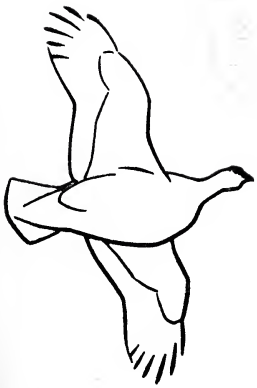
British Birds

An illustrated
monthly journal



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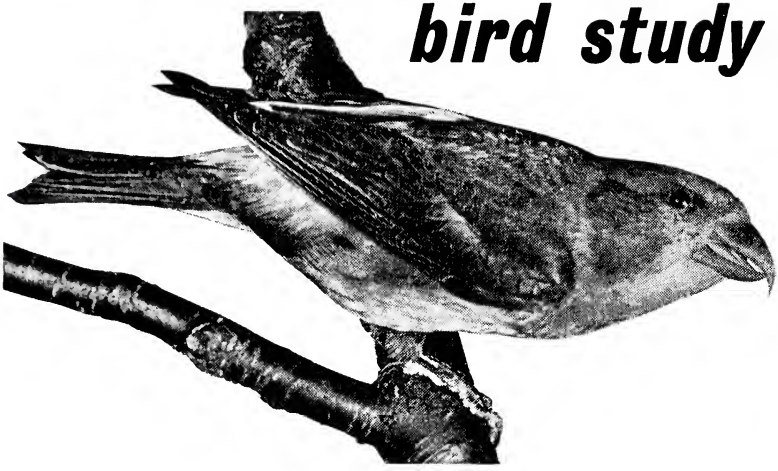

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Volume 62 Number 1 January 1969

British Birds

Editorial

When the British Trust for Ornithology was founded 37 years ago, one of its main aims was the encouragement of co-operative research by amateur ornithologists. This far-sighted move was made at a time when amateurs were few (the Trust's initial membership was 165) and the professional contribution extremely small. Now the Trust has a membership of over 4,200 and a professional staff which includes 14 ornithologists; there are probably more than a hundred other professionals ranging from university research workers to observatory wardens and many other amateurs take part in co-operative enquiries organised by such bodies as the Wildfowl Trust and the Seabird Group or contribute observations to county reports. The vision of the pioneers has been justified and the thousands who now watch birds in this country combine their enjoyment with an essential contribution to the growth of scientific knowledge. Yet there are two main weaknesses in the present position.

First, the sheer volume of data aggravates the old problem of delays in analysing the results. Thanks to the admirable network of local societies with their annual reports, Britain probably has more information about its avifauna than any other country in the world. Yet almost a quarter of a century elapsed before the pioneer 19-page analysis of distributional changes made by W. B. Alexander and Dr David Lack in 1944 (*Brit. Birds,* 38: 42-45, 62-69, 82-88) was brought up to date and greatly enlarged by the much more precise information available in the stimulating 181-page survey by J. L. F. Parslow completed in 1967 and 1968 (*Brit. Birds,* 60: 2-47, 97-123, 177-202, 261-285, 396-404, 493-508; 61: 49-64, 241-255)—and then only thanks to the generous financial backing of the Nature Conservancy. The British Trust for Ornithology's Ringing Scheme has a record of growth and efficient administration second to none, but its overworked staff have been constantly frustrated in their efforts to provide full analyses of the results available.

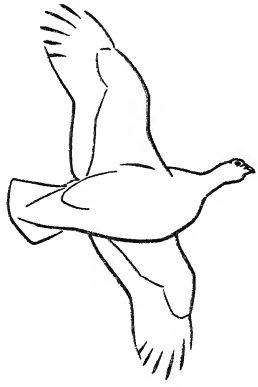
Critics of the enjoyable sport of spotting rare birds have complained that it provides little of scientific value, not least because few attempts have been made to analyse the data so as to yield significant results. Since the Rarities Committee was set up in 1958, however, its annual 'Report on rare birds . . . ' has developed to the stage where interesting patterns are beginning to emerge and some of these have received preliminary discussion in the individual species comments. Now this analysis of the patterns of rare and scarce migrants is being taken a stage further by the recently announced work of Dr J. T. R. Sharrock (*Brit. Birds,* 61: 470-471) who, beginning in spring 1969, will be publishing in *British Birds* a series of short papers examining the occurrences, during the ten years 1958-67, of 15 species of scarce migrants as well as seven of the Palearctic species and all the Nearctic waders and passerines on the Rarities Committee's list.

Secondly, although more and more observers are joining co-operative enquiries, the number of amateurs who write papers on their own studies is probably declining. This may be partly due to the fact that since the 1939-45 war an increasing number of amateurs have joined the professional ranks and partly because, with this growth in professionalism, standards have inevitably become much higher—so much so that in some fields, such as bird behaviour where amateurs of the calibre of Eliot Howard and J. P. Burkitt once made major contributions, it is almost impossible now for non-professionals to keep pace with the new developments and even the new vocabularies. Some editors of local reports do not do enough to encourage original papers, but others seek them in vain. *British Birds* has a long tradition of fostering the contributions of amateurs and we would welcome more from them than we now receive. Such contributions need not be long, ponderous or statistical to merit publication.

Co-operative enquiries benefit from the enthusiasm and the geographical spread of amateurs, and they provide information that cannot be obtained from professional sources. They not only make major contributions to scientific knowledge, but more and more are becoming powerful aids to conservation. This was shown most strikingly in the survey of Peregrines *Falco peregrinus* carried out for the British Trust for Ornithology by Dr D. A. Ratcliffe in 1961-62 (*Bird Study,* 10: 56-90 with 1963-64 and 1965-66 additions in 12: 66-82 and 14: 238-246); this demonstrated, for the first time anywhere, a startling decline in the population of one species linked with the increasing use of organochlorine pesticides, and was followed by major restrictions on these chemicals. The Common Birds Census of the Trust, launched soon afterwards, provides not only an index of fluctuations in farmland species which could alert attention to new environmental contaminations, but is increasingly being used as an aid to the scientific management of reserves. In this issue we are now publishing the results of the

enquiry organised by the Seabird Group into the status of the Little Tern *Sterna albifrons,* a species which is menaced not by contamination but by an ever-growing and increasingly mobile human population, and one which is unlikely to survive except where direct protection is given; this report is now being studied urgently by the Royal Society for the Protection of Birds and the County Naturalists' Trusts to see how existing measures can be strengthened and extended.

In 1969 the amateur ornithological scene in Britain will be dominated by the two largest and most ambitious co-operative enquiries so far launched. The B.T.O. Atlas project enters on its second year with a full-time organiser; and the Seabird Group, after preliminary surveys in 1967 and 1968, is attempting an assessment of all our seabirds with Operation Seafarer. Both projects will add greatly to our existing knowledge and also provide a base line for conservationists seeking to measure and combat the increasing threats to our bird-life. It is essential that bird-watchers give these projects the highest priority in the coming spring and summer, at home or on holiday, if they are to be fully successful.



Changes in style

This issue sees a number of changes in *British Birds* with the aim of modernising the style last altered in January 1960 and we hope that these will be welcomed. One innovation is the adoption of the widespread practice of giving authors' addresses at the ends of main contributions. Several people have contributed ideas, but we wish particularly to acknowledge the hard work and expert advice of Frank Collieson and Robert Gillmor. The latter has also produced a simple flying outline of a Red Grouse to replace the cover emblem which has stood resolute in two versions for 61 years. The Red Grouse was originally chosen because it was the only British bird species not indigenous anywhere else, but nowadays it is regarded as conspecific with the northern Holarctic Willow Grouse and so the flying emblem may symbolise the less insular attitudes of ornithology today.

Status of Little Terns in Great Britain and Ireland in 1967

R. K. Norman and D. R. Saunders

INTRODUCTION

For many years there has been growing concern for the safety of Little Terns *Sterna albifrons* nesting in Great Britain and Ireland. Recent coastal county avifaunas have noted a decrease and in some places the complete extermination of the breeding population. Such statements as 'Year by year all reports speak of disturbance and poor nesting results' (Payne 1962), 'Declined as a breeding species largely owing to human interference' (des Forges and Harber 1963) or 'Site now destroyed by building of a power station' (Heathcote, Griffin and Salmon 1967) all speak for themselves. Parslow (1967) recorded that a decline during the 19th century was followed by a period of increase in the early years of the 20th century, but that since the early 1930's the species had steadily decreased wherever its colonies were liable to disturbance, except for a brief period during the 1939-45 war when some were in prohibited zones on beaches; as a result of this decrease and in some cases disappearance, 'its numbers in several counties appear to be down to about one-half of those 30-40 years ago'.

Because of the increasing pressures on the nesting sites of Little Terns the Seabird Group organised a survey in 1967, supported by the British Trust for Ornithology and the Royal Society for the Protection of Birds. The aim was to determine the present distribution and status in Great Britain and Ireland. Those taking part were asked also to contribute information on the nest site, past history of the colony, hazards from disturbance and predation, and protection measures. This paper sets out the results of the survey.

METHODS

A standard record card was produced and observers were asked to complete this after visiting the colony at the weekend 17th/18th June 1967, or on the nearest possible date. As the number of pairs and colonies is relatively small, and in order to keep disturbance to a minimum, the enquiry was conducted semi-privately. In other words, individual observers were asked to visit particular colonies and no general appeals for assistance were published. This worked very well, all the known colonies in England, Wales and Scotland being reported. In Ireland, however, due to a lack of observers, barely half of the known colonies were covered.

RESULTS

Except in the cases of well-known colonies, the actual sites are not disclosed here for obvious reasons.

ENGLAND

Dorset One colony (or rather a series of colonies) with some 200 pairs scattered along the nine miles of the Chesil Bank. Infrequently visited in the past so that little is known of its history. Because of the difficulty of the terrain there is little disturbance except at either end and at the isolated crossing points used by fishermen and beachcombers. The main danger seems to be disturbance associated with the proposed nuclear power station which could easily alter the area's whole ecology.

Hampshire Seven colonies (though some are very close) with 59 pairs. All are protected by wardens employed by the Hampshire and Isle of Wight Naturalists' Trust: as a result, disturbance has greatly decreased since 1962. High tides are a serious threat at three colonies.

Isle of Wight One colony with five pairs.

Sussex Six colonies with 102 pairs. Two of these are now part of Local Nature Reserves, and human disturbance has decreased. At the other four sites increasing human disturbance was noted, but not considered excessive at present.

Kent Five colonies in the Dungeness area with a population of 64 pairs. At four of these there is little human disturbance, though there is some danger from Foxes *Vulpes vulpes;* at the fifth site, where only two pairs nest (surprisingly both fledged young), disturbance is at a very high level due to road making and shingle extraction. At a further four colonies 28 pairs attempted to nest, but all were subjected to such human pressures that few young were reared. High tides are a danger at three colonies; indeed, at one site the shingle spit was washed completely away. A further site normally occupied (numbers ranging from three to 24 pairs since 1949), was deserted in 1967, but reoccupied by 7-8 pairs in 1968.

Essex Seven colonies with 152 pairs. All suffer a high degree of human interference; at Foulness (70 pairs), where ornithologists find access difficult, the site is regularly trampled by yachtsmen and fishermen who land on the beach. One colony is now part of a Local Nature Reserve, while another has part-time wardens and warning signs erected by the Essex Bird Watching and Preservation Society.

Suffolk Nine colonies with 71 pairs. Once again a gradual decrease since the 1939-45 war is coupled with an increase in human disturbance on the beaches. The two largest colonies each contain 15 pairs; bad weather kept people from the beaches during the incubation period and this played an important part in the successful fledging of 25 young from these two sites.

Norfolk Eleven colonies with some 304 pairs; a further site which is irregularly used may have had two pairs. Blakeney Point (145 pairs) is the second largest colony in the country and, being fenced off, is relatively undisturbed. Three of the other colonies also receive some degree of protection. The remainder are subject to varying but increasing human pressures, including daily helicopter patrols and flights to off-shore drilling rigs.

Lincolnshire Five colonies with 32 pairs; a site with twelve pairs in 1966 was deserted in 1967 for no apparent reason, but some 40 pairs bred in 1968. At the Gibraltar Point Nature Reserve both of the colonies have been enclosed since 1965 to prevent trampling by visitors to the beach, but these efforts have largely been nullified by the depredations of Foxes, so that in 1967 only three young fledged from 18 pairs. Further north a striking example of tenacity to nest site is shown by the five pairs which struggle annually to breed at a well-known holiday resort: the nests, needless to say, are soon trodden on or obliterated by the wheels of the beach ferry.

Yorkshire Two colonies with nine pairs. Six pairs nested at a site free of human disturbance, but Foxes prevented any young being reared. At the other site three pairs attempted to nest in the face of increasing human pressures.

Durham One colony with four pairs.

Northumberland One colony with five pairs and another possibly with two; a suggestion of a third site also, but no record received.

Cumberland Four colonies with 41 pairs. One colony in a protected area, though even this suffers some disturbance. Human pressures and shingle removal have caused a decline at the other sites.

Lancashire Five colonies with 18 pairs. Special protection at one site enabled two young to fledge from four pairs. At another, however, only three young are known to have fledged during the last 13 years: here human disturbance is coupled with depredations by Brown Rats *Rattus norvegious,* Weasels *Mustela nivalis* and Little Owls *Athene noctua.*

ISLE OF MAN

One colony with 14 pairs is now considerably disturbed. There may also be several other sites used irregularly by scattered pairs.

WALES

Flint Two colonies with 13 pairs. Nine young were reared at one of these, though close to a caravan site and much disturbed.

Anglesey Four colonies with a total of twelve pairs, though at one site 26 birds had been seen earlier in the season before some nests were destroyed by high tides. Two colonies occupied until 1966 were deserted: both had been subjected to varying forms of disturbance, including cars on the beaches and use as helicopter training areas.

Caernarvonshire One colony of seven pairs. This is an old-established site which in 1911 contained some 50 pairs; the decrease has taken place even though access involves a three-mile walk or the fording of a river.

Merioneth One colony with three pairs. Until very recently there have been about ten pairs here and increased human disturbance since the War Department left the area in 1965 is considered to be the reason for the decline.

SCOTLAND

East Lothian Two colonies with 19 pairs. Much human disturbance and some coastal erosion have caused a decrease, but protection by notices and wardens at one of the sites resulted in five young fledging from three pairs.

Fife Three colonies with seven pairs, though early nests at one site where over 20 birds had been seen were washed away. High tides and wind-blown sand affect success, while human disturbance continues to increase in spite of wardens and notices.

Angus One colony with some 30 pairs. Three others have recently been deserted; this has been due partly to human disturbance, but also to predation by gulls *Larus spp.* and crows *Corvus spp.*

Kincardineshire One colony with 20 pairs. Only light disturbance and about 30 young fledged.

Aberdeenshire Three colonies with eleven nests from which ten young fledged. One colony has decreased in recent years from a maximum of 64 pairs in 1958; this, which is now part of a nature reserve, was the only site where the observer had recorded a decrease in human disturbance and yet this was still sufficient to affect the breeding success.

Morayshire One colony with three pairs where 40 pairs nested in 1958. Disturbance seems to be restricted to egg-collecting, though this is primarily aimed at gulls and the larger terns.

Sutherland One colony with a single pair whose nest was destroyed by a spring tide; the maximum here in recent years has been six pairs. Constant disturbance by holidaymakers is blamed for the decrease.

Caithness Two colonies with five pairs where human disturbance is considered negligible.

Ross-shire Two colonies with eight and three pairs, these having remained stable for many years. Virtually no disturbance at present, though high tides are a danger at one site.

Inverness Five colonies with 14 pairs. Human disturbance considered insignificant, but high tides at one site and avian predators a menace.

Argyll Four colonies with 41 pairs. Little or no disturbance, but wind-blown sand a potential hazard at one site.

Ayrshire One colony with seven or eight pairs. Despite some disturbance from egg-collecting this has increased recently from two, three or four pairs.

Wigtownshire Two colonies with one pair each. Both were unsuccessful.

IRELAND

Louth One colony known, but no recent information.

Dublin One colony with three pairs in 1966.

Wicklow Four colonies, but reports on only two, both single pairs. In each case human disturbance has increased and at one of the two sites this is probably the cause of a decline from 15 pairs in 1958. The most recent counts at the third and fourth colonies were six and five pairs in 1958 and 1961 respectively.

Wexford Ten colonies, with 37 pairs at the seven reported; one of these had decreased from about 100 pairs in 1961 to twelve. For the three colonies not reported there was no recent information in one case, while the others held five and 15 pairs in 1962 and 1963 respectively.

Cork Two colonies with eleven pairs, both heavily disturbed.

Kerry One colony with eleven pairs. The first breeding record for the county.

Limerick Possibly one colony, but no information.

Galway Three colonies, with 13 pairs at one. No recent information for the other two.

Mayo Seven colonies (though two doubtful), with 13 pairs at the two reported. In four cases there is no recent information, while at the last 'a few' were recorded in 1966.

Sligo Two colonies, but neither reported. There is no information for one, while ten pairs were noted at the other in 1955.

Donegal Nine colonies (one doubtful), but none reported. All but three of these have been recorded since 1960, the largest containing 20 pairs in 1961.

Derry Two colonies with 20 pairs. One with twelve pairs is now protected, while the other with eight pairs has not been recorded previously.

DISTRIBUTION AND SIZE OF COLONIES

The reported population of Little Terns in Great Britain and Ireland in 1967 was 1,425 pairs (table 1). Even allowing for those colonies not visited, mainly in Ireland, the total cannot have been in excess of 1,600 pairs. Between two-thirds and three-quarters of these are in the south-

Table 1. Number of colonies and pairs of Little Terns *Sterna albifrons* in Great Britain and Ireland in 1967

The total for Ireland is low because of the lack of observers; indeed, of the 43 colonies known there, only 17 were visited in 1967. Nevertheless, Oscar J. Merne (*in litt.*) estimates the total population to be no more than 250 pairs

	Total counties	Total colonies	Total pairs
England	14	69	1,094
Isle of Man	1	1	14
Wales	4	8	35
Scotland	13	28	172
Ireland	12	43	110
TOTALS	44	149	1,425

eastern counties from Dorset to Lincolnshire. There are few in the northern counties of England and only small populations in Wales, Scotland and Ireland (fig. 1). Numbers in Wales are dangerously low and it seems that urgent action is required before the Little Tern ceases to breed there.

Most of the colonies are small (table 2) and even the largest, that on the Chesil Bank, is really comprised of a number of smaller units. Some of those colonies now struggling with a handful of pairs were once thriving communities and, unless some protection can be given, they will soon cease to exist.

NEST SITE

Witherby *et al.* (1938-41) noted that on the Continent Little Terns frequently nest away from the sea on suitable river banks and on the shores of inland lakes. In Great Britain and Ireland, however, this species seems to be virtually confined to sea shores and instances of inland breeding are rare (e.g. Hudson and Pyman 1968).

The favoured nest site seems to be an open beach where there is usually, though not always, some shingle. A few colonies were recorded on pure sand, but most seemed to prefer the presence of shingle or

Table 2. Sizes of colonies of Little Terns *Sterna albifrons* in Great Britain and Ireland in 1967

Though 43 Irish colonies are known, only 17 visited in 1967 are detailed here

	Total colonies	NUMBER OF PAIRS							
		1-5	6-10	11-15	16-25	26-50	51-100	101-150	151+
England	70	31	13	13	4	5	2	1	1
Wales	8	6	2	—	—	—	—	—	—
Scotland	28	20	3	1	3	1	—	—	—
Ireland	43	7	6	4	—	—	—	—	—
TOTALS	149	64	24	18	7	6	2	1	1

Fig. 1. Status by counties of Little Terns *Sterna albifrons* in Britain and Ireland in 1967

broken shell. Several sites were noted on sandbanks or small islands in river estuaries. There is usually little vegetation and at the majority of colonies none at all.

Three colonies were not situated on beaches, though were very close to the shore line. One (which unfortunately can only be temporary) was in Kent where dredging material was being pumped in order to raise the level of an area for development. A second was in Scotland where a thriving colony of some 21 pairs nests on a civil airfield on the crumbled foundations of wartime Royal Air Force hangars. The third was in Co. Wexford where a single pair nested on the shore of a coastal lagoon.

