 58°53'N. 3°26'W. (Orkney)
C. Z24908	×	0.6.50 0.8.58	Töllöse: 55°37'N. 11°45'E. (Sjælland) Denmark Hoylake: 53°23'N. 3°11'W. (Cheshire)
L. 5009258	pull. ×	13.7.61 0.1.62	Terschelling: 53°25'N. 5°29'E. Netherlands Orford: 52°06'N. 1°33'E. (Suffolk)

Kittiwake (*Rissa tridactyla*)

M. M89414	pull. ×	20.7.61 15.3.62	Murmansk coast: 68°49'N. 37°20'E. U.S.S.R. Camber: 50°56'N. 0°46'E. (Sussex)
M. E452499	pull. ×	24.7.61 (25.6.62)	Murmansk coast, U.S.S.R. Stranraer: 54°54'N. 5°02'W. (Wigtown)
Star. 632498	pull. ×	13.7.60 18.3.62	Runde: 62°25'N. 5°38'E. (Sunnmøre) Norway Birchington: 51°23'N. 1°19'E. (Kent)
C. 585265	pull. ×	20.6.56 19.3.58	Hirsholm: 57°30'N. 10°36'E. Kattegat, Denmark Eythorne: 51°08'N. 1°19'E. Dover (Kent)
C.¶ 582310	pull. +	20.6.56 9.7.57	Hirsholm, Denmark Bracklesham: 50°47'N. 0°54'W. Selsey (Sussex)

FOREIGN-RINGED RECOVERIES

Common Tern (*Sterna hirundo*)

prt.	9.5.59	Lagos: 37°06'N. 8°40'W. (Algarve) Portugal
333B	x 2.7.62	Leith: 55°58'N. 3°10'W. (Midlothian)

Arctic Tern (*Sterna macrura*)

	pull.	10.7.56	Mykinesholm: 62°07'N. 7°38'W. Faeroes
12904	x	15.7.61	Tulla: 55°52'N. 8°45'W. (Clare)

Guillemot (*Uria aalge*)

	pull.	1.7.61	Heligoland: 54°11'N. 7°55'E. Germany
7767	()	7.2.62	Littlehampton: 50°49'N. 0°33'W. (Sussex)

Puffin (*Fratercula arctica*)

A Puffin carrying an Oslo ring was found dead at Sheringham, 52°57'N. 1°12'E. (Norfolk), on 25th February 1962, but the inscription was almost completely worn away and the only information obtainable from Oslo was that the bird was banded between 1952 and 1957, probably in 1955 or 1956 near Lurøy, 66°35'N. 15°15'E. (Nordland) **Norway**.

Turtle Dove (*Streptopelia turtur*)

prt.	f.g.	15.9.58	Mindelo: 41°19'N. 8°41'W. (Douro) Portugal
57A	x	9.8.62	Ware: 51°49'N. 0°02'W. (Hertford)
prt.	f.g.	26.9.60	Mindelo, Portugal
779C	x	23.8.62	Metheringham: 53°08'N. 0°24'W. (Lincoln)

Collared Dove (*Streptopelia decaocto*)

	juv.	12.7.61	Herford: 52°07'N. 8°40'E. (Westfalen) Germany
16486	v	4.6.62	Perranporth: 50°20'N. 5°09'W. (Cornwall)

This is the first foreign-ringed Collared Dove to be recovered in Britain.

Long-eared Owl (*Asio otus*)

	pull.	31.5.59	Wassenaar: 59°08'N. 4°20'E. (Zuid Holland) Netherlands
000408	x	10.4.60	Gotham: 52°52'N. 1°12'W. (Nottingham)

Skylark (*Alauda arvensis*)

	pull.	28.5.57	Hälsingborg: 56°05'N. 12°45'E. (Skåne) Sweden
86G8320	x	5.1.62	Beachley: 51°37'N. 2°40'W. (Gloucester)

Sand Martin (*Riparia riparia*)

	f.g.	29.7.59	La Chapelle-sur-Erdre: 47°18'N. 1°32'W. (Loire Atlantique) France
016-	v	7.6.62	Farnham: 51°13'N. 0°48'W. (Surrey)
31.O.	ad.	11.5.62	St. Ouen: 49°13'N. 2°13'W. Jersey, Channel Islands
376	c	2.6.62	near Ringwood: 50°52'N. 1°47'W. (Hampshire)
		5.7.62	

Fieldfare (*Turdus pilaris*)

	pull.	4.6.61	Roshchino: 60°15'N. 29°37'E. (Leningrad) U.S.S.R.
6843	x	0.1.62	Blundellsands: 53°30'N. 3°04'W. (Lancashire)
	pull.	24.5.61	Skövde: 58°24'N. 13°52'E. (Västergötland) Sweden
07904	x	3.1.62	Gravesend: 51°26'N. 0°22'E. (Kent)

BRITISH BIRDS

H.	♀	17.1.59	Frankfurt-am-Main: 50°06'N. 8°41'E. Germany
7275332	×	5.1.62	near Athlone: 53°25'N. 7°56'W. (Westmeath)

Song Thrush (*Turdus philomelos*)