The majority of colonies are very close to the high water mark, both

Table 3. Heights above high water and distances inland of colonies of Little Terns *Sterna albifrons* in Great Britain and Ireland in 1967

	FEET ABOVE HIGH WATER/YARDS INLAND				
	0-5	6-10	11-20	21-30	31+
Number of colonies at each height above high water	64	17	6	2	—
Number of colonies at each distance inland	27	19	14	15	20

in terms of height and distance (table 3). It is not surprising, therefore, that high tides during inclement weather are a danger at some sites, or that other sites are subject to the effects of coastal erosion. The maximum distance from the sea is at the Scottish airfield mentioned above and even that is only 300 yards inland.

HAZARDS TO COLONIES

The dangers confronting Little Terns nesting along our shores are numerous, but it is not surprising that, in the middle of Britain's playground, human disturbance is the most potent factor of all (table 4). This may take many forms, from casual picnicking (by people who barely notice the birds as they play cricket or sun-bathe in the midst of the colony) to deliberate egg-collecting and vandalism. People landing from boats are a problem even when the colony is wardened from the landward side. Fishermen quietly sitting at the edge of the sea may

Table 4. Disturbance and predation at colonies of Little Terns *Sterna albifrons* in Great Britain and Ireland in 1967

	NUMBER OF COLONIES AFFECTED			
	England	Wales	Scotland	Ireland
Human disturbance	57	6	10	10
High tides	12	1	5	—
Vehicles on beach	2	2	2	—
Helicopters	4	1	—	—
Coastal erosion	3	—	1	—
Shingle removal	2	—	—	2
Wind-blown sand	1	—	3	—
Aircraft	2	—	—	—
Horses	2	—	—	—
Foxes *Vulpes vulpes*	5	—	—	—
Brown Rat *Rattus norvegicus*	1	—	—	—
Weasel *Mustela nivalis*	1	—	—	—
Kestrel *Falco tinnunculus*	1	—	—	—
Little Owl *Athene noctua*	1	—	—	—
Gull *Larus sp.*	—	—	1	—
Crow *Corvus sp.*	—	—	1	—

keep the terns off their nests for hours at a stretch (this can happen in foul weather as well as fine, for the angler is a hardy beast). Ornithologists can be a problem too and, even when they go about their activities correctly, they may attract others less careful. At two sites an increase in breeding success over previous years was considered due to an absence of people from the beach during wet and cold weather in May.

High spring tides are a hazard, particularly as the eggs of a whole colony may be washed away. Replacement clutches after such a disaster are more open to human disturbance than those laid early in the season.

Aircraft were noted as causing disturbance at two colonies, but at several others, though passing close, were not considered a menace. There is no doubt, however, about the effect of helicopters. Whirling low along the shore they create utter confusion among the nesting birds. The East Anglian coast, where coastal patrols and flights to off-shore drilling rigs are now very much a permanent feature, seems particularly open to this hazard.

Mammal predators were observed rather infrequently, and then chiefly from wardened colonies where such less noticeable factors are more likely to be observed. The chief menace is the Fox, which at several colonies has completely nullified protection measures against human intruders.

PROTECTION MEASURES

In 1967 some of the Little Tern colonies were already receiving varying degrees of protection (table 5). A few, such as those on the Norfolk coast, have been wardened for many years, though of course not specifically for this species alone. Unfortunately, because of the nature of their breeding colonies, Little Terns are not easy to protect. Access can rarely be rigidly controlled and reserve establishment is rarely possible. Other methods have therefore to be tried.

In Lincolnshire two colonies have been enclosed by a single strand fence which acts only as a marker; at intervals signs have been erected informing people that terns are nesting and asking them to keep outside the colony. This procedure has also been tried in Hampshire by the Hampshire and Isle of Wight Naturalists' Trust, in Northern Ireland by a local field club, and in a few other areas. In many instances

Table 5. Colonies of Little Terns *Sterna albifrons* receiving a degree of protection in Great Britain and Ireland in 1967

	NUMBER OF COLONIES (TOTAL PAIRS IN BRACKETS)			
	England	Wales	Scotland	Ireland
Protection through wardens	22 (442)	1 (3)	4 (15)	1 (12)
Difficult of access	4 (234)	1 (7)	12 (69)	?

Little Terns nest thinly scattered on the beach and it would be impracticable to fence in the whole colony. Even so, it is often possible to provide protection for a part of the colony and in time other pairs may move into this quieter section.

In some counties, such as Norfolk and Essex, part-time wardens are provided. This does have a measure of success, but the results are often disappointing. When the warden is absent the egg-thieves descend or a careless picnic party destroys in a few minutes a season's labours. To receive proper protection, chosen Little Tern colonies require the attentions of full-time wardens for the whole of their brief breeding season.

In Sussex the various protection measures have received the sympathetic help of the River Board at one site and have generally been very much a joint effort. There too, the Sussex Naturalists' Trust has worked in close co-operation with the Sussex Ornithological Society and a local Wildfowlers' Association. It seems that only by enlisting the aid of a wide range of organisations will success be achieved.

The Royal Society for the Protection of Birds and the Society for the Promotion of Nature Reserves have been considering ways in which protection can be extended to further Little Tern colonies. Experiments have been carried out with posters and simple fences and it is hoped to extend the scheme considerably in 1969.

If the general public can be informed of the plight of the Little Tern, and what they can do to help, then protection measures will really begin to work. This means enlisting the sympathy and aid of all who use our beaches, whether they be holiday makers from a caravan camp near-by, anglers from a local town or yachtsmen from a club up-river. The more people who know why it is necessary to keep outside a particular area for this short period, the better. Only by educating the general public is there a chance that Little Terns will continue to nest on many of our beaches. More colonies are certain to vanish, but, if each county sets out in a determined manner to preserve at least some of its Little Terns, it is to be hoped that those which are protected will begin to spread. Action is needed now. The results of the 1967 enquiry clearly show that we cannot afford to delay any longer.

ACKNOWLEDGEMENTS

We are greatly indebted to the many observers who contributed to the enquiry, and who answered our further questions concerning conservation measures being undertaken at some colonies. To M. J. Everett, Oscar J. Merne and E. I. S. Rees we express particular thanks for collecting information from Scotland, Ireland and Wales respectively. We are exremely grateful to the Royal Society for the Protection of Birds, who kindly provided a grant enabling the enquiry to be carried out. Our sincere thanks are also due to Dr W. R. P. Bourne, Stanley Cramp, I. J. Ferguson-Lees and David Lea, who provided much helpful criticism of the earlier drafts of this paper.

SUMMARY

Concern for the present status of the Little Tern *Sterna albifrons* in Great Britain and Ireland prompted the Seabird Group to organise an enquiry in 1967. The results gave a total population of not more than 1,600 pairs, mostly nesting in south-east England. The vast majority of colonies are small; in fact, in 1967 just over 50% contained five pairs or less. The trend of the population during the past few years has been one of decrease. Most Little Terns nest on open beaches, and in 1967 only three colonies were recorded in other situations.

Various forms of human disturbance are by far the biggest hazards to colonies, but other dangers include high tides, helicopters and sand removal. Of the predators recorded, the Fox *Vulpes vulpes* is easily the most serious. Examples are given of the various protection measures being tried at some colonies.

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Recoveries in Great Britain and Ireland of birds ringed abroad

Robert Hudson

This list is based on 632 recoveries of 69 species of foreign-ringed birds reported during 1967; these are tabulated on page 14. Only one new species was added in that year, but it was a striking one: a Hawfinch *Coccothraustes coccothraustes* ringed in south-east Germany and recovered in, of all improbable places, Shetland.

Several other notable 'firsts' deserve special mention. A good series of Pochard *Aythya ferina* included one from Switzerland recaptured in Essex. An Oystercatcher *Haematopus ostralegus* found dead in Norfolk had been ringed at Kandalaksha, Russia, by far the most distant origin yet for a bird of this species moving to or from the British Isles. An Icelandic Short-eared Owl *Asio flammeus* was recovered on the Solway Firth. A Sand Martin *Riparia riparia* caught in Northamptonshire had been ringed in Denmark and was our first from that country. An above-average quota of Siskin *Carduelis spinus* recoveries included one from Kaliningrad in the Soviet Baltic.

Other particularly interesting 1967 recoveries were six Brent Geese *Branta bernicla* from Denmark (we get few recoveries of this species); a Dutch Ruff *Philomachus pugnax* found dead as far west as Pembrokeshire; a Little Gull *Larus minutus* from Finland; and a Collared Dove *Streptopelia decaocto* from south-west Germany. A Woodpigeon *Columba palumbus* ringed as a migrant on Heligoland on the very early date of 30th August was shot five years later on its nest in Norfolk; and a Whinchat *Saxicola rubetra* from Heligoland was found six days later in Kent. Finally, an above-average number of warbler recoveries included a Blackcap *Sylvia atricapilla* ringed in the Netherlands in October and found off the coast of Berwickshire, well to the *north-west,* just 13 days later.

Table 1. Foreign-ringed birds reported in Great Britain and Ireland in 1967 and the totals for these species during 1906-67

	1967	Total		1967	Total
Storm Petrel	1	2	Arctic Tern	1	16
Gannet	1	16	Sandwich Tern	1	19
Heron	2	229	Woodpigeon	1	5
Mallard	6	358	Collared Dove	4	14
Teal	33	1,533	Short-eared Owl	1	4
Wigeon	6	202	Swallow	19	57
Pintail	5	71	Sand Martin	32	144
Shoveler	3	72	Rook	1	47
Tufted Duck	6	88	Jackdaw	2	12
Pochard	9	40	Fieldfare	2	80
Shelduck	4	89	Redwing	2	82
White-fronted Goose	17	230	Blackbird	17	326
Pink-footed Goose	3	2,024	Whinchat	1	2
Brent Goose	6	11	Redstart	1	6
Barnacle Goose	41	228	Robin	2	18
Whooper Swan	3	14	Reed Warbler	1	5
Moorhen	8	52	Sedge Warbler	1	4
Oystercatcher	5	55	Blackcap	1	6
Lapwing	1	278	Garden Warbler	2	6
Ringed Plover	1	19	Willow Warbler	1	5
Golden Plover	1	91	Chiffchaff	1	3
Snipe	4	127	Goldcrest	1	2
Woodcock	1	67	Spotted Flycatcher	1	7
Curlew	8	175	Pied/White Wagtail	1	10
Redshank	1	25	Yellow Wagtail ssp.	1	4
Knot	4	59	Starling	61	1,961
Dunlin	93	507	Hawfinch	1	1
Ruff	1	3	Greenfinch	3	24
Great Black-backed Gull	6	127	Goldfinch	3	18
Lesser Black-backed Gull	1	29	Siskin	5	17
Herring Gull	3	93	Linnet	9	30
Common Gull	15	812	Chaffinch	31	242
Little Gull	1	4	Brambling	7	32
Black-headed Gull	110	2,108	Tree Sparrow	2	4
Common Tern	2	29			

he following species did not provide foreign-ringed recoveries in 1967, though they have done in previous years: Red-throated Diver (2), Great Crested Grebe (1), Slavonian Grebe (1), Little rebe (1), Manx Shearwater (2), Fulmar (1), Cormorant (7), Shag (3), Bittern (7), White Stork (2), oonbill (3), Garganey (12), Gadwall (18), American Wigeon (1), Scaup (64), Mandarin (2), oldeneye (12), Eider (1), Velvet Scoter (2), Common Scoter (2), Red-breasted Merganser (7), oosander (3), Grey Lag Goose (25), Bean Goose (2), Mute Swan (3), Bewick's Swan (2), Rough-gged Buzzard (1), Sparrowhawk (14), Marsh Harrier (2), Hen Harrier (2), Montagu's Harrier (1), sprey (8), Hobby (1), Peregrine (8), Merlin (7), Kestrel (15), Water Rail (8), Coot (13), Grey lover (1), Turnstone (21), Jack Snipe (4), Whimbrel (3), Bar-tailed Godwit (13), Common andpiper (1), Spotted Redshank (1), Greenshank (1), Purple Sandpiper (1), Little Stint (3), emminck's Stint (1), Curlew Sandpiper (2), Sanderling (9), Avocet (2), Great Skua (3), Arctic kua (2), Iceland Gull (2), Kittiwake (37), Black Tern (1), Caspian Tern (1), Razorbill (5), Guillemot 4), Black Guillemot (1), Puffin (7), Stock Dove (2), Turtle Dove (3), Cuckoo (1), Long-eared Owl 3), Swift (1), Skylark (6, House Martin (3), Hooded Crow (10), Great Tit (4), Blue Tit (3), Bearded it (9), Song Thrush (52), Wheatear (4), Black Redstart (1), Whitethroat (5), Lesser Whitethroat (1), ied Flycatcher (4), Dunnock (3), Meadow Pipit (4), Rock Pipit (5), Grey Wagtail (2), Waxwing (5), wite (1), Redpoll (5), Bullfinch (1), Reed Bunting (3), and Snow Bunting (1).

elected list of recoveries reported during 1967

he symbols and terms are the same as those used in the 'Report on bird-ringing or 1967' (see page 488 in *Brit. Birds,* 61: 477-523), with the exception that the erm 'juv.' cannot always be relied upon to signify a young bird able to fly freely; wing to lack of unanimity in the various ringing schemes, this term may sometimes ean a chick (= pullus).

Abbreviations used for ringing schemes

A.	Vogeltrekstation Arnhem	*Md.*	Ministry of Agriculture, Madrid
Ås	Statens Viltundersökelser, Ås (Oslo)	*Od.*	Ringmaerkestation, Odense, Denmark
B.	Natural Sciences Institute, Brussels		
Brno	Brno Academy	*P.*	C.R.M.M.O., Paris
C.	Copenhagen Museum	*P.V.*	Stacja Ornitologiczna, Poland
H.	Vogelwarte Helgoland	*R.*	Vogelwarte Radolfzell
Ile.	Vogelwarte Hiddensee	*Rk.*	Reykjavik Museum
Hki.	Helsinki Museum	*S.S.*	Grupo Aranzadi, San Sebastian, Spain
J.	Société Jersiaise		
K.	Vildtbiologisk Station, Kalö, Denmark	*Semp.*	Vogelwarte Sempach, Switzerland
		Stav.	Stavanger Museum
M.	Moscow Ringing Bureau	*St.*	Riksmuseum, Stockholm

Storm Petrel *Hydrobates pelagicus*

B.	ad.	22.7.66	Burhou: 49°44′N. 2°15′W. (Alderney) **Channel Islands**
P2051	v	27.8.67	Skokholm: 51°42′N. 5°16′W. (Pembroke)

Gannet *Sula bassana*

B.	pull.	31.7.64	Les Etacs: 49°42′N. 2°15′W. (Alderney) **Channel Islands**
F1936	×	(27.6.67)	Worthing: 50°48′N. 0°23′W. (Sussex)

Heron *Ardea cinerea*

Stav.	pull.	27.5.65	Rennesöy: 59°07′N. 5°38′E. (Rogaland) **Norway**
12057	×	*c.*20.3.67	*near* Stornoway: 58°10′N. 6°25′W., Outer Hebrides
Od.	pull.	20.5.65	*near* Otterup: 55°30′N. 10°25′E. (Fyn) **Denmark**
J278	×	23.10.67	Warnford: 51°00′N. 1°06′W. (Hampshire)

Mallard *Anas platyrhynchos*

M.	pull.	30.5.65	Lake Engure: 57°17′N. 23°07′E., **Latvian S.S.R.**
Ж*17288*	+	19.10.66	Kelling: 52°56′N. 1°07′E. (Norfolk)

Teal *Anas crecca*

M.	ad. ♂	26.7.66	Kandalaksha Bay: 66°32′N. 33°25′E. (Murmansk) **U.S.S.R.**
E622338	+	1.1.67	*near* Tipperary: 52°30′N. 8°10′W.

Wigeon *Anas penelope*

M.	ad. ♀	29.6.66	*near* Kandalaksha: 67°02′N. 32°35′E. (Murmansk) **U.S.S.R.**
E622352	/?/	21.10.67	Eday: 59°11′N. 2°47′W. (Orkney)
Hki.	juv.	17.7.65	*near* Vaala: 64°33′N. 27°02′E. (Oulu) **Finland**
H55304	+	24.11.65	Frampton-on-Severn: 51°46′N. 2°22′W. (Gloucester)

Pintail *Anas acuta*

M.	pull.	29.5.67	Lake Engure: 57°17′N. 23°07′E., **Latvian S.S.R.**
C116244	+	16.10.67	Neston: 53°18′N. 3°04′W. (Cheshire)

Shoveler *Anas clypeata*

M.	pull.	1.6.65	Lake Engure: 57°17′N. 23°07′E., **Latvian S.S.R.**
Ж22277	v♂	15.7.67	Abberton: 51°50′N. 0°53′E. (Essex)

Tufted Duck *Aythya fuligula*

M.	pull.	21.6.66	Lake Engure: 57°17′N. 23°07′E., **Latvian S.S.R.**
Ж*17783*	+	(9.2.67)	Kirkcaldy: 56°07′N. 3°10′W. (Fife)
Hki.	ad. ♀	12.7.62	Matalakari: 60°07′N. 25°08′E., Helsinki, **Finland**
H43539	+	28.11.67	*near* Chippenham: 51°25′N. 2°08′W. (Wiltshire)
Hki.	ad. ♀	5.7.65	*near* Björköby: 63°25′N. 21°05′E. (Vaasa) **Finland**
H60579	×	31.7.65	Birtley: 55°07′N. 2°12′W. (Northumberland)
A.	pull.	22.7.67	*near* Zandvoort: 52°21′N. 4°32′E. (Noord Holland)
5027126			**Netherlands**
	/?/	11.10.67	Loch Yetholm: 55°33′N. 2°19′W. (Roxburgh)
P.	2yr. ♀	16.3.66	Le Sambuc: 43°30′N. 4°40′E. (Bouches du Rhône) **France**
DA11080	+	28.9.67	Lough Neagh: *c.*54°40′N. 6°20′W. (Antrim)
Md.	f.g. ♂	27.2.65	Coto Doñana: 37°02′N. 6°27′W. (Huelva) **Spain**
E7274	+	21.1.67	Yateley: 51°20′N. 0°49′W. (Surrey)

Pochard *Aythya ferina*

M.	pull.	21.7.66	Lake Engure: 57°17′N. 23°07′E., **Latvian S.S.R.**
Z2430	v♀	7.1.67	Abberton: 51°50′N. 0°53′E. (Essex)
	+	27.10.67	Langenhoe: 51°49′N. 0°59′E. (Essex)
M.	f.g. ♂	1.8.64	*near* Kanevskaya: 46°06′N. 38°58′E. (Krasnodar) **U.S.S.R.**
E6066657	+	28.1.67	Tynan Abbey: 54°20′N. 6°50′W., Keady (Armagh)
Hki.	ad. ♀	15.6.64	*near* Reposaari: 61°35′N. 21°30′E. (Turku & Pori) **Finland**
H47025	+	31.1.66	Bembridge: 50°41′N. 1°05′W., Isle of Wight
Brno	pull.	12.6.66	*near* Bohdaneč: 50°06′N. 15°38′E. (Pardubice) **Czechoslovakia**
2315	+	30.12.67	Latimer: 51°41′N. 0°35′W. (Buckingham)
R.	pull.	12.7.64	Biengarten: 49°40′N. 10°49′E. (Bayern) **Germany**
P14245	+	31.1.66	Loughrea: 53°12′N. 8°34′W. (Galway)
Semp.	ad. ♂	31.1.66	Oberkirch: 47°19′N. 8°07′E. (Luzern) **Switzerland**
Z4388	v	26.4.67	Abberton: 51°50′N. 0°53′E. (Essex)

Pink-footed Goose *Anser fabalis brachyrhynchus*

Rk.	pull.	16.7.53	Thjórsárver: *c.* 64°33′N. 18°47′W., **Iceland**
26755	+	24.1.67	Solway Firth: *c.* 54°55′N. 3°30′W.

The indications are that few of the Pink-footed Geese ringed by the Wildfowl Trust's Icelandic expeditions of 1951 and 1953 are still surviving, but this one lived for 13½ years.

Brent Goose *Branta bernicla*

K.	ad.	13.4.61	Jordsand: 55°01′N. 8°32′E. (Jutland) **Denmark**
305646	×	31.1.63	Northey Island: 51°44′N. 0°44′E. (Essex)
K.	ad.	11.10.61	Jordsand, **Denmark**
306911	+	26.12.61	Helford River: 50°05′N. 5°17′W. (Cornwall)
K.	ad.	22.4.62	Jordsand, **Denmark**
306950	×	16.2.63	Hullbridge: 51°38′N. 0°37′E. (Essex)
K.	ad.	1.5.62	Jordsand, **Denmark**
306984	×	(9.4.63)	West Mersea: 51°46′N. 0°56′E. (Essex)
K.	ad.	24.4.63	Jordsand, **Denmark**
307018	×	7.2.65	Freiston: 52°58′N. 0°05′E., The Wash (Lincoln)
K.	ad. ♂	24.4.63	Jordsand, **Denmark**
307019	×	0.1.65	Frampton Marsh: 52°56′N. 0°04′E. (Lincoln)

Barnacle Goose *Branta leucopsis*

The following are published because of their inland recovery localities:

C.	ad.	28.7.63	Pingels Dal: 71°35′N. 23°05′W. (Scoresbysund) **Greenland**
75260	+	(16.12.66)	Meigle: 56°35′N. 3°10′W. (Perth)
C.	ad.	28.7.63	Pingels Dal, **Greenland**
277192	+	24.1.67	Dunblane: 56°12′N. 3°59′W. (Perth)
C.	ad.	12.7.63	Ørsted Dal: 71°50′N. 23°10′W. (Scoresbysund) **Greenland**
379726	+	13.11.65	Pontrhydfendigaid: 52°17′N. 3°51′W. (Cardigan)
Ás	ad.	20.7.62	Hornsund: *c.*77°00′N. 14°30′E., **Spitsbergen**
20062	v	2.2.63	Caerlaverock: 54°58′N. 3°26′W. (Dumfries)
	v	24.7.63	Hornsund, **Spitsbergen**
	+	(13.10.67)	Aysgarth: 54°17′N. 2°00′W., Askrigg (York)
Ás	ad.	20.7.62	Hornsund, **Spitsbergen**
20332	v	2.2.63	Caerlaverock: 54°58′N. 3°26′W. (Dumfries)
	+	21.12.66	Carham: 55°38′N. 2°18′W. (Northumberland)

Whooper Swan *Cygnus cygnus*

Rk.	(*age?*)	6.8.65	Arnarvatnsheidi: 64°54′N. 20°35′W. (Mýrasýsla) **Iceland**
0216	×	0.5.67	Glendalough: 53°02′N. 6°16′W. (Wicklow)
Rk.	pull.	9.8.63	Arnarvatnsheidi, **Iceland**
070	× (*wires*)	11.11.67	Stichill: 55°39′N. 2°25′W., Kelso (Roxburgh)
Rk.	f.g. ♀	16.8.63	Arnarvatnsheidi, **Iceland**
0150	×	*c.*5.3.67	Carron: 53°03′N. 9°05′W., Corofin (Clare)

Moorhen *Gallinula chloropus*

C.	f.g.	7.10.65	Nakskov: 54°50′N. 11°10′E. (Lolland) **Denmark**
548498	× (*car*)	8.1.67	Burnham Market: 52°57′N. 0°44′E. (Norfolk)
H.	pull.	20.7.65	Wangerooge-Ost: 53°47′N. 7°58′E., East Frisian Islands, **Germany**
455339	×	*c.*15.3.67	Holton St. Mary: 51°59′N. 1°00′E. (Suffolk)

Oystercatcher *Haematopus ostralegus*

M.	pull.	24.6.67	*near* Kandalaksha: 67°02′N. 32°35′E. (Murmansk) **U.S.S.R.**
E622701	×	mid-9.67	Salthouse: 52°57′N. 1°05′E. (Norfolk)

This is by far the most northerly origin yet for a foreign-ringed Oystercatcher found in these islands.

Lapwing *Vanellus vanellus*

Hki.	pull.	2.6.64	*near* Larsmo: 63°46′N. 22°37′E. (Vaasa) **Finland**
B40720	v	*c.*15.1.66	Causeway: 52°25′N. 9°44′W. (Kerry)

Ringed Plover *Charadrius hiaticula*

H.	ad.	27.5.67	Uthörn/Sylt: 55°02′N. 8°26′E., North Frisian Islands, **Germany**
80171092	v	20.8.67	Murston: 51°22′N. 0°46′E. (Kent)

Golden Plover *Pluvialis apricarius*

Rk.	f.g.	8.10.66	Midnes: 64°04′N. 22°43′W. (Gullbringu Sýsla) **Iceland**
716071	+	7.10.67	*near* Lanark: 55°40′N. 3°48′W.

Woodcock *Scolopax rusticola*

A.	f.g.	5.11.62	Rijsterbos: 52°52′N. 5°29′E. (Friesland) **Netherlands**
1014132	+	30.11.67	Peasmarsh: 50°58′N. 0°40′E., Rye (Sussex)

Redshank *Tringa totanus*

Rk.	pull.	13.7.67	Raudasandur: 65°30′N. 24°07′W. (Bardastrandar Sýsla) **Iceland**
718617			
	×	31.8.67	Ravenglass: 54°21′N. 3°25′W.

Knot *Calidris canutus*

Rk.	ad.	27.5.57	Midnes: 64°04′N. 22°43′W. (Gullbringu Sýsla) **Iceland**
611224	v	3.9.67	Snettisham: 52°53′N. 0°30′E. (Norfolk)

Dunlin *Calidris alpina*

M.	ad. ♀	26.5.67	Great Ainov Island: 69°50′N. 31°35′E. (Murmansk) **U.S.S.R.**
X230611	v	9.9.67	Terrington Marsh: 52°47′N. 0°17′E. (Norfolk)
M.	ad. ♀	16.5.67	Great Ainov Island, **U.S.S.R.**
X778588	v	7.9.67	Dawsmere: 52°51′N. 0°07′E., The Wash (Lincoln)
M.	ad.	6.6.66	Great Ainov Island, **U.S.S.R.**
X939859	v	21.11.67	Spurn Point: 53°35′N. 0°06′E. (York)

Ruff *Philomachus pugnax*

A.	ad. ♂	22.7.67	Watergang: 52°26′N. 4°57′E. (Noord Holland) **Netherlands**
2032929	× (*wires*)	23.11.67	Haverfordwest: 51°49′N. 4°58′W. (Pembroke)

Great Black-backed Gull *Larus marinus*

M.	pull.	13.6.65	Great Ainov Island: 69°60′N. 31°35′E. (Murmansk) **U.S.S.R.**
C113608	×	23.8.67	Lydd: 50°57′N. 0°55′E. (Kent)
M.	pull.	0.7.65	Great Ainov Island, **U.S.S.R.**
C113719	×	24.5.67	Beamish: 54°52′N. 1°39′W. (Durham)
M.	pull.	9.7.66	Great Ainov Island, **U.S.S.R.**
C120678	×	25.3.67	Shirland: 53°08′N. 1°24′W., Alfreton (Derby)

M.	juv.	13.7.67	Great Ainov Island, **U.S.S.R.**
C53887	×	13.12.67	Humberston: 53°32′N. 0°02′W. (Lincoln)

Lesser Black-backed Gull *Larus fuscus*

C.	pull.	9.7.66	Anholt: 56°42′N. 11°34′E., Kattegat, **Denmark**
431468	×	3.6.67	Sprotborough: 53°32′N. 1°11′W. (York)

Herring Gull *Larus argentatus*

A.	pull.	2.6.62	Schiermonnikoog: 53°29′N. 6°12′E., Frisian Islands, **Netherlands**
4014501	×	8.5.67	Williamstown: 53°40′N. 8°34′W. (Galway)

Little Gull *Larus minutus*

Hki.	pull.	4.7.64	*near* Hailuoto: 64°57′N. 24°46′E. (Oulu) **Finland**
B53245	×	10.8.65	Easington: 54°47′N. 1°21′W. (Durham)

Black-headed Gull *Larus ridibundus*

Rk.	pull.	1.7.67	Skipalón: 65°47′N. 18°12′W. (Eyjafjardar Sýsla) **Iceland**
J11469	×	14.10.67	Inverness: 57°27′N. 4°15′W.

Common Tern *Sterna hirundo*

Hki.	pull.	3.7.67	Uusikaupunki: 60°46′N. 21°13′E. (Turku & Pori) **Finland**
A345197	×	11.8.67	Hoylake: 53°23′N. 3°11′W. (Cheshire)
H.	pull.	30.6.63	Insel Scharhörn: 53°57′N. 8°26′E., R. Elbe estuary, **Germany**
7424062	×	14.5.67	Burton: 53°16′N. 3°02′W. (Cheshire)

Arctic Tern *Sterna paradisaea*

H.	pull.	21.6.59	Norderdithmarschen: 54°16′N. 8°56′E. (Schleswig-Holstein) **Germany**
7327899	v	3.8.67	Spurn Point: 53°35′N. 0°06′E. (York)

Sandwich Tern *Sterna sandvicensis*

A.	pull.	17.7.67	Griend: 53°15′N. 5°15′E., Waddenzee, **Netherlands**
2028561	×	26.8.67	Withernsea: 53°44′N. 0°03′E. (York)

Woodpigeon *Columba palumbus*

H.	f.g.	30.8.62	Heligoland: 54°11′N. 7°55′E., **Germany**
446235	+	3.8.67	Burnham Market: 52°57′N. 0°44′E., Wells (Norfolk)

This bird was shot on a nest and knowledge of its antecedents would be interesting, for a British breeding Woodpigeon ought not to have been on Heligoland, especially on such an early date as 30th August.

Collared Dove *Streptopelia decaocto*

R.	f.g.	5.1.64	Bad Kreuznach: 49°51′N. 7°52′E. (Rheinland Pfalz) **Germany**
ET4661	× (*wires*)	14.7.65	Great Yarmouth: 52°37′N. 1°44′E. (Norfolk)
A.	1yr.	1.2.64	*caught* Wageningen: 51°57′N. 5°39′E. (Gelderland), *released* Barneveld: 52°08′N. 5°35′E. (Gelderland) **Netherlands**
1019873	×	13.7.67	Pedmore: 52°26′N. 2°08′W. (Worcester)
A.	f.g.	24.1.66	Meppel: 52°42′N. 6°12′E. (Drente) **Netherlands**
3053528	×	12.3.67	March: 52°33′N. 0°06′E. (Cambridge)
B.	f.g.	6.3.67	Ekeren: 51°17′N. 4°25′E. (Antwerpen) **Belgium**
E27031	()	8.6.67	Reigate: 51°14′N. 0°13′W. (Surrey)

Short-eared Owl *Asio flammeus*

Rk.	pull.	3.7.67	Hörgárdalur: 65°47′N. 18°14′W. (Eyjafjardar Sýsla) **Iceland**
22632	×	*c.*22.10.67	*near* Ruthwell: 55°00′N. 3°26′W. (Dumfries)

Sand Martin *Riparia riparia*

C.	juv.	10.7.66	Vassingeröd: 55°50′N. 12°20′E., Hilleröd (Sjaelland)
9103001	(*colony*)		**Denmark**
	v	18.6.67	Bainton: 52°38′N. 0°23′W. (Northampton)
	(*colony*)		

This is the first Danish-ringed Sand Martin to be found in the British Isles, though a Swedish one was trapped here in 1965.

Rook *Corvus frugilegus*

A.	pull.	18.5.66	Staphorst: 52°37′N. 6°09′E. (Overijssel) **Netherlands**
4030661	×	mid-2.67	Holt: 52°55′N. 1°05′E. (Norfolk)

Jackdaw *Corvus monedula*

A.	juv.	6.7.66	Den Helder: 52°57′N. 4°47′E. (Noord Holland)
308585 1			**Netherlands**
	×	*c.*15.3.67	Thorndon: 52°17′N. 1°08′E., Eye (Suffolk)
A.	pull.	27.5.67	*near* Wassenaar: 52°08′N. 4°20′E. (Zuid Holland)
3010171			**Netherlands**
	+	23.12.67	Swingfield: 51°08′N. 1°10′E. (Kent)

Fieldfare *Turdus pilaris*

Hki.	pull.	2.6.66	Pori: 61°29′N. 21°47′E., **Finland**
A304501	v	7.2.67	Middlestown: 53°39′N. 1°36′W., Wakefield (York)
A.	f.g.	1.11.66	De Mok: 53°00′N. 4°46′E., Texel, **Netherlands**
K247862	×	16.3.67	Liphook: 51°05′N. 0°49′W. (Hampshire)

Redwing *Turdus iliacus*

Hki.	pull.	12.6.66	Björköby: 63°25′N. 21°05′E. (Vaasa) **Finland**
A264217	v	1.1.67	Gawsworth: 53°13′N. 2°09′W. (Cheshire)
Rk.	f.g.	20.9.66	Reykjavik: 64°08′N. 21°56′W. (Gullbringu Sýsla) **Iceland**
822996	v	(18.4.67)	*near* Stornoway: 58°12′N. 6°23′W., Outer Hebrides

Whinchat *Saxicola rubetra*

H.	juv.	4.9.67	Heligoland: 54°11′N. 7°55′E., **Germany**
0437987	v ♀	10.9.67	Dungeness: 50°55′N. 0°59′E. (Kent)

Redstart *Phoenicurus phoenicurus*

C.	juv.	11.9.67	Copenhagen: 55°40′N. 12°35′E. (Sjaelland) **Denmark**
9139431	×	30.9.67	Seaford: 50°46′N. 0°06′E. (Sussex)

Robin *Erithacus rubecula*

A.	f.g.	14.9.65	De Koog: 53°06′N. 4°48′E., Texel, **Netherlands**
568617	×	24.4.67	Cromer: 52°56′N. 1°18′E. (Norfolk)
P.	juv.	11.9.66	Ver-sur-Mer: 49°20′N. 0°32′W. (Calvados) **France**
800429	v	3.5.67	Spurn Point: 53°35′N. 0°06′E. (York)

Reed Warbler *Acrocephalus scirpaceus*

J.	juv.	5.7.64	St. Ouen: 49°13′N. 2°13′W. (Jersey) **Channel Islands**
N1732	v	17.5.67	Chichester: 50°48′N. 0°48′W. (Sussex)

Sedge Warbler *Acrocephalus schoenobaenus*

P.	f.g.	30.4.67	Gatteville: 49°41′N. 1°17′W. (Manche) **France**
801323	×	14.5.67	Bardsey Island: 52°46′N. 4°48′W. (Caernarvon)

Blackcap *Sylvia atricapilla*

A.	f.g. ♂	19.10.67	Oude Schild: 53°02′N. 4°51′E., Texel, **Netherlands**
S201995	×	1.11.67	3 miles off St. Abbs Head: *c.*55°55′N. 2°05′W. (Berwick)

Garden Warbler *Sylvia borin*

H.	f.g.	12.5.67	Heligoland: 54°11′N. 7°55′E., **Germany**
0393490	× (*car*)	30.5.67	*near* Leamington: 52°17′N. 1°33′W. (Warwick)
B.	ad.	21.8.67	Knokke: 51°22′N. 3°22′E. (West Flanders) **Belgium**
9A87319	v	11.9.67	Bamburgh: 55°36′N. 1°42′W. (Northumberland)

Willow Warbler *Phylloscopus trochilus*

P.	f.g.	14.4.67	Pointe de Barfleur: 49°42′N. 1°16′W. (Manche) **France**
962090	× (*car*)	3.5.67	Woodhall Spa: 53°09′N. 0°14′W. (Lincoln)

Chiffchaff *Phylloscopus collybita*

H.	ad.	28.9.66	Wilhelmshaven: 53°31′N. 8°08′E. (Niedersachsen) **Germany**
0350718	v	26.4.67	Hilbre Island: 53°23′N. 3°14′W. (Cheshire)

Goldcrest *Regulus regulus*

P.	ad. ♂	12.11.66	St. Josse-sur-Mer: 50°28′N. 1°40′E. (Pas de Calais) **France**
728996	× (*cat*)	28.3.67	Lydd: 50°57′N. 0°55′E. (Kent)

Spotted Flycatcher *Muscicapa striata*

P.	f.g.	30.9.65	La Chapelle-sur-Erdre: 47°18′N. 1°33′W. (Loire Atlantique) **France**
J92831	× (*car*)	*c.*23.8.67	*near* Londonderry: 55°00′N. 7°20′W.

White Wagtail *Motacilla a. alba*

Rk.	ad.	10.7.67	Skipalón: 65°47′N. 18°12′W. (Eyjafjardar Sýsla) **Iceland**
914180	v	17.9.67	Cadoxton: 51°26′N. 3°16′W., Barry (Glamorgan)

Yellow Wagtail *Motacilla flava*

P.	juv.	11.9.66	Vannes: 47°40′N. 2°45′W. (Morbihan) **France**
618548	v♀	19.7.67	Christchurch Harbour: 50°44′N. 1°44′W. (Hampshire)

Hawfinch *Coccothraustes coccothraustes*

R.	f.g. ♀	27.3.62	Meerane: 50°50′N. 12°28′E. (Sachsen) **Germany**
G226006	× (*cat*)	7.5.67	Haroldswick: 60°47′N. 0°50′W., Unst (Shetland)

This extraordinary record is the first foreign-ringed Hawfinch to be recovered in the British Isles. This species is an exceedingly rare vagrant to Shetland: L.S.V. and U. M. Venables (1955, *Birds and Mammals of Shetland*) knew of only five records (but they excluded Fair Isle, where it has been noted on eleven occasions).

Greenfinch *Carduelis chloris*

H.	f.g. ♀	28.2.67	Heligoland: 54°11′N. 7°55′E., **Germany**
7443647	×	10.5.67	Wells-next-Sea: 52°58′N. 0°51′E. (Norfolk)
B.	ad. ♂	4.1.67	Gaurain-Ramecroix: 50°35′N. 3°29′E. (Hainaut) **Belgium**
2V26722	× (*cat*)	18.7.67	Pegwell Bay: 51°19′N. 1°23′E. (Kent)
P.	ad. ♂	22.1.67	Steenwerck: 50°42′N. 2°47′E. (Nord) **France**
732858	×	14.6.67	Ipswich: 52°04′N. 1°10′E. (Suffolk)

Goldfinch *Carduelis carduelis*

SS.	ad. ♀	20.4.67	Fuenterrabia: 43°21′N. 1°48′W. (Guipuzcoa) **Spain**
A52211	×	7.6.67	Brighton: 50°50′N. 0°10′W. (Sussex)

Siskin *Carduelis spinus*

M.	f.g. ♂	3.10.66	Rybatschi: 55°11′N. 20°49′E. (Kaliningrad) **U.S.S.R.**
S294080	v	18.2.67	Weybridge: 51°22′N. 0°28′W. (Surrey)
He.	juv. ♂	26.10.66	Aschersleben: 51°46′N. 11°27′E. (Sachsen Anhalt) **Germany**
90140686	×	*c.*18.2.67	Hounslow: 51°29′N. 0°22′W. (Middlesex)
R.	f.g. ♀	19.10.65	Mannheim: 49°30′N. 8°28′E. (Nord-Baden) **Germany**
H877298	v	12.3.67	Virginia Water: 51°25′N. 0°36′W. (Surrey)
B.	f.g.	28.3.64	St. Marc: 50°30′N. 4°50′E. (Namur) **Belgium**
3A85745	×	*c.*12.3.67	Effingham: 51°16′N. 0°24′W. (Surrey)
A.	f.g. ♀	23.9.66	*near* Wassenaar: 52°10′N. 4°21′E. (Zuid Holland) **Netherlands**
S160333	×	4.5.67	Newcastle: 54°12′N. 5°54′W. (Down)

The finding of five foreign-ringed Siskins in one year is notable (only twelve were reported during the 61 years 1960-66), and indicative of a considerable influx in early 1967.