H.	1stS.	3.5.60	Heligoland: 54°11'N. 7°55'E. Germany
80042024	×	1.1.62	Pill: 51°28'N. 2°41'W. (Somerset)
H.	ad.	3.5.60	Mellum: 53°44'N. 8°10'W. North Sea, Germany
80015339	×	16.4.62	Calne: 51°26'N. 2°00'W. (Wiltshire)
L.	1stW.	15.10.61	Diemerzeedijk: 52°21'N. 4°59'E. (Noord Holland) Netherlands
K149092	×	0.2.62	Little Mongcham: 51°13'N. 1°22'E. (Kent)
B.	pull.	28.6.58	Wilrijk: 51°10'N. 4°23'E. (Antwerp) Belgium
7D5132	v	7.1.62	St. Clement: 49°10'N. 2°05'W. Jersey, Channel Islands

Redwing (*Turdus iliacus*)

Rk.	pull.	25.5.58	Reykjavik: 64°08'N. 21°56'W. Iceland
84563	()	0.2.62	Douglas: 51°52'N. 8°27'W. (Cork)
Rk.	f.g.	19.9.61	Reykjavik, Iceland
817385	v	3.2.62	Castlebar: 53°52'N. 9°18'W. (Mayo)
Rk.	f.g.	24.9.61	Reykjavik, Iceland
818942	v	13.2.62	St. Kilda: 57°49'N. 8°34'W. (Outer Hebrides)
Rk.	f.g.	23.10.60	Reykjavik, Iceland
816600	×	1.1.62	Ventry: 52°08'N. 10°22'W. (Kerry)
Rk.	f.g.	9.10.60	Reykjavik, Iceland
816222	×	2.1.62	Dingle: 52°08'N. 10°16'W. (Kerry)
Rk.	f.g.	14.9.60	Reykjavik, Iceland
814761	+	20.3.62	Rathcabbin: 53°07'N. 8°02'W. (Tipperary)
Rk.	f.g.	29.9.60	Reykjavik, Iceland
815265	()	4.1.62	Ballybunion: 52°31'N. 9°41'W. (Kerry)
Rk.	f.g.	14.10.61	Reykjavik, Iceland
820447	+	(9.2.62)	coast of Donnegal
Rk.	ad.	15.4.61	Midnes: 64°04'N. 22°43'W. Iceland
711272	×	0.1.62	Abbeystorney: 52°21'N. 9°42'W. (Kerry)
Rk.	f.g.	28.10.61	Akureyri: 65°41'N. 18°05'W. Iceland
713326	×	7.1.62	Buckhaven: 56°09'N. 3°02'W. (Fife)
Rk.	pull.	8.7.62	Akureyri, Iceland
821330	v	31.10.62	Tory Island: 55°16'N. 8°14'W. (Donegal)
Rk.	pull.	12.6.58	Reykjadalur: 65°45'N. 17°21'W. Iceland
88840	[?]	30.12.62	Inverin: 53°15'N. 9°28'W. (Galway)
Rk.	f.g.	7.9.60	Kvísker: 63°59'N. 16°27'W. Iceland
712266	×	8.2.62	Ballinafad: 54°02'N. 8°21'W. (Sligo)
Rk.	f.g.	31.10.60	Kvísker, Iceland
712325	v	3.1.62	Loughill: 52°36'N. 9°12'W. (Limerick)
Rk.	f.g.	26.9.61	Kvísker, Iceland
712395	×	(bank) 20.1.62	Mallaig: 57°01'N. 5°49'W. (Inverness)
L.	f.g.	2.11.59	Wassenaar: 52°08'N. 4°20'E. (Zuid Holland) Netherlands
K43420	+	24.3.60	Batterstown: 53°29'N. 7°28'W. (Meath)

Blackbird (*Turdus merula*)

Hki.	ad.	14.8.61	Helsinki: 60°09'N. 24°57'E. Finland
A137421	×	0.1.62	Alderton: 52°02'N. 1°26'E. (Suffolk)

FOREIGN-RINGED RECOVERIES

Hki. A153802	ad. ♂ ×	7.9.61 2.1.62	Strömfors: 60°32'N. 26°28'E. Finland Rodmarton: 51°41'N. 2°05'W. (Gloucester)
Hki. A105021	ad. ♂ ×	21.4.60 c. 14.4.62	Signilskär: 60°12'N. 19°22'E. Åland Islands, Finland Great Yeldham: 52°01'N. 0°34'E. (Essex)
Hki. A125278	ad. ♀ v	30.3.61 2.1.62	Hamina: 60°35'N. 27°12'E. Finland Cloughton: 54°20'N. 0°26'W. Scarborough (York)
Hki. A191230	juv. ×	28.8.62 29.11.62	Karjalohja: 60°15'N. 28°40'E. Finland Redcar: 54°38'N. 1°04'W. (York)
Hki. A151619	pull. v	28.5.62 6.11.62	Hattula: 61°03'N. 24°19'E. Finland Fair Isle: 59°32'N. 1°37'W. (Shetland)
St. 5008701	pull. v	24.5.61 19.1.62	Yxsjöberg: 60°05'N. 14°45'E. (Västmanland) Sweden Burgess Hill: 50°57'N. 0°08'W. (Sussex)
St. 5035612	pull. ×	26.6.62 c. 25.12.62	Knutsdalen: 58°47'N. 12°31'E. (Dalsland) Sweden Dullingham: 52°12'N. 0°23'E. (Cambridge)
St. Orn. 440780	ad. ♂ ×	12.8.61 27.3.62	Gälö: 59°05'N. 18°18'E. (Södermanland) Sweden Fordingbridge: 50°56'N. 1°48'W. (Hampshire)
St. Orn. 710962	ad. ♀ ×	20.3.61 2.12.62	Bergshamra: 59°38'N. 18°40'E. (Uppland) Sweden Point of Ayre: 54°25'N. 4°21'W. Isle of Man
St. B357449	juv. ×	15.8.59 30.1.62	Ytterby: 57°51'N. 11°48'E. (Bohuslän) Sweden near Maryport: 54°43'N. 3°31'W. (Cumberland)
Stav. 756249	♀ ×	23.9.61 10.9.62	Klabbu: 63°14'N. 10°26'E. (Sör-Trondelag) Norway Tiptree: 51°49'N. 0°45'E. (Essex)
St. 729501	juv. ♀ v	14.6.62 8.10.62	Harridslev: 56°30'N. 10°08'E. (Jutland) Denmark near Sheffield: 53°23'N. 1°29'W. (York)
St. 722274	♀ ×	12.3.61 (26.11.61)	Amager: 55°38'N. 12°34'E. Copenhagen, Denmark Occumster: 58°18'N. 3°15'W. (Caithness)
H. 7351463	ad. ♂ ×	22.9.59 3.1.62	Spiekeroog: 53°46'N. 7°44'E. East Frisian Islands, Germany near Stone: 52°54'N. 2°09'W. (Stafford)
L. K96087	pull. ×	19.6.59 17.1.60	Texel: 53°06'N. 4°48'E. Netherlands Lathom: 53°34'N. 2°35'W. (Lancashire)
L. K156049	♀ ×	14.11.61 0.1.62	Texel, Netherlands near Peterborough: 52°34'N. 0°14'W. (Northampton)
L. K101031	pull. v	16.6.59 29.12.62	Nunspeet: 52°25'N. 5°47'E. (Gelderland) Netherlands near Norwich: 52°38'N. 1°19'E. (Norfolk)
L. K103523	juv. ♂ +	20.9.59 1.1.60	Amsterdam: 52°21'N. 4°55'E. Netherlands Little Durnford: 51°07'N. 1°50'W. (Wiltshire)
L. K45635	♀ ×	24.5.59 29.1.60	Maartensdijk: 52°10'N. 5°10'E. (Utrecht) Netherlands Cottenham: 52°18'N. 0°08'E. (Cambridge)
L. K85421	juv. ♂ (	13.6.58 0.12.59	Omnen: 52°31'N. 6°26'E. (Overijssel) Netherlands Takeley: 51°53'N. 0°15'E. (Essex)
L. K88058	pull. (	4.5.59 20.3.60	Heemskerk: 52°31'N. 4°40'E. (Noord Holland) Netherlands Rathcoffey: 53°20'N. 6°33'W. (Kildare)
St. 7H8019	juv. ♂ v	1.7.60 19.2.62	Wimereux: 50°46'N. 1°37'E. (Pas-de-Calais) France Dungeness: 50°55'N. 0°59'E. (Kent)

 Redstart (*Phoenicurus phoenicurus*)

H. 12324	1stW. ♀ v	18.9.61 26.9.62	Trischen: 54°03'N. 8°40'E. (Holstein) Germany Dungeness: 50°55'N. 0°59'E. (Kent)
-------------	--------------	--------------------	--

BRITISH BIRDS

Robin (*Erithacus rubecula*)

<i>St.</i>	ad.	24.10.61	Falsterbo: 55°23'N. 12°50'E. (Skåne) Sweden
1034448	×	2.4.62	near Pocklington: 53°54'N. 0°50'W. (York)

Whitethroat (*Sylvia communis*)

<i>Mad.</i>	♂	1.10.61	near Cape St. Vincent: 37°01'N. 8°59'W. (Algarve) Portugal
J9267	×	14.7.62	Saxthorpe: 52°51'N. 1°09'E. (Norfolk)

Willow Warbler (*Phylloscopus trochilus*)

<i>H.</i>	f.g.	15.5.59	Heligoland: 54°11'N. 7°55'E. Germany
9739409	×	20.5.62	Toft: 60°29'N. 1°13'W. Delting (Shetland)
<i>P.</i>	f.g.	26.4.60	Ushant: 48°28'N. 5°05'W. (Finistère) France
07896	×	c. 30.4.62	on trawler off Rockall: 57°40'N. 13°13'W. North Atlantic Ocean

Spotted Flycatcher (*Muscicapa striata*)

<i>H.</i>	f.g.	14.6.61	Heligoland: 54°11'N. 7°55'E. Germany
9986311	v	15.7.62	Spurn Point: 53°35'N. 0°06'E. (York)
<i>P.</i>	f.g.	2.9.61	Ushant: 48°28'N. 5°05'W. (Finistère) France
174988	×	(18.6.62)	Middlesbrough: 54°35'N. 1°14'N. (York)

Pied Flycatcher (*Muscicapa hypoleuca*)

<i>H.</i>	1stW.	1.9.62	Wangeroog: 53°48'N. 7°52'E. East Frisian Islands, Germany
093743	v	14.9.62	Spurn Point: 53°35'N. 0°06'E. (York)

Meadow Pipit (*Antbus pratensis*)