Linnet *Acanthis cannabina*

SS.	f.g. ♀	17.3.67	San Sebastian: 43°19′N. 1°59′W. (Guipuzcoa) **Spain**
A46141	v	7.5.67	Fairburn: 53°45′N. 1°18′W. (York)

Chaffinch *Fringilla coelebs*

Stav.	juv. ♂	31.8.63	Björkedal: 62°00′N. 6°03′E. (Möre & Romsdal) **Norway**
990502	()	30.3.67	Wytham: 51°46′N. 1°18′W. (Berkshire)
P.V.	f.g. ♀	20.9.65	Wapnica: 53°52′N. 14°26′E. (Szczecin) **Poland**
H142077	×	16.3.67	Bewdley: 52°22′N. 2°19′W. (Worcester)

Brambling *Fringilla montifringilla*

St.	juv.	3.9.65	*near* Sundsvall: 62°22′N. 17°20′E. (Vaster Norrland) **Sweden**
2042680	×	7.4.67	Broad Oak: 51°19′N. 1°07′E., Canterbury (Kent)
Stav.	juv. ♂	2.9.66	*near* Sokndal: 58°24′N. 6°23′E. (Rogaland) **Norway**
9146396	v	11.2.67	Hinstock: 52°51′N. 2°28′W. (Shropshire)

Tree Sparrow *Passer montanus*

B.	ad.	7.7.66	St. Andries: 51°12′N. 3°10′E. (West Flanders) **Belgium**
4V38463	v	31.1.67	Elm Park: 51°32′N. 0°11′E., Romford (Essex)
	v	19.6.67	St. Andries, **Belgium**
B.	pull.	27.6.67	Brugge: 51°13′N. 3°14′E. (West Flanders) **Belgium**
12A38387	v	10.12.67	Elm Park (Essex)

British Trust for Ornithology, Beech Grove, Tring, Hertfordshire

Studies of less familiar birds

152 Rock Thrush

Geoffrey Beven

Photographs M. D. England

Plates 1-3

The male Rock Thrush *Monticola saxatilis* (plates 1 and 2a) is unmistakable with pale slate-blue head, neck and mantle, white lower back and blackish-slate rump contrasting with a tail which is orange-chestnut except for brown central feathers. The wings are blackish-brown with blackish-slate on the scapulars, the under-parts and axillaries orange-chestnut. The bird is $7\frac{1}{2}$ inches long with brownish-black bill, legs and feet. In winter the colours are obscured by brown feather-tips above and whitish ones below. Immature males are generally mottled and may have no white patch. The female (plates 1 and 3) has strongly mottled brown upper-parts and mottled rufous-buff under-parts, sometimes with a trace of white on the back. The young are mottled brown and slate with bold crescentic markings below. M. D. England tells me that one hatched in captivity in June was indistinguishable from the female in the following December, but was clearly a male two months later. The chestnut tail of the Rock Thrush readily separates it from the Blue Rock Thrush *M. solitarius* with its dark one (*cf. Brit. Birds,* 61: 303-307, plates 39-42).

The Rock Thrush is a migrant with a breeding range extending further north than that of the Blue Rock Thrush and including the Iberian peninsula, southern France, Switzerland (where it seems to be increasing), Austria, south Poland, Czechoslovakia, Italy, the Balkans, Ukraine, Asia Minor, Corsica, probably Sardinia, Morocco and Algeria. Across Asia its range extends through Caucasia, Iran, Baluchistan and the Altai mountains to north China. On passage it visits the Mediterranean islands and north Africa. The whole Eurasian population winters in tropical Africa, mostly in the eastern half, and in Arabia (Bannerman 1954). The species has occurred accidentally in Belgium, the Netherlands, Germany and Sweden, and has been noted in Britain on seven occasions (three England, four Scotland) between 1843 and 1963, five times in May and June, and twice in October and November. The males arrive on the breeding grounds before the females, sometimes by as much as three weeks in Hungary (Koffán and Farkas 1956).

This species frequents warm and sunny rocky ground, perhaps with crags or among ruins, but it tends to favour a 'greener' habitat than

that of the Blue Rock Thrush, one which often includes stretches of grassland with or without scattered trees. It generally prefers high altitudes, being found mainly from 3,000 to 8,000 feet in Europe, up to 10,000 feet in the High Atlas and Iran and up to 11,500 feet in Afghanistan, but it may occur on dry, grassy lowland steppes with scattered bushes; and in the eastern Balkans, where the lower-nesting Blue Rock Thrush is absent, it breeds on cliffs and rocky ground down to sea level (e.g. Mountfort and Ferguson-Lees 1961). The habitat where these photographs were taken is shown on plate 2b; in Switzerland the species often nests in high alpine meadows interspersed with boulders. The winter is spent in savannah country and on bare ground from sea-level to 6,000 feet. In east Africa large numbers gather before spring departure, up to 100 having been seen in one day (Bannerman 1954).

A shy and solitary bird in its breeding haunts, the Rock Thrush is said to be tame and confiding in its winter quarters. It perches upright, more like a Wheatear *Oenanthe oenanthe* than a thrush, with a characteristic flirting action of its noticeably short tail which is jerked upwards and then allowed to swing loosely from the body. Most of its time is spent on the ground or hopping on boulders, but it sometimes perches on trees, buildings or telegraph wires and will run quite fast on bare slopes. When alarmed, it flies quickly out of sight, dodging behind rocks.

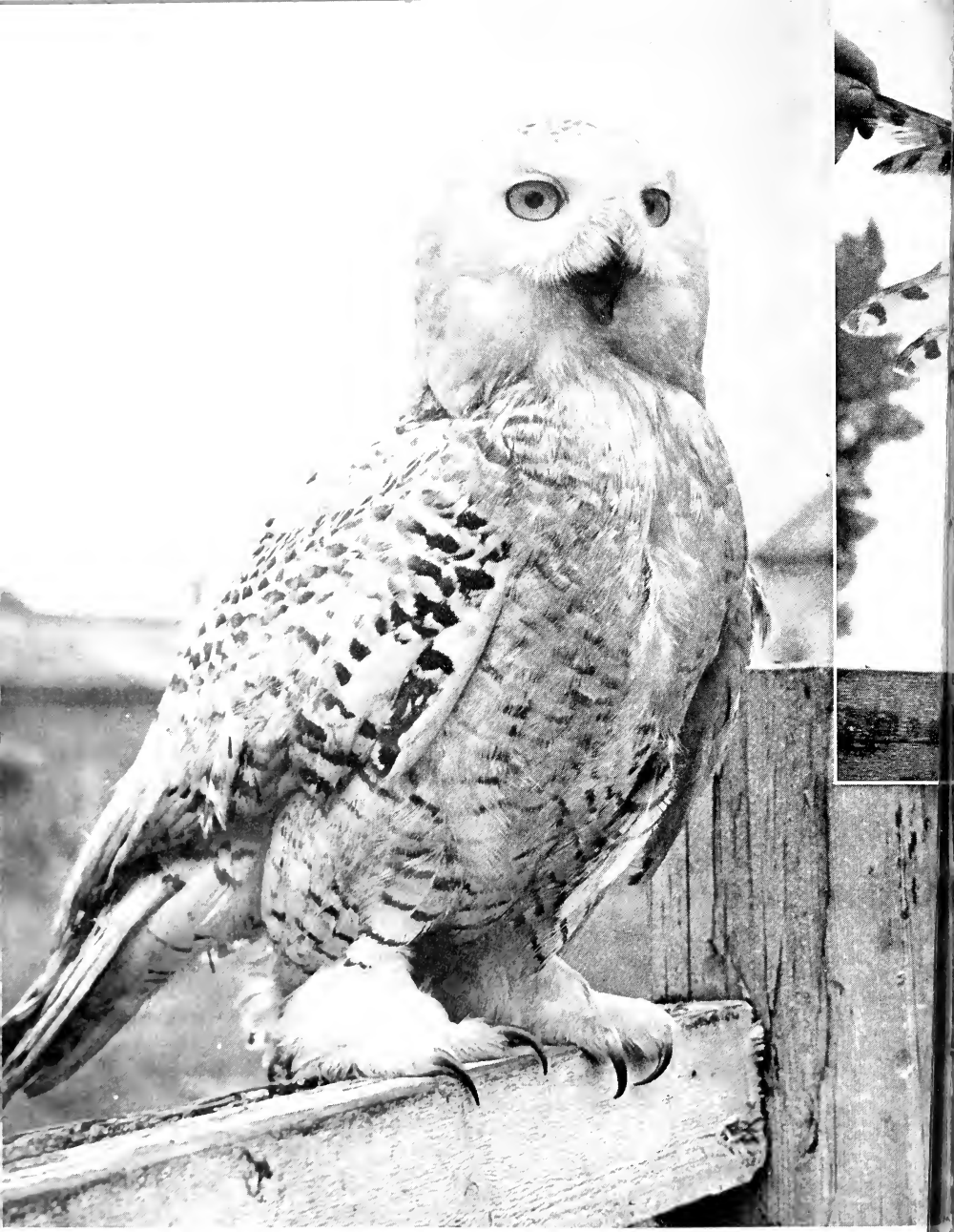
It usually observes its prey from a rock or tree and takes it on the ground, but beetles and other insects are also captured in flight. It feeds mainly on large insects, such as grasshoppers, mole crickets, locusts, beetles, flies and large caterpillars (including both hairy and green ones). Sometimes it will catch ants, spiders, centipedes, earthworms, small snails, frogs and lizards. In addition, it frequently eats berries, especially cherries *Prunus cerasus* and *P. avium* which, when given to the young, colour their excreta purple (Koffán and Farkas 1956; other data from Voous 1960, Witherby *et al.* 1938-41).

The main call is a *chack-chack* similar to that of a Blackbird *Turdus merula*, but softer; there is also a high-pitched *fid*; the adults may call *soop* while waiting to feed young in the nest. The song is a loud, mellow and fluty warble reminiscent of a Blackbird and usually uttered from a rock, but sometimes while in display flight, ascending and describing aerial circles with outspread wings and fanned orange-red tail; occasionally an individual sings in ordinary flight (Koffán and Farkas 1956). In winter a soft warbling subsong has been noted in Kenya and M. D. England has heard quite loud song at that season from an adult male in captivity.

In courtship display the male perches or struts in front of the female, with wings hanging or fluttering, tail outstretched, neck held out straight and moved slowly, snake-like, from side to side with twists

PLATE 1. Rock Thrushes *Monticola saxatilis* at nest with young, Switzerland, June 1967. Both have a chestnut tail; the male has bluish head and mantle, white lower back and chestnut-orange under-parts, while the female is a mottled brown above and rufous-buff below with crescentic markings (pages 23-25) (*photo: M. D. England*

PLATES 2 and 3. Opposite, male Rock Thrush *Monticola saxatilis*, and nest habitat, Switzerland, June 1967. The nest was sited about three-fifths of an inch to the right of the iron post in mid-picture. Above and below, female entering nest and brooding young; these show well her plumage and markings (*photos: M. D. England*)



[illegible] and 3. Above and top right, female Snowy Owl *Nyctea scandiaca*, Yorkshire, [illegible] after colliding with a hawser on a trawler in the White Sea; the underparts of the female is mainly white even though the upper surface is very strongly [illegible] (page 36) *(photos: L. Marshall)*. Bottom right, male Snowy Owl in Shetland, [illegible] and, next, immature female, December 1968, showing the extremes from [illegible] to heavily barred young *(pages 33-36) (photos: R. J. Tulloch)*

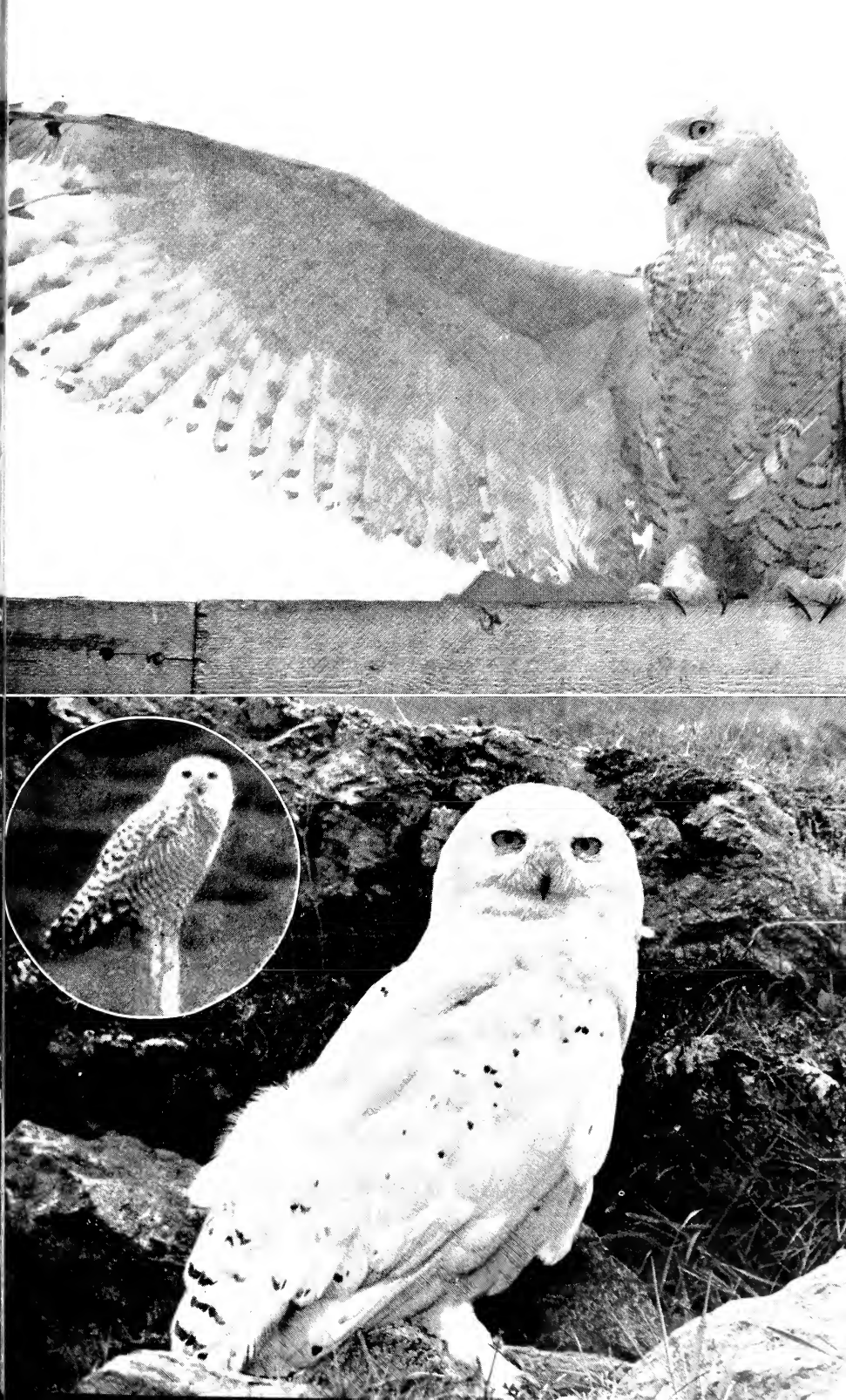
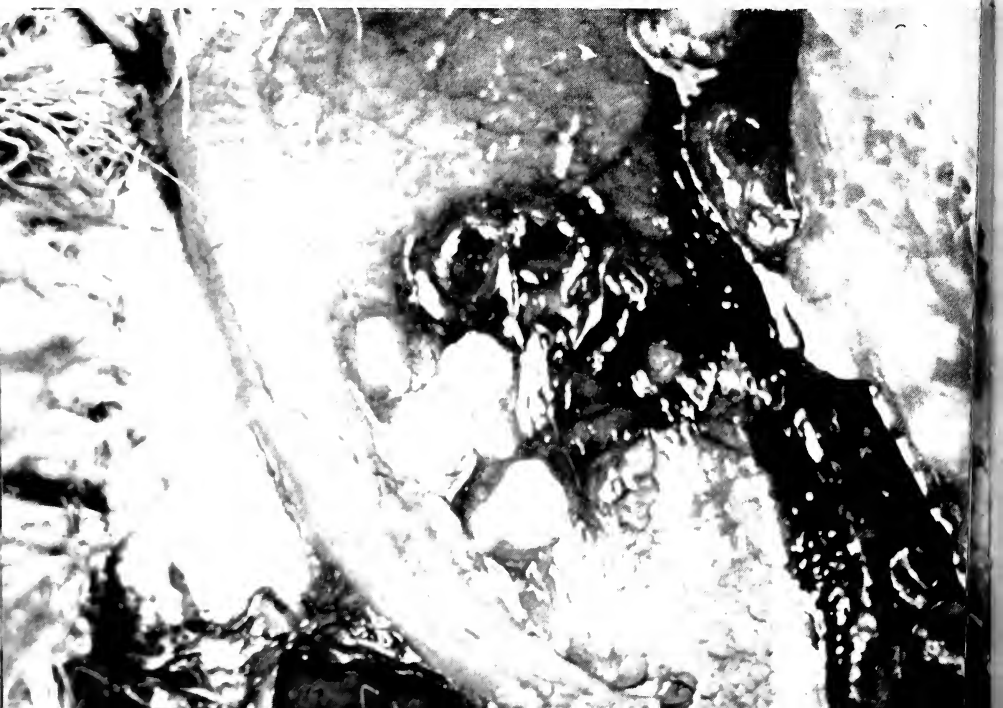


PLATE 6. Above, Fieldfare *Turdus pilaris* at nest with five young, Shetland, July 1968: the nest was under an overhang in a bank of a stream (page 36) (*photo: R. J. Tulloch*). Below, Little Grebe *Podiceps ruficollis* with a Miller's Thumb *Cottus gobio* stuck in its throat, Hampshire, February 1968 (page 31) (*photo: A. E. Cooper*)

PLATE 7. Lesser Black-backed Gulls *Larus fuscus* with white wing-patches, Iceland, April-May 1966. These were two of eight individuals which were photographed in Reykjavik harbour; at least ten out of a population of 640 showed such characters and this high frequency is considered on pages 31 32 (*photos: Agnar Ingolfsson*)

PLATE 8. Legs of Dunlin *Calidris alpina*, Flint, January 1967; right leg with a growth probably due to pox virus, normal left leg, and right leg again with the lesion bisected (pages 26-27) (*photos: G. H. Green*). Below, oesophagus of Greenfinch *Carduelis chloris* with ulcers due to salmonellosis (pages 28-30) (*photo: C. Hood*)



of the head. After 15-20 seconds he mounts the female, she having crouched quite still on the ground all this while (Bannerman 1954, Magnenat 1962). A male still wet from bathing sang to a female and bowed, hanging his wings and waving his fanned tail to and fro (Koffán and Farkas 1956). On 5th March 1942 in east Africa, at least 3,000 miles from the nearest breeding place, a male offered mulberries to a female and she accepted them (R. E. Moreau quoted by Bannerman 1954).

The nest site is in rocky ground, in ruins or on a precipice and the nest is usually placed in a horizontal crevice in a crag, a wall, a pothole, under the shelter of a boulder on sloping ground, or possibly a hole in a tree. The female builds the nest, a rather neat cup of grasses, rootlets and moss, lined with finer grasses and roots. Laying begins in May, even at heights of 8,500 feet in the Sierra Nevada, Spain. There are usually four or five eggs, sometimes six, pale blue or a delicate greenish-blue, often unmarked or with faint red-brown spots usually darker than those on the eggs of the Blue Rock Thrush. Average measurements are 25.9 × 19.5 mm (Witherby *et al.* 1938-41).

Incubation is chiefly if not entirely by the female and lasts for 14-15 days. The young are then fed by both sexes, although the male sometimes takes little part, and they remain in the nest for 14-16 days. The adults carry away the faeces. The species is usually said to be single-brooded, but in Hungary second broods are frequent (Koffán and Farkas 1956). Plates 1-3 were taken at Gampel, near Leuk, Switzerland, on 7th and 8th June 1967 on a steep rocky hillside overlooking meadows. The nest was on the ground under a sloping ledge of rock and well hidden by grasses. There were five downy young with quills just appearing. The adults were anxious to feed and returned to the nest within five minutes of being disturbed and a hide erected.

ACKNOWLEDGEMENTS

It is a pleasure to thank M. D. England for the use of his notes and for much helpful advice. We are both most grateful to Monsieur M. Defase of Saillon, whose time and knowledge of Rock Thrushes were so generously made available to us.

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Suspected pox virus infection of a Dunlin

G. H. Green

Plate 8a

On 7th January 1967, at the Point of Air, Flintshire, I found a Dunlin *Calidris alpina* which could fly only for short distances before landing awkwardly and running with difficulty. It was easy to catch and proved to have a large tumour-like growth around the tibiotarso-tarso-metatarsal joint of the right leg (plate 8a, left). It died shortly after.

Dissection showed no obvious internal disease, but there was marked reduction of subcutaneous fat and many parasitic worms were noted in the gut. Besides the leg growth the only other lesion found was a nodule measuring 20 × 10 × 5 mm on the lower external abdominal wall. The leg lesion measured 23 × 20 × 25 mm and the amputated leg weighed 6.4 grams. The normal left leg amputated in a similar manner (plate 8a, centre) weighed 0.7 grams. Bisection of the growth revealed a creamy-white cut surface with many cystic spaces filled with turbid fluid (plate 8a, right). Histological examination of this and of the abdominal nodule showed the typical appearance of infection with pox virus. There was great proliferation of the skin epithelium and the cells contained intra-cytoplasmic acidophilic inclusion bodies. The cystic spaces were formed by the necrotic breakdown of the infected cells. Dr I. F. Keymer kindly examined some of the sections and he agreed (*in litt.*) that the changes were similar to those seen in pox infections, particularly pigeon pox.

The Dunlin was in winter plumage and the measurements taken were bill 32 mm, wing 116 mm and weight 44 grams. Dissection showed it to be a male and the measurements indicate the northern race *C. a. alpina*.

DISCUSSION

Pox virus infection has been recorded in many species of birds (Andrewes and Pereira 1967, Cunningham 1965, Kirmse 1967, and Miles and Wilson 1964). Three main avian strains occur, infecting (1) Columbiformes (pigeon pox); (2) Galliformes (fowl pox); and (3) Passeriformes (canary or passerine pox). Virological studies could not be made on the Dunlin described here and it is not known which strain could have caused the infection. Pox infection of wading birds is certainly uncommon. No obvious infection has been noted among 30,000 waders of many species, including about 20,000 Dunlin, caught for ringing in the area of the Wash during 1959-67 (Dr C. D. T. Minton and personal observations). Dare and Mercer (1968) did not refer to pox infection of the legs of Oystercatchers *Haematopus ostralegus* in their study of over

7,000 individuals, but A. J. Mercer (*in litt.*) has kindly supplied details of one with a swelling the size of a walnut at the base of the lower mandible, which J. W. Macdonald of the Veterinary Laboratory at Lasswade, Midlothian, stated was caused by pox virus infection. Boer (1967) recorded 'warts' on the legs of two Oystercatchers, but these were not apparently caused by pox virus. Kirmse (1966a, 1966b, 1966c, 1967 and *in litt.*) has described extensive studies of pox infections in birds, particularly in North America, but the only record of a possible infection of a wader known to him involved a Curlew *Numenius arquata* with a growth the size and colour of a potato on the upper mandible (von Schauberg 1901). Thus pox infection of the legs of waders does not appear to have been described previously and this infection of a Dunlin seems to be a new host record.

With a weight of 44 grams, this Dunlin fell at the lower end of the range for males of the northern race in the British Isles in winter (personal observations and unpublished data of the Wash Wader Ringing Group). If one subtracts 5.7 grams (weight of infected leg less weight of normal leg), the extremely low figure of about 38 grams is obtained, with the infection representing about 15% of the bird's total weight. This and the reduction in fat suggest that the leg lesion was sufficient impediment to prevent adequate feeding.

ACKNOWLEDGEMENTS

I am grateful to Dr I. F. Keymer for examining sections, to A. J. Mercer for information about pox infections of the Oystercatcher and for providing a summary of a translation of P. Boer's paper, to P. Kirmse for sending me his data and comments, and to Dr C. D. T. Minton and others of the Wash Wader Ringing Group for discussion of Dunlin measurements.

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Salmonellosis in wild birds

J. W. Macdonald and L. W. Cornelius

Plate 8b

Wilson and Macdonald (1967) described four outbreaks of *Salmonella typhimurium* infection in House Sparrows *Passer domesticus* and Greenfinches *Carduelis chloris* in 1966. After one of these outbreaks at Sanderstead, Surrey, the disease recurred during the next two winters. This communication describes the subsequent history of that outbreak and 22 others which erupted in the south of England in the first three months of 1968. By this time, Greenfinch numbers had probably reached their peak of recovery after the 1962/63 winter (Bailey 1967).

From January 1967, until deaths ceased at the end of April, seven Greenfinches, five House Sparrows and a Dunnock *Prunella modularis* died of *S. typhimurium* infection in the original garden at Sanderstead. The same phage type U218 which had been isolated nine months earlier from the premises was responsible. On 18th July 1967 a Green Woodpecker *Picus viridis* died of U218 infection in a garden at Reigate, Surrey, eight miles south-west of Sanderstead. On six occasions ringed Greenfinches from the Sanderstead garden were recovered in the Reigate area, suggesting dissemination of infection from this focus when the wintering flock of 300 Greenfinches broke up for the breeding season. On 18th December 1967 U218 salmonellosis broke out for the third time at Sanderstead after a lapse of a further nine months; the disease was confirmed in eight Greenfinches and five House Sparrows. Post-mortem examinations were discontinued on 29th February 1968, but a further seven Greenfinches and four House Sparrows were found dead before the disease had run its course in early April.

At the beginning of January 1968 a series of 22 outbreaks of salmonellosis involving four different phage types of *S. typhimurium* occurred in Greenfinches and House Sparrows in the southern half of England. The disease was first recorded at Marlborough, Wiltshire, where phage type U165 was implicated. From the end of February to the middle of March specimens with U165 were also received from Bleasby, Nottinghamshire; from two areas one mile apart at Grays, Essex; from Eastbourne, Sussex; from the city of Leicester; from Malvern, Worcestershire; from two areas two miles apart near Bath, Somerset; and from Godalming, Surrey. This phage type showed a very scattered geographical distribution and the significance of that is not known. U165 had been recovered a year earlier from five House Sparrows, a Greenfinch and Dunnock which died on a farm at Chalfont St Giles, Buckinghamshire.

In sharp contrast, isolations of U218 originally found at Sanderstead were confined to a relatively small area in east Surrey and west Kent. From early February until the middle of April Greenfinches and House Sparrows from Ashtead, Reigate, Kingston upon Thames and Warlingham in Surrey and from Tonbridge and Rainham in Kent died from the infection. Similarly, U239 occurred during the same period in Camberley and Woking, Surrey, and in Farnborough, Hampshire, all within a radius of five miles. In early March, on a farm three miles west of the town of Northampton, twelve House Sparrows died of salmonellosis from which U239 was again isolated. Finally, U19 occurred during the first half of March in House Sparrows dying at Little Eversden and Kingston, Cambridgeshire, which are within three miles of each other.

Towards the end of the outbreaks at Sanderstead, Chalfont St Giles, Marlborough and Eastbourne single cases of salmonellosis occurred in Dunnocks. Macdonald *et al.* (1968) discussed the nature of salmonellosis and showed that during an outbreak the ground in the vicinity of bird tables or roosts must become heavily contaminated with the causative organism. The infection of such non-gregarious birds as the Dunnocks and the Green Woodpecker may be explained by their ground-foraging activities. On the other hand, five Blue Tits *Parus caeruleus* which died at three of the centres of infection were not affected with salmonellosis. It is probable that their different feeding methods, involving minimal contact with the ground, saved them from the repeated intimate exposure to the causative organism necessary for the establishment of overt disease. Three samples of peanuts and one proprietary seed mixture from affected premises were examined for salmonella organisms without showing any evidence of contamination.

In many outbreaks, it was reported that flocks of 100 to 500 Greenfinches and House Sparrows were attracted to gardens by liberal quantities of peanuts, that two or three birds had been found dead daily for the past three weeks, and that each day a similar number of sick individuals were picking listlessly at nuts which they appeared to have difficulty in swallowing. Both species showed similar post-mortem appearances. Most were in poor bodily condition, weighing about 22 grams. A very characteristic feature not seen in any other avian disease was the presence of multiple ulcers 1-2 mm in diameter in the lower part of the gullet (plate 8b). A core of yellowish-white pus in the centre of the ulcer was readily lifted out to reveal a deeply congested crater with raised edges sharply demarcated from the surrounding normal mucosa of the oesophagus. If death did not supervene at this stage, the ulcers coalesced to form a large necrotic mass blocking the thoracic inlet. Gross changes in the gullet were found in 36 of the 66 specimens examined and were probably responsible for the difficulty in swallowing which was frequently reported. Eleven birds also showed

abscesses in various tissues, such as the liver, spleen, caecal tonsils, adrenal gland, testes and muscle of the abdominal wall. The organism could be isolated readily by direct culture of material from those lesions and from the liver and lungs.

The simultaneous occurrence of different phage types of *S. typhimurium* in widely separated parts of the south of England suggests that, under normal conditions in some groups of Greenfinches and House Sparrows, a very small percentage of apparently healthy individuals are carriers of salmonella organisms. As long as the birds are not subjected to any stress, such as extremes of temperature or overcrowding, no harm results. But when large amounts of food are made available for most of the winter months in, say, a garden, it is probable that a build-up of infection occurs around the bird-table and that these artificial feeding conditions thus give rise to outbreaks of disease.

Although water-soluble drugs, such as chloramphenicol and furaltadone, are used in the treatment of human and animal cases of salmonellosis, it would be difficult, with alternative sources of drinking water available, to get wild birds to take enough of the drug to effect a cure. Suboptimal dosage might cause the emergence of antibiotic-resistant strains of the organism. Simply cutting off the supply of artificial food for the birds would probably resolve the immediate local problem, but in the long run might result in widespread dissemination of the organism if the flocks split up temporarily and then descended *en masse* on other gardens elsewhere. As, however, the organism appears to be widespread in the south of England this argument loses some of its validity. Offering smaller quantities of food except during short spells of very hard weather and changing the part of the garden where the food is put down would prevent the ground becoming heavily contaminated with droppings. The use of wire baskets or seed-hoppers instead of indiscriminate scattering of the food on the ground would also reduce the risk of picking up infection.

We are grateful to P. J. Olney of the Royal Society for the Protection of Birds for submitting many of the specimens.

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Notes

Little Grebe choking to death on fish On 21st February 1968, in the New Forest, Hampshire, a dead female Little Grebe *Podiceps ruficollis* was found choked by a fish; the corpse was given to A. J. Wise who passed it on to me. As in the two cases described by D. G. Bell (*Brit. Birds*, 61: 307), the fish was a Miller's Thumb *Cottus gobio* (a female distended with spawn), but in this instance it was stuck head first in the grebe's throat (plate 6b). A. E. Cooper

It seems now to be sufficiently established that Little Grebes are sometimes choked to death by Miller's Thumbs. Eds

Lesser Black-backed Gulls with white wing-patches in Iceland Individuals with white patches on the upper surface of the wings, usually the greater primary coverts, have been reported in Heermann's Gull *Larus heermanni* (Hubbs and Bartholomew 1951), Western Gull *L. occidentalis* (Hubbs 1954, Strauch and Thackaberry 1965), Lesser Black-backed Gull *L. fuscus* (Sage 1958, 1959, Puckering 1965), Herring Gull *L. argentatus* (Sage 1958) and Great Black-backed Gull *L. marinus* (Jones 1958). Only in the case of Heermann's Gull has this interesting aberration been the subject of a detailed study, and only in that species have museum skins showing white wing-patches been examined; the records of all the other species are field observations.

In April and May 1966 several Lesser Black-backed Gulls with white wing-patches—all full adults—were observed in Reykjavik harbour, Iceland. Collecting was not possible and so I attempted to photograph them in flight with a 350 mm monocular. In all, I photographed seven different individuals with white wing-patches; two of these are shown on plate 7. Jon B. Sigurdsson has also allowed me to examine a similar photograph which he took at Reykjavik, likewise in April 1966.

All eight of the gulls photographed had some of the greater primary coverts white or partly white, but the number and position of these varied considerably. Of the seven gulls in which both wings were photographed, six had white patches on both and the last a single white greater primary covert on the right wing only. Although there was thus a strong tendency towards symmetry and the patches were rather similar on each wing in some cases, they were not actually identical in any individual. Excepting the gull with only one white covert, all the others had two or more white feathers on each wing, although in no case were all the greater primary coverts white. Some individuals had the white feathers adjacent, but others showed two or three white patches separated by normal feathers. Four of the gulls also had a few white secondary coverts, in two cases a single feather on each side

(plate 7), and the one photographed by Jon B. Sigurdsson not only had white primary and secondary coverts, but also several white primaries and secondaries in each wing. The variations among these aberrant Lesser Black-backed Gulls were thus very similar to those recorded in Heermann's Gulls (Hubbs and Bartholomew 1951), with some primary coverts always involved and other feathers less often.

An attempt was made to estimate the frequency of Lesser Black-backed Gulls with white wing-patches at Reykjavik. Combining the observations from several dates resulted in a figure of 1.6% (ten aberrant out of 640). This contrasts sharply with an estimated frequency of about 0.01% in Heermann's Gulls (Hubbs and Bartholomew 1951). No estimates are available for the other species in which white wing-patches have been recorded, but the frequency is very low in British Lesser Black-backed Gulls, certainly lower than these observations suggest is the case in Iceland (Dr M. P. Harris *in litt.*). This is somewhat surprising since the Icelandic population must have derived from Britain or the Faeroe Islands no more than 60 years ago (Gudmundsson 1955, also Barth 1966). Nevertheless, although the Icelandic population now totals several thousand, it may have originated from a very small number of colonists and, by chance, a relatively large proportion of these may have harboured the genes responsible. There is little one can add here to Hubbs and Bartholomew (1951) and Harrison (1964) about the significance of such patches, but in this case the aberrations do seem to have been too frequent for recurrent mutations.

AGNAR INGOLFSSON

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Whiskered Terns with dark shoulder-patches Most identification books state that the dark shoulder-patches of the Black Tern *Chlidonias niger* out of breeding plumage are diagnostic in separating that species from the other marsh terns. From 15th to 23rd July 1968, in the Coto Doñana, Spain, I saw large numbers of immature Whiskered Terns *C. hybrida*, some still being fed by their parents and others old enough to fend for themselves, but all able to fly, and I was surprised to note that many of them had dark shoulder-patches. The marks seemed to fade with age for, whilst most of the younger juveniles showed them, the older ones did not. I saw no Whiskered Terns with marks as dark as those of the Black Terns which were present for comparison, but they were very prominent in some individuals and at longer ranges looked just like those of the Black Terns. One Whiskered Tern had a shoulder-patch on one side, but not on the other.

As these marks seem to disappear with age, it is unlikely that any young Whiskered Terns occurring in Britain would show them. In any case, there are enough differences between the two species for people with experience of both to have little difficulty in separating them. Nevertheless, this feature could cause confusion among observers seeing Whiskered Terns for the first time and its omission from the textbooks seems unfortunate. It was certainly well known to the ornithologists on the Coto Doñana. J. H. Taverner

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Snowy Owls breeding in Shetland I have already recorded the successful breeding of a pair of Snowy Owls *Nyctea scandiaca* which reared five young on Fetlar, Shetland, in 1967 (*Brit. Birds*, 61: 119-132). What was presumed to be the same pair nested again in 1968 and fledged three more young; this note is a summary of the essential details with comments on differences between the two years.

In the winter of 1967/68 the five young owls reared in 1967 scattered among the islands of Shetland. On Fetlar they often came to the crofts at dusk and were sometimes seen chasing Starlings *Sturnus vulgaris* and other small birds around the stackyards. One on Mid Yell was surprised a number of times within a few yards of houses, usually sitting on a wall or a haystack; it was seen in the moonlight and occasionally in daylight. One crofter complained that a young Snowy Owl so scared his hens that they would not emerge from the shelter of a cabbage patch for most of one day. There was no definite sighting of the adult female for several months, but the adult male stayed mostly on Fetlar. On 9th February I saw four young owls—two males and two females—in the breeding area, with a different adult male, but on 22nd February what was apparently the original male was back with one of the young 'pairs'; on this day the adult was aggressive towards the young male, knocking him to the ground and chasing

him off. On 25th April I could see only a young male and female there, but on the 29th a crofter reported the return of 'the old pair'. My next visit was on 9th May when I found an adult male and female which seemed to be the same individuals as in 1967.

In 1967 the nest had been on the shoulder of a large rock slab; in 1968 it was some 60 feet away at a slightly lower elevation, not near any rocks and so much less effectively camouflaged. In 1967 the first egg was laid about 3rd June, but in 1968 laying started three weeks earlier, on 12th May, and the clutch of six (compared with seven in 1967) was completed by the 24th. Actual laying dates could not always be checked, but, assuming an incubation period of about 33 days, the hatching dates showed that the six eggs were probably laid on the 12th, 13th or 14th, 15th, 20th, 22nd, and 23rd or 24th. The gap of five days between the third and fourth eggs coincided with a change from mild rainy weather and southerly winds to a short period of bitter cold and northerlies before warmer weather returned on the 21st.

The first three young hatched and fledged normally, but none of the last three lived for long. On 24th June, when the fourth chick was two days old, I found it lying outside the nest—wet, cold and almost dead. We kept it indoors while it recovered and put it back after two days; it was seen to be fed and appeared at first to be thriving, but was dead four days later. The fifth chick survived for three days, but was found dying on 26th June; it seemed short of food and was also bruised and scratched. The sixth egg was chipping on 24th June, but there was no sign of egg or chick on the 26th. It was thought that the loss of these three chicks stemmed from the five-day gap in laying and hatching: the disparity in size may have been too great for them to compete with the older ones, although there was always a surplus of food in the nest. The surviving chicks progressed very much as in 1967, wandering from the nest at about 18 days and leaving for good at about 25 days. The first flight was seen at 37 days and the first sustained flight at 44 days (compared with 35 and 43 days in 1967); the young were strong on the wing from about 50 days.

The surviving young proved to be one male and two females. It is difficult to tell the sexes apart up to about ten weeks, but after that it becomes fairly obvious. The young female (plate 5b, inset) is heavily barred on both the upper-parts and the lower breast and flanks, while her face and neck are white extending in a deep V down the front. Her barring is so dark as to make her appear wholly grey at a distance, while the young male's browner and more washed-out barring gives a fawn-coloured effect. The male is also smaller and more compact with a rounder head, while the female looks more loosely-feathered and her dark crown gives her head a more flattened appearance. What was probably one of the two young males reared in 1967 was on Fetlar for most of 1968: from a distance he appeared as white as an adult,

but at closer range there was a liberal sprinkling of brown spots over his back and wings.

In the 23 days from when the observation hut was set up on 21st May until the first egg hatched, the only food seen to be brought to the nest was a total of 25 Rabbits *Oryctolagus cuniculus*, all caught by the male. In the next 34 days, until the young had wandered too far from the nest for reliable observation, a minimum of 102 prey items, all but three provided by the male, included 59 Rabbits, 23 fledgling Oystercatchers *Haematopus ostralegus*, three fledgling Curlew/Whimbrel *Numenius arquata/phaeopus*, one fledgling Lapwing *Vanellus vanellus*, one fledgling Arctic Skua *Stercorarius parasiticus*, four unidentified birds, and eleven other unidentified items. A total of 91% of the prey was caught between 6 p.m. and 6 a.m., and 60% of that between 9 p.m. and 3 a.m. The male would sit for long periods on a rock, a post or even the ground; when a Rabbit moved, he would fly directly to it and land on it (it having 'frozen' at his approach). He would then usually just stand on the Rabbit, occasionally biting it until it had stopped kicking, whereupon he would pick it up, generally in both feet, and fly to the nest, landing a few feet away. There he would transfer the Rabbit to his bill before presenting it to the female.