<i>B.</i>	f.g.	1.11.61	Ekeren: 51°17'N. 4°25'E. (Antwerp) Belgium
39B2855	×	28.12.62	on board ship 15 miles SW of Dungeness (Kent) English Channel

Rock Pipit (*Antbus spinoletta*)

<i>H.</i>	f.g.	1.10.60	Mellum: 53°44'N. 8°10'E. North Sea, Germany
9808983	×	(19.2.62)	Cliffe Marshes: 51°28'N. 0°29'E. (Kent)

White Wagtail (*Motacilla alba*)

<i>Ré.</i>	pull.	18.7.62	Skipalón: 65°47'N. 18°12'W. Iceland
911107	v	26.8.62	Fair Isle: 59°32'N. 1°37'W. (Shetland)

Starling (*Sturnus vulgaris*)

<i>M.</i>	pull.	10.4.62	Kholm: 57°10'N. 31°10'E. (Novgorod) U.S.S.R.
F687715	×	6.11.62	near Bury St. Edmunds: 52°15'N. 0°44'E. (Suffolk)
<i>M.</i>	juv.	1.6.56	Darwin Reserve: 58°30'N. 37°30'E. (Rybinsk) U.S.S.R.
F304321	×	11.1.62	Corby: 52°29'N. 0°40'E. (Northampton)
<i>M.</i>	pull.	24.5.58	Pärnu: 58°23'N. 24°30'E. Estonian S.S.R.
F324239	+	3.2.62	near Coventry: 52°24'N. 1°30'W. (Warwick)
<i>M.</i>	juv.	26.5.59	Kandava: 57°02'N. 22°47'E. Latvian S.S.R.
P41598	×	13.1.62	Sudbury: 52°03'N. 0°44'E. (Suffolk)
<i>Hki.</i>	pull.	29.5.60	Kyrkslätt: 60°14'N. 24°25'E. Finland
A95180	×	2.1.62	Corby (Northampton)
<i>Hki.</i>	pull.	9.6.60	Helsinki: 60°09'N. 24°57'E. Finland
A114164	v	4.2.62	near Newcastle upon Tyne: 54°58'N. 1°36'W. (Northumberland)
<i>Hki.</i>	pull.	2.6.61	Sääksmäki: 61°13'N. 24°03'E. Finland
A144577	×	0.1.62	near Dereham: 52°41'N. 0°57'E. (Norfolk)

FOREIGN-RINGED RECOVERIES

ki.	pull.	28.5.61	near Pori: 61°30'N. 21°45'E. Finland
120771	×	29.10.62	Inner Dowsing Light-vessel: 53°13'N. 0°34'E. (Norfolk)
ki.	pull.	23.5.61	near Eura: 61°10'N. 22°07'E. Finland
158407	+	31.12.62	near Beverley: 53°50'N. 0°25'W. (York)
1.	pull.	2.6.62	Sundsvall: 62°23'N. 17°21'E. (Medelpad) Sweden
017307	v	25.12.62	Knaresborough: 54°01'N. 1°28'W. (York)
1.	ad.	15.4.62	Hol: 60°35'N. 8°25'E. (Buskerud) Norway
79800	×	29.10.62	Inner Dowsing Light-vessel (Norfolk)
1.	ad.	12.5.61	Nakskov: 54°50'N. 11°09'E. (Lolland) Denmark
26077	×	(cat) 16.1.62	St. Austell: 50°20'N. 4°47'W. (Cornwall)
1.	pull.	25.5.57	Gerlev: 55°49'N. 12°00'E. (Sjaelland) Denmark
88495	×	15.12.57	near Carlingford: 54°02'N. 6°11'W. (Louth)
1.	pull.	28.6.61	near Genthin: 52°24'N. 12°09'E. (Sachsen-Anhalt) Germany
211974	×	12.5.62	Romford: 51°35'N. 0°11'E. (Essex)
1.	juv.	14.6.59	Nienburg Weser: 52°38'N. 9°13'E. (Niedersachsen) Germany
363007	+(wires)	10.10.62	near Maidstone: 51°16'N. 0°31'E. (Kent)
1.	pull.	10.5.57	Huizen: 52°18'N. 5°14'E. (Noord Holland) Netherlands
30284	+	1.1.62	Wantage: 51°36'N. 1°26'W. (Berkshire)

The following record shows an interesting case of a Starling's reorientation after being caught and transported in the migration season. Several similar examples have been reported in these lists from time to time, but the return from Barcelona is almost remarkable.

1.	ad. ♂	7.10.61	Wassenaar: 52°09'N. 4°22'E. Netherlands
150793	transp.		Barcelona: 41°22'N. 2°10'E. Spain
	+	20.7.62	Sittingbourne: 51°21'N. 0°45'E. (Kent)

Greenfinch (*Chloris chloris*)

1.	ad. ♀	4.2.62	Mesen: 50°45'N. 2°53'E. (West Flanders) Belgium
3B9967	×	16.4.62	Felixstowe: 51°57'N. 1°21'E. (Suffolk)
1.	♂	18.2.62	Menen: 50°47'N. 3°07'E. (West Flanders) Belgium
40986	×	1.6.62	Clacton: 51°47'N. 1°10'E. (Essex)
1.	♂	14.1.62	Fromelles: 50°37'N. 2°52'E. (Nord) France
9276	v	29.4.62	Colchester: 51°54'N. 0°55'E. (Essex)

Goldfinch (*Carduelis carduelis*)

1.	ad.	5.11.60	St. Quentin: 49°51'N. 3°17'E. (Aisne) France
5824	×	25.8.62	near Chichester: 50°50'N. 0°47'W. (Sussex)
1.	♂	17.10.60	Anglet: 43°29'N. 1°30'W. (Basses-Pyrénées) France
S7798	×	(cat) 24.6.62	Crewkerne: 50°53'N. 2°48'W. (Somerset)
1.	♀	19.11.61	Mindelo: 41°19'N. 8°41'W. (Douro Litoral) Portugal
107E	v	30.5.62	Cambridge: 52°12'N. 0°07'E.