In 1967 neither adult had been seen to bathe or drink, but in 1968 a small pool about 50 yards from the nest was visible from the oberva-tion hut and both adults were watched drinking and bathing vigorously on a number of occasions. As in 1967, the adults were mobbed by most of the birds nesting in the vicinity as well as by those passing; most persistent were Great Black-backed Gulls *Larus marinus*, Oystercatchers and a party of Hooded Crows *Corvus corone cornix*, the last again thieving prey from the young and from the food depots. Sheep and ponies which approached the nest closely were attacked by the male, and sheep were often struck, sometimes having pieces of wool torn out.

Both owls were more tolerant of human beings than in 1967, the female even staying on the nest during a repair to the roof of the observation post only 150 yards away, and the male was more careless in warning the female of the approach of intruders. Another difference was that the male sometimes reacted to an intruder at the nest by hooting instead of his previously invariable barking. Later on, when the young were near to flying, the male would sometimes not show any reaction at all, but simply watch while the female performed her distraction display or dive-bombed the intruder.

This negative reaction on the male's part may have had a physical origin because when the young were only about a week on the wing he was discovered, unable to fly, on the east side of Fetlar some four miles from the nest. He appeared to have a weak left wing and offered little resistance to being picked up and handled. He was somewhat emaciated and while in captivity also developed an eye infection which we

treated twice daily with antibiotic eye drops. This meant that he had to be regularly approached and handled, but he was very docile in captivity, even in the later stages of convalescence when he could fly strongly round the room. He responded well to treatment and food, feeding himself after the second day, and after three weeks was released near the nest. The female had taken over the feeding of the young and continued to do so after his return; indeed, although apparently fit and well, he played no further part in the rearing of the family. Plate 5b was taken while the male was in captivity. He was still on Fetlar at the end of November 1968, seemingly fully recovered.

As the Snowy Owls nested only about 60 feet from the 1967 site, there was no difficulty in repeating the successful watching arrangements in 1968. An additional public hide was erected and by the time the young owls were on the wing this had been used by over 600 people. The area surrounding the nest was declared a statutory bird sanctuary in 1968 and this is now managed and financed by the Royal Society for the Protection of Birds as the Fetlar Bird Reserve. Four watchers were employed throughout the season. R. J. TULLOCH

Reafirth, Mid Yell, Shetland

Mr Tulloch's report on the 1967 breeding (*Brit. Birds*, 61: 119-132) was accompanied by 14 photographs of both adults as well as the eggs and the young at various stages. Therefore, although a number of additional photographs were taken in 1968, we have thought it pointless to reproduce more than the two referred to in the text above. At the same time, however, we are also publishing two photographs of a female Snowy Owl which collided with a hawser on a trawler in the White Sea and was then brought back to Hull, Yorkshire, in early July 1968. One wing proved to be so badly damaged that amputation was considered essential by the local veterinary surgeon of the Royal Society for the Prevention of Cruelty to Animals. Plate 4 is a particularly fine study and plate 5 illustrates a point not brought out in the previous photographs, namely that the underwing of the female is almost entirely white even though the upper surface is heavily marked. We are grateful to B. S. Pashby for sending us these photographs and to Alan Marshall and the R.S.P.C.A. for allowing us to reproduce them here. EDS

Fieldfares breeding in Shetland On 14th July 1968, following a message from a Shetland crofter to the effect that some strange birds were breeding on his land, I was shown a pair of Fieldfares *Turdus pilaris* with quite a conspicuous nest (visible at up to 25 yards) under a slight overhang in the bank of a dried-up stream. Rather like that of a Blackbird *T. merula*, it was built of rough grasses with a lining of solidified muddy matter and an inner lining of fine grasses. There were

four newly hatched young and one egg; later five young fledged successfully. The adults scolded us from distances of 25-30 yards, uttering harsh churring calls (quite different from those of Fieldfares on migration) both in flight and from perches, and they also chased away Hooded Crows *Corvus corone cornix* and Common Gulls *Larus canus*. I revisited the site when the young were ten days old and watched their parents feeding them every ten to twelve minutes; by this time the adults were much less aggressive and went to hunt for food while we were standing not far from the nest. I set up a temporary hide about 35 feet away and, having found that this did not disturb the feeding, took a number of photographs (plate 6a).

Although this is only the second record of Fieldfares breeding in Britain, the first having been in Orkney in 1967 (*Brit. Birds*, 61: 84-85), it is likely that other pairs nested in Shetland in 1968. I was told that in June, only about a mile from the site of this nest, a pair had been watched chasing gulls and crows and had later been accompanied by what was supposed to be a fledged youngster. On 28th and 29th July, on another island, two adults were seen feeding three young scarcely able to fly and evidently still with some down on their bodies (the observer put it that they had 'a hairy look' about them). On 22nd July 'a family party' was reported on a third island, but these could simply have been early migrants because fine anticyclonic weather in late July and early August saw a steady influx of Fieldfares into Shetland: by mid-August there was an estimated 700 on Fetlar and 300 on Fair Isle, many of them still in juvenile plumage. R. J. TULLOCH

Requests for information

Invasion of Nutcrackers As noted in the 'Recent reports' (*Brit. Birds*, 61: 428, 473-474, 536), unprecedented numbers of Nutcrackers *Nucifraga caryocatactes* occurred in Britain from August 1968 onwards. For this one season only, the Rarities Committee is removing this species from its list and passing all the records to J. N. Hollyer, who is scrutinising them in conjunction with county editors and then preparing a full analysis. Anyone who has an observation of a Nutcracker which they think may not have been submitted to the Rarities Committee, the editors of *British Birds* or the county editor concerned, is asked to send date, locality, description and any additional information, such as habitat, behaviour, food and direction of flight, to **J. N. Hollyer, 21 Temple Way, Worth, near Deal, Kent.**

This invasion of Nutcrackers into Britain was only a reflection of much wider eruptive movements across northern Europe from Russia through Fenno-Scandia, the Baltic States, Poland and Germany to the Netherlands, Belgium and France. Mr Hollyer is co-operating with those who are analysing these movements in other countries and it is hoped that his eventual paper will include a summary of what happened in each country on the Continent as a background to the British records. A more general survey is being attempted by **M. Eriksson and J.-A. Hansson, Department of Zoology, 4:e Langgatan 7B, S-413 05 Gothenburg, Sweden,** and we ask that any Continental records should be sent to them.

Reviews

Bird Navigation. By G. V. T. Matthews. Cambridge University Press, Cambridge, 1968. (Cambridge Monographs in Experimental Biology No. 3, second edition.) x+198 pages; 40 text-figures. £2.

The new edition of *Bird Navigation* bears little resemblance to the first, and this reflects the rapid advances in research on this problem during the last ten years or so. Most of the book is concerned with experimental approaches to the study of navigational methods. Among the new topics discussed in the second edition are the planetarium studies of Drs E. G. F. and E. M. Sauer, S. T. Emlen and others—work which has demonstrated the reality of orientation, if not also navigation, by the stars. Also described are the findings of Frank C. Bellrose and Dr Matthews himself on 'nonsense' orientation in ducks, of Dr A. C. Perdeck on bearing-and-distance movements of young Starlings *Sturnus vulgaris* transported during their migrations, and of Professor Charles Walcott and Martin Michener on the routes followed by homing pigeons after release—routes tracked by maintaining radio contact with the flying birds from a small aircraft.

This book is far more than an uncritical abbreviated collection of many publications not readily available to the general reader. At all stages Dr Matthews applies the highest standards of scientific scepticism to the results he uses. Clearly, he is sold on the idea of bird navigation by visual means and, if there has to be a single method of navigation, few would dispute that the sun and stars are the most obvious candidates to serve as navigational cues at different times of day. Yet does there have to be only a single means of navigation? In the first place, there is no reason to suppose that navigational abilities have evolved only once among birds, so that different species might well use different means. Furthermore, *any* means which help an individual to home or migrate successfully will have been selected for during the course of evolution, so why should birds be restricted to only one method now?

There is growing evidence from radar studies, not only for the *continuation* of nocturnal migration in the correct direction when migrants meet and then fly under complete cloud cover, but also for migration continuing *inside* cloud, and for *departures* of nocturnal migrants under complete high-level overcast and through fog at ground level. These observations seem to demand an explanation in terms of navigation by non-visual means.

As soon as one allows the possibility of a single bird possessing more than one means of navigation, the interpretation of experiments becomes much more difficult. For example, the fact that two groups

of pigeons homed equally well, even though one group carried swinging neck-magnets while the other did not, proves *not* that pigeons cannot or do not use magnetic information during their homing flights, but simply that they did not need to do so when an alternative (and probably preferred) means of navigation—information from the sun—was available. The results neither support nor refute the idea that birds are sensitive to the earth's magnetic field. I believe that many experiments at present held responsible for the 'elimination' of possible means of navigation need to be re-examined with the possibility in mind that birds possess several means.

I would also question the interpretation of certain experiments carried out in Kramer (round) cages. Many species of birds have been shown to take up a preferred direction in such cages under natural or artificial skies, but to lose such orientation when the natural sky becomes covered with cloud, or the artificial sky is lit by diffuse lighting instead of artificial sun or stars. Such experiments have usually been taken to indicate that birds are incapable of maintaining a preferred direction in the absence of visual cues. They may, however, be able to derive information when they are *flying* over the surface of the earth which they cannot get when they are confined in a small cage. For example, a bird in flight might be able to detect and compensate by inertial means for wind forces tending to push it off its intended flight track; or it might be able to make use of information from the earth's magnetic field only during flight, when it could act as a conductor cutting the magnetic lines of force of the earth.

These general comments aside, I recommend this book unreservedly. It is written tersely and with a minimum of scientific jargon; the narrative is clear and easy to follow; and the sequence of the thirteen chapters cannot be faulted. Those readers who will wish to consult it as often as I shall would do well to get the hardback edition, but for those unable to afford that there is a paperback edition as well.

P. R. Evans

Birds of the Atlantic Islands. Volume IV. History of the Birds of the Cape Verde Islands. By David A. Bannerman and W. Mary Bannerman. Oliver & Boyd, Edinburgh & London, 1968. xxxi+458 pages; 20 colour and 31 monochrome plates; numerous text-figures. £6 6s.

Dr Bannerman has had a close interest in the birds of the Cape Verde Islands for more than 40 years, and it was natural that, having finished their three books on the birds of the Canary Islands, Madeira and the Azores, he and Mrs Bannerman should want to round off the series with a fourth on the Cape Verdes. The result is a most satisfying volume, on the generous scale we have come to expect from Dr Bannerman's long collaboration with Oliver & Boyd. This is the

twenty-eighth book in which author and publisher have been associated—and, sadly, the last.

There are ample introductory notes on the geography, history, climate and other features of the islands. Then follows a 40-page historical introduction dealing fully with every ornithologist of note known to have worked on the archipelago (but omitting any mention of Captain Cook's visit in 1772, which perhaps was not ornithologically important though the artist G. Forster made a good painting of the endemic White-headed Kingfisher). The American *Blossom* expedition, which visited the Cape Verde Islands in 1923-24, is very fully dealt with: a lot of birds—too many, in some cases—were collected on that occasion, but no results were published by any member of the expedition, a puzzling and regrettable omission for which the present authors give a convincing explanation. Dr W. R. P. Bourne's visit in 1951 receives full treatment, as do the most recent researches of the Abbé de Naurois, which are still being continued. In fact both here and throughout the systematic section Dr and Mrs Bannerman give full credit to their predecessors in the field; even when they disagree with some of the conclusions, the disagreement is always good humoured.

A section on the general zoological affinities of the islands is accompanied by a chapter by N. D. Riley on the butterflies, with a colour plate. Next, 85 pages are devoted to the authors' own visits to the islands, with notes from the diary of Mrs Bannerman. Then follows the main part of the book, the 300-page systematic section. All the more important species are accorded a full essay, often of several pages. Readers of Dr Bannerman's earlier books will be familiar with his treatment, and generous use of quotations, often from works now difficult to consult, which results not in a dry collection of statistics but in a readable essay. Some may disagree with his taxonomic decisions, as he is well aware. He generally prefers to give specific status to forms which are now usually treated as subspecies, and to retain subspecific names which others no longer recognise. But if his decision to treat the shearwater *Calonectris* (*kuhlii* = *diomedea*) *edwardsii* as a distinct species is disputed, few will quarrel with him when he goes on to write: 'Having disposed of the name and status of this shearwater to my own satisfaction, if not to the approval of anyone else, . . . we can now turn to what is much more interesting—the *life-history* of the bird, so far as it is known'. Although the Cape Verdes have not suffered as much as some other islands inhabited by man for several hundred years, there is urgent need for the protection of certain species, especially the endemic lark of Razo Island, the buzzard, and several of the breeding seabirds. Dr and Mrs Bannerman pay particular attention to this need, and devote a special section to recommendations for conservation.

The book is generously illustrated. The 17 colour plates of birds, by D. M. Reid-Henry and P. A. Clancey, are mostly very good, except for

some of the flight studies by the latter artist. Mr Reid-Henry's portraits of the Cape Verde Peregrine, which is now known to breed in small numbers, and of the endemic White-headed Kingfisher, are especially memorable. Text-figures show most of the species not illustrated in colour.

Altogether, this is a very fine book. It marks the end of an era, for we can hardly hope again for such a combination of industrious author and enlightened publisher. D. W. SNOW

Birds of the Atlantic Ocean. By Ted Stokes; paintings by Keith Shackleton. Country Life Books, Feltham, Middlesex, 1968. 156 pages; 38 colour plates; many maps. £6 6s.

This book describes and (with the one exception of the Light-mantled Sooty Albatross) illustrates 140 species belonging to the families selected by W. B. Alexander for inclusion in his *Birds of the Ocean* (1928). These 140 species are the ones which Commander Stokes and Mr Shackleton accept as of more or less regular occurrence in the 'Atlantic', here treated as including adjacent sectors of the Arctic and Southern Oceans, the North, Baltic, Mediterranean and other connected seas, and in-shore waters. At least one species, the White-bellied Storm Petrel, is inexplicably omitted; at the same time it would have been nice to have broken with a tradition imposed by economy rather than ecology and to have included the divers and more marine grebes and ducks which have a better claim to a place than, say, the skimmers and Reed Cormorant.

There is a general introduction to each family and the species accounts include wing-span (or for penguins, body-length), notes on field-characters and plumage variations and on breeding, feeding and other characteristic behaviour, and a summary of status and distribution. Maps show breeding and off-season ranges, occasionally but not consistently including some situated outside the Atlantic region. Fifteen species are illustrated singly by reproductions from oil paintings, the rest by drawings in gouache, in which up to a dozen species may be grouped, some represented only by the head of the bird (chosen as the most diagnostic feature), others with commendable frequency by the bird in flight. There is an index of scientific and English names (including some synonyms), which fairly satisfactorily provides the means of cross-reference between text and plates.

It all adds up to a handsome book, which cannot fail to excite pleasure and interest, not only in seabird addicts, but also in anyone susceptible to the attractions of great oceans and of one of the groups of better-known but still often mysterious forms of life they support. Much of this will be owed to the way in which Mr Shackleton's paintings evoke moods of sea and sky—from the tropical calm over which his Cahow glides to the chill turbulence which is the Fulmar's fitting

backdrop—and successfully portray the 'jizz' of many species, especially, no doubt, those he has personally encountered. Commander Stokes's crisp style, flavoured with nautical lore, humour and occasional passionate condemnation of follies (such as that which led to the removal of the Great Auk from the scope of this book), also has much to do with binding the spell.

Where the setting is so good, it is a pity to have to record that one of the avowed objectives of the book, to be of value for reference and for identification purposes, has not been achieved: the essential reliability and, at the very least, consistency between artist, author and map-drawer are unfortunately too often missing. In the case of the pictures, faults of reproduction may be partly responsible: contrasts must surely have been brought out more clearly in the originals, for example between the cap, back and tail of the Great Shearwater or the mantles of some of the gulls and terns. The actual errors are usually in respect of soft-part colours, the 'set' of feathers (e.g. the Rockhopper Penguin's 'eyebrow' plumes) or the pattern of an extended wing, perhaps due to over-reliance on museum specimens. For example, there is little indication of the extremely characteristic wing-bar of the prions. Again, the fact that the yellow colouring on bill and feet in the fine painting of the Wandering Albatross is not just artistic licence is shown by its repetition in the gouache 'identification plate': in reality, both bill and feet are usually pink, the former an exquisitely pale and delicate shade. Also, save each outer toe, the feet of the Little Shearwater are the brightest cobalt-blue in life and not the 'slate-blue' of the text or the slate-grey of the drawing in this book: these are colours which are assumed soon after death.

The unreliability of the text appears to stem largely from unfamiliarity with much of what has been published on seabirds during the last decade. But, even if there were good reasons for being unable to make full use of this mass of new material, it should surely have been possible to reflect discoveries which have already found their way into standard reference books and to avoid such discrepancies as quoting (correctly) the Blue-faced Booby as breeding on Ascension and yet on the accompanying map not even showing Ascension to be within the species' non-breeding range. Commander Stokes effectively disarms the many criticisms which could be made on nomenclatural and taxonomic grounds, but in any case these are often matters of opinion or controversy and unimportant compared with the errors of fact which should and could so easily be corrected. It is much to be hoped that the enormously enhanced value this book would have, if it could be recommended to the ever-growing band of Atlantic seabird watchers as a book for constant use rather than only as an enjoyable lead-in to more reliable sources of information, will soon justify a comprehensively revised edition.

H. F. I. Elliott

Letters

Black-headed Gulls taking olives With reference to the recent note by Collingwood Ingram (*Brit. Birds*, 61: 311), you may like to know that Black-headed Gulls *Larus ridibundus* have been recorded taking olives before. P. Madon (1935, *Alauda*, 7: 382-401) cited observations of A. Blanchet (1925, *Revue Française d'Ornithologie,* 17: 299) who recorded Black-headed Gulls in Tunisia flying among the trees and gathering ripe olives, thus confirming the earlier record of Roster who reported finding olives and figs in the stomachs of two Black-headed Gulls in Tuscany, Italy, in November.

Black-headed Gulls are well known to consume fruit at certain times of the year and they have frequently been recorded taking the berries of hawthorn *Crataegus* and the acorns of oaks *Quercus* in Britain. There are also records of their feeding on crowberry *Empetrum nigrum,* bog whortleberry *Vaccinium uliginosum* and cherry *Prunus* on the Continent. J. D. R. Vernon

Reassessment of rejected rarities I am concerned at the criteria that the Rarities Committee appears to be adopting in judging the acceptability of certain records. I refer particularly to the Laughing Gull *Larus atricilla* in Essex (*Brit. Birds,* 61: 415-416), which having originally been rejected is now considered acceptable, apparently because other records of this species have since been accepted. Surely the basic and most important criteria in judging any record must be the adequacy of the description and the known competence and reliability of the observer, neither of which can have changed between original rejection and subsequent acceptance in this case. Similar comments can be made concerning the record of a Pallas's Sandgrouse *Syrrhaptes paradoxus* in Kent (*Brit. Birds,* 60: 333, 416-419), although in that instance the Committee was persuaded to change its mind by having its attention drawn to the occurrence of what was possibly the same individual in the Netherlands.

I do not claim competence to judge the acceptability of either of the above records, but I find it disturbing that the Committee can apparently be persuaded to alter its decision about a record purely on the grounds that the species has since been proved to occur in this or a neighbouring country. If the Committee is to continue to command widespread respect, it must make it quite clear that it is judging records by criteria that also command such respect. In the two instances referred to above I suggest that this is far from clear. P. J. Oliver

Sometimes the critics of the decisions of ornithological recording committees urge that each record should be assessed on the adequacy

of the description alone, so it is satisfactory to note that Mr Oliver shares the view of the Rarities Committee that the competence and reliability of the observer are also of basic importance. These are not the only factors involved, however, and recording committees often feel compelled to take into account other considerations, such as the possibility of escapes and also the existing pattern of records. Sometimes skins or parts of birds are available for examination, more often records include measurements and other details from trapped birds examined in the hand, but for the bulk of the observations no scientific evidence is producible and acceptance becomes a matter of assessment. In this assessment, a record which alters or falls outside the accepted pattern needs closer vetting than one conforming to a pattern. Consider, for example, the difference in degree of scrutiny that should be given by any recording committee in this country to a January sight-record of a Willow Warbler *Phylloscopus trochilus* compared with one of a Chiffchaff *P. collybita*. Again, in the circumstances of the recent invasion of Nutcrackers *Nucifraga caryocatactes,* the true extent of the irruption into this country will be better appreciated if, within the framework of records fully authenticated by known ornithologists, the picture is augmented by the inclusion of less detailed and less technical but nevertheless convincing observations from people who are unknown ornithologically and whose notes, if made during the years of the species' very rare appearances, would not normally have been regarded as adequate evidence of occurrence.

It should be emphasised that, while acceptance denotes full satisfaction with the proof offered, rejection does not necessarily imply any more than that the evidence so far produced falls short of what is necessary. It is inherent in this approach that subsequent good evidence can carry a record across the threshold of qualifying for acceptance, and the Rarities Committee regard it as quite natural to reassess rejected records if new facts come to light.

In each of the two cases cited by Mr Oliver there had been a change in the background pattern and it was this which gave rise to the reconsideration of the record. When the Essex Laughing Gull was originally reported, the species was not on any European list, but, later, when it came to be reconsidered, there were authenticated records from Sussex, Kent, France and Sweden. The Pallas's Sandgrouse, on the other hand, had been an irregular irruption-visitor to western Europe up to 1908-09, since when it had hardly ever been recorded and it had even been suggested that it might never occur again. Against this background, some members of the Rarities Committee felt that the inherent improbability of the record was not fully overcome by the report of a bird seen only on the wing; but this hurdle was surmounted when it became known that what may have been the same individual had been seen in the Netherlands immediately beforehand. Eds

News and comment *Robert Hudson*

B.T.O. Annual Conference The British Trust for Ornithology's Annual Conference was held at Swanwick in Derbyshire from 29th November to 1st December, with a capacity attendance and (as some were heard to say) a capacity programme. Probably the most important feature was the institution of the Witherby Memorial Lecture, to be given each year to commemorate the late H. F. Witherby, a founder member of the B.T.O. whose generosity (see *Brit. Birds,* 27: 174) helped make the infant organisation a viable one, and whose gift of his ringing scheme gave the B.T.O. its first major scientific plank; this first Witherby Memorial Lecture was given by Sir Landsborough Thomson and entitled 'The subspecies concept', a most apt subject since H. F. Witherby had been so involved in taxonomic work. Another Swanwick lecture of particular interest, again by an invited speaker, J. Blondel of the Station Biologique de la Tour du Valat (Camargue), was a review of ornithological work in France, with emphasis on the amateur contribution.

At the B.T.O. Annual General Meeting and Annual Dinner, which took place during the Conference, R. C. Homes completed his second term as President (the only man ever to hold this office twice) and I. J. Ferguson-Lees, who needs no introduction to readers of this journal, was elected President in his stead. A special presentation to R. C. Homes was made by the B.T.O. Council and senior Staff in recognition of the tremendous amount of work he had accomplished for the Trust. The Tucker Medal was awarded this year to Mrs Susan Cowdy for her manifold services to the Trust's training programme.

Nature reserve additions The Nature Conservancy has announced the declaration of a new National Nature Reserve (the 126th) and the enlargement of another. The new reserve consists of a 4½-mile coastal strip of sand-dunes, salt-marshes, a freshmarsh and mud-flats in the Lincolnshire parishes of Saltfleetby and Theddlethorpe; 293 acres have been purchased from the Ministry of Defence and a further 795 acres of foreshore leased from the Crown Estate Commissioners. The main ridge of dunes is long-established and contains mature plant communities that include some rare species; this coastal area is a popular feeding ground of wildfowl and waders, and constitutes the most northerly habitat on the east coast for the Natterjack Toad. The reserve will be managed in conjunction with the Lincolnshire Naturalists' Trust and Lindsey County Council.

The Aston Rowant National Nature Reserve in Oxfordshire has been extended by the addition of 58 acres of Bald Hill and adjacent slopes, leased from All Souls College, Oxford. This brings the total to 258 acres. The Aston Rowant reserve is primarily of botanical interest; grassland will be grazed by stock and the effects will be recorded as part of the Nature Conservancy's research into management.

The ecology of pollution We live in an age when Man is accelerating the rate of his contamination of the environment. In the midst of this, and recognising the need for serious study, the British Ecological Society has set up an Industrial Ecology Group to foster interest in the ecology of environments affected by urban and industrial conditions and certain other intensive forms of human use. This Industrial Ecology Group met in London on 5th December and heard a number of relevant papers. I am grateful to C. J. Mead for the following notes.

The presented papers ranged widely to include such diverse subjects as biological indicators of fluorine pollution, landscape planning of coal tips, and multi-purpose use of freshwater. The last-mentioned faced the problem of conflicting interests between naturalists, fishermen and sailing enthusiasts; it was agreed by those present that power-boating and water-skiing were downright anti-social on freshwater, but

that with planning and co-operation sailing, fishing and natural history interests could be compatible. For the ornithologist, however, the meat of this meeting was three invited papers from Sweden dealing with mercurial contamination. Mercury has been used widely in Sweden, not only as a seed-dressing, but also as a slime-inhibitor in paper-mills; it has a high level of toxicity (especially methyl mercury) and is known to have caused death or permanent disablement to over 100 Japanese who had eaten contaminated fish. A worried Swedish legislature is now restricting the use of mercurial compounds in agriculture and the pulp industry; yet it may be 50 or even 100 years before the degree of mercurial contamination of many Swedish rivers is significantly reduced.

The Birds of Flintshire This is the title of a new 38-page booklet compiled by a committee of the Flintshire Ornithological Society; the Maelor is disregarded, since this detached area was covered by the *A Handlist of the Birds of Shropshire* (1964). After an introductory section and a short chapter on the habitats to be found in the county, the remaining 27 pages are devoted to a systematic list of the 235 species which have been recorded in Flintshire. (A quick glance through the scientific names revealed 13 mis-spellings.) Very little had previously been written about the birds of this county and this is its first checklist; as such it will be welcomed, though one could wish that the distributional accounts were more comprehensive. There are some surprising absentees from the county list, such as Montagu's Harrier, Red-necked Phalarope, Black Guillemot, Hooded Crow and Firecrest; no doubt the more concentrated watching that *The Birds of Flintshire* will encourage will turn up some of these. This booklet is available from M. R. Jones, 90 Russell Road, Rhyl, Flintshire, at five shillings.

Bird report for Wales In 'News and comment' for February 1967 a proposal for a new all-Wales bird report was noted with satisfaction, and a welcome must now be given to the first issue, which contains records for 1967 and is edited by P. E. Davis and P. Hope Jones. In Wales, bird-watchers are few and far between; consequently there is not at present enough money available to permit an independent publication, and one must be grateful to the West Wales Field Society for including this first 'Welsh Bird Report' (consisting of 16 pages of records) in *Nature in Wales;* separates, at two shillings each, may be obtained from P. E. Davis, Ty Coed, near Tregaron, Cardiganshire. May this polished acorn be encouraged to develop into a notable oak.

Beached birds survey This project for ornithologists and beachcombers was reported in 'News and comment' last April, when its aims were described.There is now a trial scheme for an international beached seabirds survey concentrated around the North Sea and eastern Atlantic, for which it is hoped that there will be systematic coverage of coastlines on specific predetermined dates (following the example of the International Wildfowl Counts). The first two of these international 'corpse countings' are on 15th-17th and 22nd-24th February; but we must take issue with the Belgian organiser, Eckhart Kuyken, for giving very little prior warning. For British participants, standard recording forms are issued by the Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire. Oiled birds should not be too difficult to find this winter, unfortunately, for there have been several small oiling incidents, the most recent in Suffolk and Sussex. More worrying, however, was a leakage on Christmas Day from a faulty pipeline into Bantry Bay, Co. Cork; this fairly new oil port, within sight of some of Ireland's finest seabird colonies, is the terminus for a new 300,000-ton tanker, *Universe Island,* a vessel three times the size of the *Torrey Canyon.*

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

J. T. R. Sharrock and I. J. Ferguson-Lees

These are largely unchecked reports, not authenticated records

This summary is confined to November 1968 and, unless otherwise stated, all dates refer to that month. Although there were a few belated records of vagrants from America and Asia as well as from the continent of Europe, the numbers of these were so small by comparison with October that it seems pointless to continue to treat them under areas of origin. Instead, they are in broad family groups.

GREBES, HERONS AND WILDFOWL

A **Pied-billed Grebe** *Podilymbus podiceps* stayed on the Ouse Washes near Welney, on the border of Norfolk and Cambridgeshire, from 9th to 12th; this comes after various records in Somerset and also Yorkshire since the first in 1963. A **Night Heron** *Nycticorax nycticorax* was seen on the River Conway (Caernarvonshire) on 9th and another at Farnham (Surrey) from 25th into December. **White Storks** *Ciconia ciconia* were very few in 1968 in contrast to the influx in 1967 (*Brit. Birds*, 61: 335), but there was one at Boston (Lincolnshire) as late as 25th-30th; whether it might have been an escape from captivity has still to be checked. More certain to be escapes were a **Ruddy Shelduck** *Tadorna ferruginea* at Coate Water near Swindon (Wiltshire) on 3rd and an earlier one on the Ouse Washes on 14th October. A **Ferruginous Duck** *Aythya nyroca* was seen at Sutton Bingham (Somerset) on 8th. The only Nearctic duck reported in November was a male **Surf Scoter** *Melanitta perspicillata* at Kinnegar (Co. Down) on 24th.

Among commoner species of wildfowl, the numbers of **Goosanders** *Mergus merganser* in mid-Wales from 20th were described as exceptional, up to 19 being seen on various waters in Radnor, Cardigan, Carmarthen and elsewhere. Many **Bewick's Swans** *Cygnus bewickii* arrived in November and one unusual record was a herd of about 320 moving south over Brynsiencyn (Anglesey) on 4th. The previous day there were 66 at the New Grounds (Gloucestershire), increasing to 89 by 10th, 102 on 11th, and 170 by 25th; of these 170, only nine were birds of the year, suggesting a poor breeding season. Smaller numbers were reported on various lakes and reservoirs from Somerset to East Anglia. We do not have figures for the Ouse Washes for November, but the herd there had risen to 198 by 15th December.

RAPTORS AND OWLS

A **Goshawk** *Accipiter gentilis* at Butcombe (near Bristol) on 4th may have been wild, but another at Beddington (Surrey) from 3rd through to December was complete with bells and jesses. A **Red Kite** *Milvus milvus* at Ballycotton (Co. Cork) on 9th was only the third or fourth Irish record and the first since 1951. A **Rough-legged Buzzard** *Buteo lagopus* at the Midrips (Sussex) in mid-month stayed in the area between there and Lydd (Kent) until well into December. A **Snowy Owl** *Nyctea scandiaca* was identified at Seaford Head (Sussex) on 8th and another in Co. Ros-common on 10th.

RAILS AND WADERS

The only **Spotted Crake** *Porzana porzana* reported was at Pennington (Hampshire) on 24th. The **Sociable Plover** *Vanellus gregarius* in Kent (*Brit. Birds*, 61: 539) stayed on through November into December. A **Kentish Plover** *Charadrius alexandrinus* was seen at Minehead (Somerset) on 10th-12th. A few American waders remained into November, including a **dowitcher** *Limnodromus sp.* on the North Slob (Co.

Wexford) on 2nd; a **White-rumped Sandpiper** *Calidris fuscicollis* at Akeragh Lough (Co. Kerry) on 10th; and a **Lesser Yellowlegs** *Tringa flavipes* on the Camel estuary (Cornwall) from 10th through to December.

GULLS, TERNS AND AUKS

A few **Mediterranean Gulls** *Larus melanocephalus* were confined to the south and east coasts, apart from one at Clevedon (Somerset) on 17th. A **Bonaparte's Gull** *L. philadelphia* was seen at Newlyn (Cornwall) on 7th. **Little Gulls** *L. minutus* in western districts included four at Llanon (Cardiganshire) on 3rd—the species has very rarely been recorded in that county—and one at Cape Clear Island (Co. Cork) on the same day. An unusually late **White-winged Black Tern** *Chlidonias leucopterus* stayed at Eye Brook Reservoir (Leicestershire) from 10th to the exceptional date of 27th, thus crowning an autumn which has produced more records of this species than ever before (*Brit. Birds*, 61: 474, 540, 580).

November also saw the beginning of a small-scale wreck of **Little Auks** *Plotus alle*. Twenty were seen at Spurn (Yorkshire) on 3rd and two found dead near Burton-on-Trent (Staffordshire) and Grangewood (Derbyshire) on 5th.

NEAR-PASSERINES AND PASSERINES

The influx of **Great Spotted Woodpeckers** *Dendrocopos major* from Fenno-Scandia (*Brit. Birds*, 61: 474, 538) continued to produce odd records in out-of-the-way places, such as one in Co. Clare on 17th. Similarly, a **Northern Bullfinch** *Pyrrhula p. pyrrhula* (*Brit. Birds*, 61: 580) was identified at Holme (Norfolk) on 2nd-3rd. More **Great Grey Shrikes** *Lanius excubitor* were reported on the east coast south to Kent and further west to Staffordshire, Warwickshire, Derbyshire and Hampshire, but still the numbers were not unusual. **Firecrests** *Regulus ignicapillus* included one at Croxley Common (Hertfordshire) on 13th, at least two at Frampton-on-Severn (Gloucestershire) on 23rd-24th and also one on Cape Clear Island on 28th-29th. **Snow Buntings** *Plectrophenax nivalis* are not often seen well inland in England and so two at Clay Mills (Derbyshire) on 2nd-3rd and one at Nuncargate near Kirkby-in-Ashfield (Nottinghamshire) on 6th were of interest. The only report of an **Ortolan Bunting** *Emberiza hortulana* came from Ballycotton.

Among rarer species, a **Rustic Bunting** *E. rustica*, possibly more than one, was seen on Tresco (Isles of Scilly) on 7th and 8th; earlier, there had been a different individual on 24th and 27th October. A flush of records of **Serins** *Serinus serinus* included one at Porthgwarra (Cornwall) on 2nd-3rd, two near Plymouth (Devon) on 9th, one on Tresco on 14th, two there on 16th-17th and one on 23rd, and one at Selsey (Sussex) on 24th. A **Tawny Pipit** *Anthus campestris* appeared at Frampton-on-Severn on 11th-12th. The autumn total of **Richard's Pipits** *Anthus novaeseelandiae* was raised well above the hundred mark by November records involving some 21 individuals in Yorkshire, Lincolnshire, Norfolk, Kent, and, more particularly, western counties from Lancashire and Caernarvonshire south to Pembrokeshire, Somerset and Devon. Among eastern warblers, the **Dusky Warblers** *Phylloscopus fuscatus* at Holkham (Norfolk) on 2nd-3rd (two) and at Holme on 9th were mentioned in the last summary in connection with October records; there was also a **Greenish Warbler** *P. trochiloides* at Holme on 9th, and the only **Yellow-browed Warblers** *P. inornatus* were at Holkham on 3rd, 9th and 16th-17th. The only **Red-breasted Flycatcher** *Ficedula parva* was at Dungeness (Kent) on 1st.

Finally, apart from such late vagrants as the **White-winged Black Tern** mentioned above and the **Roller** *Coracias garrulus* which stayed in Essex until 18th, (*Brit. Birds*, 61: 579), there were various reports of late summer-visitors. Worth noting are a **Swift** *Apus apus* at Wells (Norfolk) on 2nd and a **Wryneck** *Jynx torquilla* near Sevenoaks (Kent) on 4th. In addition, single **Turtle Doves** *Streptopelia turtur* have been found wintering with the resident **Collared Doves** *S. decaocto* in Dorset, Kent and Norfolk and we would be interested in any other records.

SMALL ADVERTISEMENTS

Semi-detached, SW Herts, 30 mins drive N London. Very suitable anyone with bird-ringing interests: over 600 birds, not including House Sparrows, ringed in large garden 1968. £6,500. Box JY211.

Fair Isle Bird Observatory requires young man as Assistant Warden from March 1969. Write for details to Roy Dennis, Westcott, West Terrace, Kingussie.

Cape Clear Bird Observatory. Book now. Resident Warden until 31st July. Cooked meals £3 10s p.w. until 31st August. Experienced observers needed October-December. Free information booklet: Roy Jackson, 17 The Moorlands, Benson, Oxon OX9 6RT.

Technician/Junior Technician required for Culterty Field Station, Newburgh, Aberdeenshire. Must have interests in natural history and some 'O' or 'A' level qualifications. Salary: Technician £722-£1,007; Junior £352-£595. For further particulars apply to Dr H. Milne at the above address.

Wanted. *Scottish Birds*, vols 1, 2, 3. *Irish Bird Report*, 1953, 1961. R. Walthew, 24 Batchwood Drive, St Albans, Herts.

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British Birds

New Palearctic bird sound recordings during 1966-67

Jeffery Boswall

The purpose of this paper is to add two further years to my discography of Palearctic bird sound recordings (Boswall 1964a, 1966a). The numbering of the records (or sets of records) follows on from the latter, but in other ways the style has had to be modified. Owing to pressure of space, I have included lists of birds only when essential and there is no cross-index.

New discs, new sets or additions to existing sets appear at the rate of about one a month. In the two-and-a-half years covered by this paper 23 additional reference numbers have been used (**82** to **104**). Of these, four records or albums come from Japan (**82**, **85**, **92** and **103**, of which **85** includes no less than 121 species and **92** is stereophonic). There are first records from Czechoslovakia (**84**) and Poland (**86**). Miss Irene Neufeldt kindly sent me two discs of recordings made in the Soviet Far East (**83** and **99**). Jean-Claude Roché has completed volumes I (**100**) and II (**102**) of his *Guide Sonore des Oiseaux d'Europe*. The doyen of active European recordists, Sture Palmér of Sweden, has published the last five (**104**) of the 40 records in his *Radions Fågel Skivor* set which now covers almost 300 species.

At three places in the revised edition of the *Field Guide* (Peterson *et al.* 1966) we are urged to be careful, when identifying birds by voice, of confusion with sounds from other classes of animals. The voice of the Midwife Toad *Alytes obstetricans* is said often to cause confusion with the call of the Scops Owl *Otus scops;* interestingly enough, this very misidentification occurs on **89** reviewed in this paper. Under Nightjar *Caprimulgus europaeus* we are urged to 'Beware similar noise of Mole Crickets' *Gryllotalpa gryllotalpa;* and under Savi's

Warbler *Locustella luscinioides* to note that 'Song . . . can be confused with noise made by Marsh Cricket' (Gryllidae). It is therefore worth drawing attention to commercial sources of Palearctic amphibian, insect and even mammal sound recordings (Boswall 1966b, c, d).

There are now also ornithological discographies for the Australasian zoogeographical region (Boswall 1965), the Ethiopian region (Boswall and North 1967) and the Antarctic (Boswall and Prytherch in press). In all three papers recordings of species also found in the Palearctic are referred to. Roché (1966) has published a 'Discographie Critique' of the more important sets of records issued in Europe. He tells me he played each disc five times before assessing its scientific significance, technical quality, form of presentation, and artistry of arrangement. His paper covers two German, one Swiss, one English (published in the Netherlands), one Finnish and three Swedish sets. The comments on each under the four headings are perceptive and valuable, as are the lists of species in the French language. The failure to deal in detail with *Witherby's Sound-Guide to British Birds* (North and Simms 1958) is puzzling, however.

I am constantly being asked to recommend books on the art and technique of field recording. The only two of which I know are Purves (1962) and a more recent and much more comprehensive volume by Ausobsky (1964). Recent papers on this subject include Field (1965), Margoschis (1966), Boswall (1965b), Veprintsev and Marcov (1965) and Wahlström (1965); but one of the best by far is that of the late Myles E. W. North (1964-65). Incidentally, one Soviet paper (Dementiev and Illichev 1963) mentions that the first bird recordings made in that area were in the days of the Czars, in 1912. An up-to-date catalogue of the natural history section of the British Broadcasting Corporation's Sound Archive has recently been printed (Burton 1969) and a letter about the scientific use of B.B.C. wildlife sound recordings appeared in a number of scientific journals (e.g. Burton 1966).