Siskin (*Carduelis spinus*)

1.	ad. ♀	9.4.60	Kortrijk: 50°49'N. 3°15'E. (West Flanders) Belgium
1A1791	[?]	(2.7.61)	Roydon: 51°46'N. 0°03'E. (Essex)

July is a most unusual month for a Siskin to appear in Essex and, as the details of recovery are rather vague, we have put the date in brackets.

Linnet (*Carduelis cannabina*)

1.	pull.	4.6.61	Tananger: 58°57'N. 5°37'E. Stavanger, Norway
87062	×	0.3.62	River Loxley: 53°24'N. 1°30'W. Sheffield (York)

BRITISH BIRDS

P.	ad. ♀	13.3.62	Armentières: 50°41'N. 2°53'E. (Nord) France
79075	× (<i>car</i>)	26.7.62	Winterton: 52°43'N. 1°42'E. (Norfolk)
San. S.	ad. ♀	2.4.60	Fuenterrabía: 43°21'N. 1°48'W. (Guipúzcoa) Spain
A14270	v	13.10.62	Cliffe: 51°28'N. 0°29'E. (Kent)
San S.	ad.	1.11.61	Rentería: 43°18'N. 1°55'W. (Guipúzcoa) Spain
A29244	v	23.4.62	Elm Park: 51°33'N. 0°12'E. Romford (Essex)

Chaffinch (*Fringilla coelebs*)

M.	♂	29.9.58	Rybatschi: 55°11'N. 20°49'E. (Kaliningrad) U.S.S.R.
X711216	v	1.1.62	Margam: 51°34'N. 3°44'W. (Glamorgan)
St.	ad.	9.4.61	Kungälv: 57°51'N. 12°02'E. (Bohuslän) Sweden
2025578	×	28.3.62	Hove: 50°50'N. 0°13'W. (Sussex)
C.	ad.	29.3.56	Klintebjerg: 55°57'N. 11°35'E. (Sjælland) Denmark
940097	v	29.3.58	Kilmore: 52°11'N. 6°35'W. (Wexford)
L.	♀	7.10.61	Castricum: 52°33'N. 4°38'E. (Noord Holland) Netherlands
N60912	×	7.4.62	Grittleton: 51°32'N. 2°12'W. (Wiltshire)
L.	♀	9.10.59	Bloemendal: 52°24'N. 4°38'E. (Noord Holland) Netherlands
N6351	×	0.1.62	Heswall: 53°19'N. 3°06'W. (Cheshire)
L.	ad. ♀	2.11.57	Wassenaar: 52°08'N. 4°20'E. (Zuid Holland) Netherlands
H98437	v	25.2.62	Burton: 53°16'N. 3°02'W. Wirral (Cheshire)
L.	juv. ♀	8.10.56	Wassenaar, Netherlands
H56779	×	22.10.59	Thorneombe: 50°50'N. 2°53'W. (Dorset)
L.	♀	12.11.60	Amsterdam: 52°21'N. 4°54'E. Netherlands
N34676	+	12.11.61	Peterborough: 52°35'N. 0°10'W. (Northampton)
B.	ad.	9.10.56	Winegem: 51°13'N. 4°32'E. (Antwerp) Belgium
18B6551	×	7.1.62	Marlow: 51°34'N. 0°47'W. (Buckingham)
B.	ad.	16.10.57	Winegem, Belgium
22B6788	×	10.1.62	Chidham: 50°50'N. 0°53'W. (Sussex)
B.	♀	11.10.55	Vosselaar: 51°19'N. 4°53'E. (Antwerp) Belgium
15B3622	×	4.3.62	Devizes: 51°21'N. 1°59'W. (Wiltshire)
B.	ad. ♀	10.10.61	Deurne: 51°12'N. 4°27'E. (Antwerp) Belgium
35B5428	+	2.1.62	near Bodorgan: 53°12'N. 4°25'W. (Anglesey)
B.	ad. ♂	15.10.60	Gaurain-Rameeroix: 50°35'N. 3°29'E. (Hainaut) Belgium
37B3752	×	31.1.62	Hellingly: 50°53'N. 0°15'E. (Sussex)
B.	ad. ♀	10.10.60	Olsene: 50°56'N. 3°28'E. (East Flanders) Belgium
22B8549	+	18.2.62	Denver: 52°35'N. 0°22'E. (Norfolk)

Brambling (*Fringilla montifringilla*)

L.	ad. ♂	16.10.57	Wassenaar: 52°08'N. 4°20'E. (Zuid Holland) Netherlands
H97486	v	31.1.62	Burton: 53°16'N. 3°02'W. Wirral (Cheshire)
B.	f.g.	27.10.58	Vosselaar: 51°19'N. 4°53'E. (Antwerp) Belgium
26B3740	×	17.3.62	Chilham: 51°14'N. 0°58'E. (Kent)
B.	♂	1.4.61	Kapellen: 51°18'N. 4°25'E. (Antwerp) Belgium
34B8832	×	5.4.62	Sand Hutton: 54°02'N. 0°56'W. (York)
B.	♀	14.10.62	Stabroek: 51°20'N. 4°22'E. (Antwerp) Belgium
4A2323	v	4.12.62	Frieth: 51°37'N. 0°52'W. (Buckingham)

Reed Bunting (*Emberiza schoeniclus*)

L.	♀	25.10.61	Castricum: 52°33'N. 4°38'E. (Noord Holland) Netherlands
R13242	v	27.1.62	Neston: 53°17'N. 3°04'W. Wirral (Cheshire)

Bird observatories in Great Britain and Ireland

List is arranged alphabetically and is designed to give (i) the name of the warden or director where there is one; (ii) the address from which particulars may be obtained; and (iii) an indication of accommodation charges and travel routes (charges are, of course, liable to alteration). *Stamped envelopes should be sent with applications for particulars.*

Weymouth Bird and Field Observatory, Caernarvonshire. Resident warden. *Enquiries:* Mrs. J. Walton, 51 Mount Road, St. Asaph, Flintshire. *Accommodation:* 11s. per day (including evening meal). *Travel:* train to Pwllheli; boat from Aberdaron (10s. return, plus island landing charge of 15s.).

Bradwell-on-Sea Bird Observatory, Essex. *Enquiries:* A. B. Old, Bata Hotel, East Tilbury, Essex. *Accommodation:* 2s. 6d. to 4s. per night. *Travel:* train to Southminster; bus to Bradwell-on-Sea.

Manx Bird Observatory, Isle of Man. *Warden:* Alan H. Morley. *Enquiries:* Secretary, Manx Museum and National Trust, Douglas, Isle of Man. *Accommodation:* 4s. per night. *Travel:* boat (£2 17s. 2nd class return from Liverpool, and also summer sailings from other ports) to Isle of Man; bus to Port St. Mary; small boat to Calf of Man.

Clear Bird Observatory, Co. Cork. *Enquiries:* H. M. Dobinson, Old Barn, Sonning Common, Reading, Berkshire. *Accommodation:* 5s. per night or 30s. per week; accommodation parties in second house. *Travel:* bus from Cork to Baltimore; boat from Baltimore four days return (8s. return).

Weymouth Bird Observatory, Norfolk. Closed at the end of 1963.

Glenties Bird Observatory, Co. Down. *Enquiries:* C. W. Bailey, 17 Hillside Drive, Belfast 9, Northern Ireland. *Accommodation:* 2s. 6d. per day (maintenance charge to non-members). *Travel:* bus and boat from Belfast (11s. 7d. return).

Weymouth Bird Observatory, Kent. *Warden:* R. E. Scott. *Enquiries:* H. A. R. Cawkell, Weymouth Road, Hastings, Sussex. *Accommodation:* 5s. per night. *Travel:* train to Lydd-on-Sea.

Fair Isle Bird Observatory, Shetland. *Warden:* Roy H. Dennis, Fair Isle Bird Observatory, by Fair Isle, Shetland. *Enquiries* to warden. *Accommodation:* 18s. to 25s. per day (including full board). *Travel:* train to Aberdeen; steamer from Aberdeen to Lerwick or B.E.A. aeroplane from Aberdeen to Sumburgh; boat from Sumburgh to Fair Isle (21s. 6d. return).

Weymouth Bird Observatory and Field Research Station, Lincolnshire. *Enquiries:* A. E. Weymouth, Pyewipes, Willoughby, Alford, Lincolnshire (bookings) and R. B. Wilkinson, 3 Ocean Road, Skegness, Lincolnshire (research). *Accommodation:* 6s. per night. *Travel:* train to Skegness.

Weymouth Bird Observatory, Co. Wexford. *Enquiries:* F. King, Solicitor, Dingle, Co. Kerry, Ireland. *Accommodation:* 2s. 6d. per night. *Travel:* boat from Fishguard to Rosslare; train from Rosslare to Bridgetown; boat to island (20s. return).

Weymouth Bird Observatory and Field Station, Fife. *Hon. Secretary:* Miss N. J. Gordon, Weymouth Terrace, Edinburgh 9. *Bookings:* A. Macdonald, Hadley Court, Sidegate, Haddington, East Lothian. *Accommodation:* 5s. per night. *Travel:* boat from Pittenweem (15s. return); full particulars on application.

Weymouth Bird Observatory, Channel Islands. *Enquiries:* A. Le Sueur, 6 York Street Chambers, Jersey. *Accommodation:* seaside café, 8-9 gns. per week (bed, breakfast, evening meal). *Travel:* boat from Weymouth (£5 4s. 2nd class return) or by air.

Weymouth Field Station and Observatory, off North Devon coast. *Warden:* Michael Jones. *Enquiries:* J. Dyke, 8 Rock Avenue, Barnstaple, Devon. *Accommodation:* 5s. per night. *Travel:* boat to Bideford; M.V. *Lindy Gannet* from Bideford Quay (50s. return) or Campbell Steamer from Bideford Pier (45s. return).

Weymouth Grounds, Slimbridge, Gloucestershire (Headquarters of the Wildfowl Trust). *Hon. Secretary:* Peter Scott. *Assistant Director (Research):* Dr. G. V. T. Matthews. *Enquiries:* Bookings to Weymouth, Wildfowl Trust, Slimbridge, Gloucestershire.

Weymouth Bird Observatory and Field Centre, Dorset. *Warden:* Frank Clifton, Portland Bird Observatory, Old Lower Light, Portland, Dorset. *Enquiries* to warden. *Accommodation:* 10s. per night including evening meal, 6s. per night when meal not supplied. *Travel:* train to Weymouth; bus to Portland Bill.

Weymouth Bird Observatory, Isles of Scilly. *Enquiries:* J. L. F. Parslow, c/o The Edward Grey Institute, Botanic Garden, Oxford. *Accommodation:* 4s. 6d. per night. *Travel:* R.M.V. *Scillonian* from Plymouth to St. Mary's (37s. 6d. return), or by air from London (Gatwick), Plymouth or Exeter to St. Mary's; launch from St. Mary's to St. Agnes (4s.).

Weymouth Bay Bird Observatory, Kent. *Enquiries:* D. M. Batchelor, No. 1 Bungalow, Old Farm, Sandwich Bay, Kent. *Accommodation:* 5s. per night. *Travel:* train to Sandwich; bus to Sandwich Bay (2 miles).

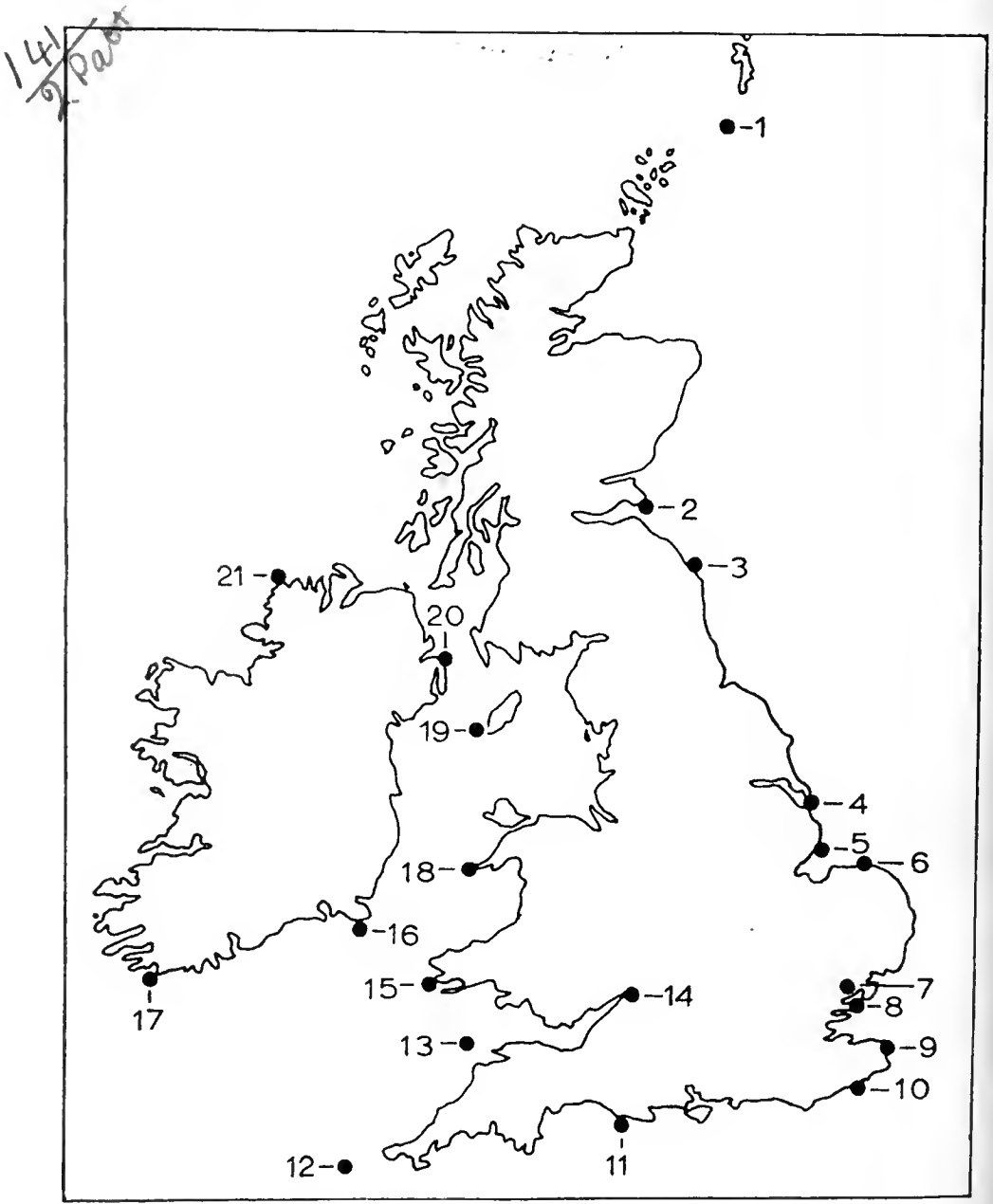
Weymouth Bird Observatory, Pembrokeshire. *Warden:* M. P. Harris. *Enquiries:* The Warden, Weymouth Field Centre, Haverfordwest, Pembrokeshire. *Accommodation:* £8 per week (including board); amateurs £7 10s. *Travel:* train to Haverfordwest; car and boat to island (20s. return).

Weymouth Bird Observatory, Yorkshire. *Warden:* to be appointed. *Enquiries:* J. K. Fenton, Moor House, Woodhead, Burley-in-Wharfedale, Ilkley, Yorkshire. *Accommodation:* 5s. per night (4s. for U. members). *Travel:* train to Hull or Patrington; then bus or taxi to Kilnsea.

(continued overleaf)

Tory Island Bird Observatory, Co. Donegal. Enquiries: R. G. Pettitt, St. Mary Magdalene's Bennett Street, Chiswick, London, W.4. Accommodation: 20s. per week. Travel: train to Londonderry or Strabane; bus to Magheroughy; boat to island (20s. return).

In addition to the above observatories, representatives from each of which form the Bird Observatories Committee, there are several which have not yet applied for formal recognition. These include Walney (Lancashire) and Walberswick (Suffolk). Enquiries concerning such stations may be made through the Ringing Officer, Bird-Ringing Committee, Beech Grove, Tring, Hertfordshire.



Map to show positions of bird observatories and two other ringing localities (Farne Islands and Abberton Reservoir) whose co-ordinates are omitted from the body of the 'Report on bird-ringing'

- | | | | |
|-------------------|----------------|---------------|-----------------|
| 1 Fair Isle | 6 Cley | 11 Portland | 16 Great Saltee |
| 2 Isle of May | 7 Abberton | 12 St. Agnes | 17 Cape Clear |
| 3 Farne Islands | 8 Bradwell | 13 Lundy | 18 Bardsey |
| 4 Spurn Point | 9 Sandwich Bay | 14 Slimbridge | 19 Calf of Man |
| 5 Gibraltar Point | 10 Dungeness | 15 Skokholm | 20 Copeland |
| | 21 Tory Island | | |



LIST OF ILLUSTRATIONS

	PAGE
	Hen Harrier (<i>Circus cyaneus</i>), Argyll (A. Winspear Cundall); and Whooper Swan (<i>Cygnus cygnus</i>), Ayrshire (William S. Paton) <i>facing</i> 176
Plates 35-38	Spoonbills (<i>Platalea leucorodia</i>), at nest, in flight, and in reeds, Netherlands and Hungary (Guy B. Farrar and Eric Hosking) <i>facing</i> 214
Plates 39-42	Glaucous Gulls (<i>Larus hyperboreus</i>), swallowing Eider's egg, in flight, party by tundra pool, calling, and immature eating corpse of adult, Spitsbergen (W. Puchalski) <i>facing</i> 252
Plate 43	Tawny Pipit (<i>Anthus campestris</i>), adult perched on rock, Sweden (P. O. Swanberg) <i>facing</i> 288
Plate 44	Upper: Richard's Pipit (<i>Anthus novaeseelandiae</i>), adult at nest, Malaya (F. G. H. Allen) Lower: Tawny Pipit (<i>Anthus campestris</i>), adult at nest, Sweden (P. O. Swanberg)
Plate 45	Richard's Pipit (<i>Anthus novaeseelandiae</i>), adult in flight, Malaya (F. G. H. Allen)
Plate 46	House Sparrows (<i>Passer domesticus</i>), one typical and two discoloured females (specimens) (British Museum, Natural History) <i>facing</i> 289
Plates 47-53	Typical habitats and birds of the Danube delta, including Glossy Ibis (<i>Plegadis falcinellus</i>), White Pelicans (<i>Pelecanus onocrotalus</i>), Spoonbill (<i>Platalea leucorodia</i>) and Great White Heron (<i>Egretta alba</i>), Rumania, Bulgaria and Hungary (I. J. Ferguson-Lees, Eric Hosking and Zoltán Tildy) <i>facing</i> 324
Plate 54	Parts of Bookham Common, Surrey (Geoffrey Beven) <i>facing</i> 325
Plate 55	Crane (<i>Megalornis grus</i>), female at nest, Norway (M. D. England) <i>facing</i> 345
Plates 56-59	Cranes (<i>Megalornis grus</i>), male and female at nest, and habitat, Norway (M. D. England) <i>facing</i> 368
Plate 60	The late Stuart Smith (1906-1963), with Willow Warbler and stuffed Cuckoo (Eric Hosking) <i>facing</i> 392
Plate 61	Houbara Bustard (<i>Oblamydotis undulata</i>), Suffolk (Eric Hosking) <i>facing</i> 412
Plates 62-63	Red-rumped Swallows (<i>Hirundo daurica</i>), entering and leaving nest, Portugal (M. D. England)
Plate 64	Radde's Warbler (<i>Phylloscopus schwarzi</i>), in hand and showing wing formula, Kent (G. R. Shannon) <i>facing</i> 413
Plates 65-72	Black-winged Kites (<i>Elanus caeruleus</i>), male and female at and near nest, nest and eggs, and habitat, Portugal (M. D. England and A. N. H. Peach) <i>facing</i> 452

141 1121