The Wildlife Sound Recording Society is the title of a new British association of animal sound recordists, which came into being on 31st March 1968 (see Margoschis and Burrows in press). The secretary is Roger Burrows, Breanoc, Goonvrea, St Agnes, Cornwall.

CORRECTIONS

In the original discography (Boswall 1964), on page 12, under **16**, for 'sixty-four' read 'sixty-five'; on page 44, under **68** disc 4, after 'Moustached Warbler' add 'Sedge Warbler'; on page 52, to 'Sedge Warbler' add **68**. On page 32, **43** is exclusively attributed to Jean-Claude Roché who, in fact, made some of the recordings, but his name does not appear on the disc sleeve where they are said to be by P. Helluin and P. Ribassin. On page 28, under **36**, I wrote that a Long-eared Owl *Asio otus* was 'uttering what must be one of the rarer

calls of the species'; it is now agreed that the bird is a Little Owl *Athene noctua* (P. J. Sellar and J.-C. Roché verbally).

In the first supplement (Boswall 1966), on page 28, under EUROPEAN SPECIES, for '27' read '26', and for 'nine' read 'eight'; on page 31, under **75**, for '80 species' read '82 species'; on page 36, after 'Ortolan Bunting . . .' add 'Little Bunting *Emberiza pusilla* **74**'. On the subject of **74**, I am advised that it can be bought as a tape version as well as in disc form.

Wahlström (1968) has pointed out that the recording attributed to Baillon's Crake *Porzana pusilla* on **16** and **34**, and also used on **33** and **100**, is in fact a Little Crake *P. parva*. A disc comparing in detail the voices of Baillon's Crake, Little Crake, Spotted Crake *P. porzana* and Water Rail *Rallus aquaticus* has just been issued and will be reviewed later. Meanwhile, the record, called *Vier europäische Rallenarten*, is obtainable from Dr Paul Feindt, 32 Hildesheim, Wallmodenweg 7, West Germany.

EUROPEAN SPECIES

Up to the time of my last paper, 34 (not 33 as there stated) regular European nesters had still to be recorded, wild or captive, in Europe. Since then, the following 13 have been recorded:

White Pelican *Pelecanus onocrotalus* C. Chappuis (captive)
Squacco Heron *Ardeola ralloides* C. Chappuis
Common Scoter *Melanitta nigra* Sture Palmér
Harlequin *Histrionicus histrionicus* P. J. Sellar
Spotted Eagle *Aquila clanga* C. Chappuis (captive)
Long-legged Buzzard *Buteo rufinus* J.-C. Roché
Black-winged Kite *Elanus caeruleus* C. Chappuis (captive)
Crested Coot *Fulica cristata* J.-C. Roché
Grey Phalarope *Phalaropus fulicarius* P. J. Sellar
Glaucous Gull *Larus hyperboreus* Magnus Sinclair
Brünnich's Guillemot *Uria lomvia* P. J. Sellar
Pied Wheatear *Oenanthe leucomela* J.-C. Roché
Two-barred Crossbill *Loxia leucoptera* H. B. Thornton

The 21 European regular nesting species of which there is no known European tape recording, published or unpublished, are as follows:

Pygmy Cormorant *Phalacrocorax pygmaeus*
Dalmatian Pelican *Pelecanus crispus*
Great White Egret *Egretta alba*
White-headed Duck *Oxyura leucocephala*
Egyptian Vulture *Neophron percnopterus*
Black Vulture *Aepgyius monachus*
Lammergeier *Gypaetus barbatus*
Levant Sparrowhawk *Accipiter brevipes*
Pallid Harrier *Circus macrourus*
Lanner *Falco biarmicus*
Red-footed Falcon *Falco vespertinus*
Chukar *Alectoris chukar*
Andalusian Hemipode *Turnix sylvatica*
Great Bustard *Otis tarda*
Black-winged Pratincole *Glareola nordmanni*
Slender-billed Gull *Larus genei*
Black-bellied Sandgrouse *Pterocles orientalis*
Red-flanked Bluetail *Tarsiger cyanurus*
Masked Shrike *Lanius nubicus*
Rose-coloured Starling *Sturnus roseus*
Arctic Redpoll *Acanthis hornemanni*

FURTHER ADDITIONS TO THE DISCOGRAPHY

82. KABAYA, TSURUHIKO and YOSHIHIKO. 1960. *The Songs of Wild Birds* (Japanese). One 10-inch 33.3 rpm, AL-3010. HMV, Victor Company of Japan, 13-2 Misakicho, Kanda, Chiyoda, Tokyo, Japan.

A popular selection of 21 Japanese species. No English or scientfic names are given, but I am informed by the recordists that side 1 is called 'A Day in the Hills' and gives songs of such species as Siberian Thrush *Turdus sibiricus* and White's Thrush *Zoothera dauma*. Side 2, 'Four Seasons by the Shore', includes Black-tailed Gull *Larus crassirostris* and a stirring chorus of three species of crane: Japanese *Grus japonensis,* White-naped *G. vipio* and Hooded *G. monacha.*

83. NEUFELDT, IRENE. About 1963. *The Bird Voices of Amurland.* One 7-inch 33.3 rpm, 5289-61. All-Union Studio of Disc Recording, Mezhdunarodnaja Kniga, 32/34 Smolensk Square, Moscow 200, U.S.S.R.

Nine species recorded in the area of the Amur River, in the extreme east of the Soviet Union, in 1962. Four of them—all warblers—have occurred in Europe as vagrants. Since names are given only in Russian, I repeat here the list of species based on the scientific names sent to me by Miss Neufeldt:

SIDE 1

White-throated Rock Thrush *Monticola gularis*
Pallas's Warbler *Phylloscopus proregulus*
Radde's Warbler *Phylloscopus schwarzi*
Chinese Bush Warbler *Bradypterus tacsanowskius*

SIDE 2

Lanceolated Warbler *Locustella lanceolata*
Siberian Ruddy Crake *Porzana paykullii*
Jungle Nightjar *Caprimulgus indicus*
Gray's Grasshopper Warbler *Locustella fasciolata*
Short-winged Cuckoo *Cuculus micropterus*

84. HANZAK, JAN, *et al.* 1964-66. *Listening to the Sounds of Nature* (Czech). Two 10-inch 33.3 rpm, DV15211 and DV15293. Supraphon, The Gramophone Club, Prague, Czechoslovakia.

The first of these two records is in a standard Supraphon sleeve with no relevant printed matter at all; the second in a sleeve booklet with ten pages of text and illustration. There are about 80 recordings in all, the vast majority being of wild birds in Czechoslovakia, plus a few from Jugoslavia and Hungary, and three from the Antarctic! They include recordings of a captive Goshawk *Accipiter gentilis* and a captive Imperial Eagle *Aquila heliaca,* the latter the only one known of an adult, as well as a few east European amphibians and insects in the wild and some captive mammals from the Prague zoo.

85. NAKATSUBO, REIJI. 1965. *Singing Birds in Japan.* Three books, each 88 pages, and nine 7-inch 33.3 rpm. Forestry Extension Association of Japan.

The author and recordist of this ambitious publication is a producer

in the Natural Science Unit of the Japan Broadcasting Corporation. The voices of 121 species can be heard on the 18 sides (of which side 7 is stereophonic) and each is also illustrated with a photograph and a line drawing. The text is in Japanese, but all photos are also captioned in English, and scientific and English names appear together in the last chapter of each volume. The record sleeves, which are bound in with the book, give English names and these are faultlessly pronounced on the discs themselves. Among the species listed are some of the rarest in the world: Japanese Ibis *Nipponia nippon,* Japanese Crane *Grus japonensis* and Steller's Albatross *Diomedea albatrus.*

86. WOJTUSIAK, ROMAN J., *et al.* 1965. *Studies of the Voices of Animals. Part* 1. *Birds of Poland.* One 10-inch 33.3 rpm, ZL413. Uniwersytet Jagiellonski W. Krakowie, Wydzial Biologii I Nauk O Ziemi, Prace Zoologiczne Zeszyt 9, Krakow, Poland.

One of the purposes of this first record from Poland is to accompany a paper (Wojtusiak 1965). It includes 24 passerines and four non-passerines, all wild except a Tawny Owl *Strix aluco.* A chorus of young Starlings *Sturnus vulgaris* is compared with that of old birds gathering in the autumn to migrate. Variations in the songs of Chaffinch *Fringilla coelebs* and Great Tit *Parus major* are presented.

87. ULRICH, HENRI. 1965. *Oiseaux et Gibiers.* One 7-inch 33.3 rpm, LDY 5006. 'Le Chant du Monde', 32 Rue Beaujon, Paris 8e, France.

Twenty bird species and five mammals. This is Mr Ulrich's second disc for this publisher's series; his earlier one was **53** (LDY 5003) and the others, by G. Albouze, were **28** (LDY 5000-5002, 5004, 5005).

88. MORRIS, DESMOND. 1965. *A Day at the Zoo.* One 7-inch 45 rpm, EP 7083. Oriole Records, 104 New Bond Street, London W1.

Includes a recording of the Tawny Eagle *Aquila rapax.*

89. THIELCKE, GERARD, and KÖNIG, C. 1965. *Vogelstimmen aus Südeuropa.* One 7-inch, 75-09255. Kosmos, Pfizerstrasse 5-7, 7 Stuttgart 1, West Germany.

Thielcke (1963) has shown that the song of the Spanish Chiffchaff, which appears on this record, is more similar to that of the Willow Warbler *Phylloscopus trochilus* than to the normal Chiffchaff song in four respects. This Spanish song is restricted to Spain, a small sector of south-west France and north-west Africa.

The recording attributed to the Scops Owl is of a Midwife Toad *Alytes obstetricans,* illustrating rather neatly the warning in the *Field Guide* (1966) that confusion can arise between these two creatures. Working independently, Thönen (1968) and König (1968) have demonstrated this with sound spectrograms.

SIDE 1
Cetti's Warbler *Cettia cetti*
Melodious Warbler *Hippolais polyglotta*
[Scops Owl *Otus scops*]
Whiskered Tern *Chlidonias hybrida*

SIDE 2
Orphean Warbler *Sylvia hortensis*
Alpine Swift *Apus melba*
Spanish Chiffchaff *P. collybita'brehmii'*
Rock Sparrow *Petronia petronia*

90. THIELCKE, G. 1965. *Zimmerleute des Waldes.* One 7-inch 45 rpm 75.0934.5. Kosmos, Pfizerstrasse 5-7, 7 Stuttgart 1, West Germany.

An interesting and valuable record largely devoted to the instrumental and vocal sound production of woodpeckers: Great Spotted *Dendrocopos major,* drumming, pecking, begging calls, alarm calls; Middle Spotted *D. medius,* song; Lesser Spotted *D. minor,* drumming, series of calls; Grey-headed *Picus canus,* drumming, series of calls, rivalry calls; Green *P. viridis,* series of calls; and Black *Dryocopus martius,* drumming, series of calls, 'Jackdaw' calls. Also Snipe *Gallinago gallinago,* drumming; White Stork *Ciconia ciconia,* bill-clappering; and Long-eared Owl *Asio otus,* bill-snapping, mewing.

91. AUSOBSKY, A., KÖNIG, C., and KUHLEMAN, P. 1965. *Stimmen einheimischer Vögel.* Two 7-inch 45 rpm, 75.0966.5 and 75.0967.5. Kosmos, Pfizerstrasse 5-7, 7 Stuttgart 1, West Germany.

Two further discs in the series started by C. Fentzloff and G. Thielcke (**31**) and continued by E. Tretzel (**65** and **76**). Ausobsky's book (1964) on wildlife sound recording is worth attention.

75.0966.5
A Red Kite *Mivus milvus*
Collared Flycatcher *Ficedula albicollis*
Pygmy Owl *Glaucidium passerinum*
Brambling *Fringilla montifringilla*
B Rock Bunting *Emberiza cia*
Cirl Bunting *Emberiza cirlus*
Sand Martin *Riparia riparia*
Little Bittern *Ixobrychus minutus*

75.0967.5
A Water Pipit *Anthus spinoletta*
Snow Finch *Montifringilla nivalis*
Alpine Ring Ouzel *Turdus torquatus alpestris*
Alpine Chough *Pyrrhocorax pyrrhocorax*
B Red-breasted Flycatcher *Ficedula parva*
Savi's Warbler *Locustella luscinioides*
River Warbler *Locustella fluviatilis*
Barred Warbler *Sylvia nisoria*

92. KABAYA, TSURUHIKO. 1965. *The Wild Bird Chorus in Living Stereo.* One 10-inch 33.3 rpm, stereophonic, SLV 549. HMV, Victor Company of Japan, 13-2 Misakicho, Kanda, Chiyoda-ku, Tokyo, Japan.

Thirteen Japanese species recorded and reproduceable stereophonically. I know of only three other stereophonic discs of birds (**63**, **80**, **85**). No scientific or English names are given, but the following details are from a translation made for me by Toomoo Royama:

SIDE 1 '*Dawn in the Hills*'
Cuckoo *Cuculus canorus*
Jungle Nightjar *Caprimulgus indicus*
Bush Warbler *Cettia diphone*
Black-browed Reed Warbler *Acrocephalus bistrigiceps*
Red-bellied Thrush *Turdus chrysolaus*
Crow *Corvus sp.*
Masked Hawfinch *Eophona personata*
Grey Thrush *Turdus cardis*

SIDE 2 '*By Wood and Lake*'
Siberian Thrush *Turdus sibiricus*
Red-bellied Thrush, Cuckoo and Bush Warbler
Japanese Yellow Bunting *Emberiza sulphurata*
Great Tit *Parus major*
Great Spotted Woodpecker *Dendrocopos major*
Red-bellied Thrush
Siberian Thrush
White's Thrush *Zoothera dauma*

93. CHAPPUIS, CLAUDE. 1966. *Oiseaux de France: Migrateurs et Gibiers d'Eau en Hiver.* Five 7-inch 33.3 rpm, CC A/B 1 to 5. Obtainable from Dr C. Chappuis, 2 rue Walter, 76 Rouen, France.

The printed text and spoken announcements are in French. There are no scientific names, but Dr Chappuis kindly sent me a list showing exactly how 83 species are arranged on the five discs. These include 24 of the 27 indigenous European ducks, among them the rarely recorded Common Scoter *Melanitta nigra,* King Eider *Somateria spectabilis,* Ferruginous Duck *Aythya nyroca,* Barrow's Goldeneye *Bucephala islandica,* Smew *Mergus albellus,* Ruddy Shelduck *Tadorna ferruginea* and Marbled Duck *Anas angustirostris,* the last two taped wild in Morocco.

The grouping of the sounds is nobly motivated, but does not come off. Dr Chappuis started out, I suspect, by wanting to group together similar-sounding species for easy comparison. The difficulty is that many defy classification by this method and additional criteria have had to resorted to: sex, distribution, and function of call. Take the water-birds on disc 1 and the first side of disc 2. The headings are (a) 'Whistles of males' (eight ducks); 'Short alarm calls on the water' (a coot and a grebe); (c) 'Typical phrases' (a grebe and a duck); (d) 'Southern species' (two ducks); (e) 'Harsh cries of males' (three ducks); (f) 'Conversational calls of females' (seven ducks); (g) 'Cries of male eiders' (two ducks); (h) 'Grumbling cries of females' (eight species); (i) 'Take-off cries' (six ducks); (j) 'Rolling or vibrating cries' (six species); and (k) 'Repeated cacklings' (three ducks). Dr Chappuis persists with this method for the waders on the next three sides, but then seems to abandon it. Perhaps this is because the less complicated vocabulary of the swans, geese, herons and cranes on disc 4 do not attract permutations. Nor, thankfully, do the songs of the passerines on disc 5.

I do not want readers to be put off the discs for this reason, nor because a number of the recordings are of captive birds. Some of the waterfowl and waders, and doubtless the Demoiselle Crane *Anthropoides virgo,* must have been taped in confinement. It should have been clearly *stated,* however, that they *were* recorded in captivity. There is nothing disreputable about a recording made at a waterfowl collection or a zoo, provided that one declares its origin. Many ducks are notoriously difficult to record in the wild, and there is little reason to suppose that they call any differently when confined.

94. HELLUIN, P. 1966. *Francis et les Etangs.* One 7-inch 33.3 rpm, CLA 1013. Disques Clartés, 13 rue de Buci, Paris 6, France.

The creation of this sound montage is attributed to G. Dobbelaere assisted by P. Ribassin. The intention of the format is that the birds and other animals on the record are identified there by the human voice, and listed alphabetically by French vernacular and scientific names on the sleeve. Unfortunately, while twelve of the sounds are correctly identified on the disc, nine are incorrectly named, one is inadequately named, and eight are not identified at all! In the printed list we find three species that do not appear on the record and are not mentioned in the commentary (Little Grebe *Podiceps ruficollis,* Edible Frog *Rana esculenta* and Green Woodpecker *Picus viridis*). Another is mentioned in the commentary as a Sedge Warbler *Acrocephalus schoenobaenus,* but it is a misidentification of the call of a Green Sandpiper *Tringa ochropus,* which in turn is printed as 'Le chevalier (*Tringa* sp.)'. The voice of the Feral Pigeon *Columba livia* appears as 'Le pigeon (*Columba* sp.)' on the sleeve, and is attributed to the Woodpigeon *Columba palumbus* in the commentary. Lastly, six species are omitted altogether from the list. I am told that the disc was issued for educational purposes! It should be added that J.-C. Roché kindly played it through with me and helped me over checking the various identifications.

95. LEWIS, VICTOR. 1966. *Bird Recognition: an Aural Index.* Vol. 1: Birds of the Farm and Garden; Vol. 2: Birds of Heaths, Commons, Fields and Hedgerows; Vol. 3: Woodland, Copse and 'Wet Habitat' Birds. Nine 45 rpm, 7EG 8923-31, and three booklets (24, 28 and 32 pages). H.M.V., 20 Manchester Square, London W1.

With this set of records, a new and fifth phase of bird sound publication is entered. It is the first attempt I know of to aim deliberately at presenting the complete vocabularies of certain species. When the earliest bird gramophone records were issued some 60 years ago (see 1 to 7), they were of *captive* songsters. European recordings of *wild* birds were first issued in 1910 (1), Australasian in 1931 (Littlejohns 1931), North American in 1931 (Brand and Keane 1931), African in 1933 (Heck and Koch 1933), South American (Neotropical) in 1950 (Kellogg and Allen 1950), Asiatic in 1954 (**26**) and Antarctic in 1965 (Curth 1965). These were almost all *selections* of easy-to-record, pretty or bizarre sounds. Many records like these, of a popular nature, appeared and continue to be issued. The third phase was entered in 1958 with the *faunistic* treatment of the British Isles by North and Simms (**33**) and was soon followed in Europe by Palmér in 1958-67 (**33** and **104**) and Roché in 1964-67 (**68, 75, 100, 102** and **103**), and in North America by Kellogg and Allen (1959) and Kellogg (1962). The fourth or *quantitative* phase was pioneered by Borror and Gunn

(1958-63) with a series of records of which each takes a bird family or group of families and aims to present individual and geographical variations in the songs of individual species.

In this set there is a total of 178 separate recordings relating to 47 species, an average of nearly four recordings per species. What is ideally required is a recording of each of the items (defined by biological function) in each species' vocabulary. But few species' vocabularies are completely known to science, let alone tape-recorded! Thorpe (1961: 31) listed the number of 'words' used in the form of call-notes (he excluded 'song') by adults and young of a dozen well-studied species, and the totals varied between five (for the Barbary Dove *Streptopelia 'risoria'*) and 15 (for the Chaffinch *Fringilla coelebs*). Thus Mr Lewis has entered a field that would daunt many lesser men. To wait until he had the complete vocabularies of even five or ten species might take five or ten years—and recording birds is an expensive and very time-consuming business. Any recordist is entitled to the royalties on his discs and the personal satisfaction of having them on the market even though they fall short of completeness. All he can do therefore is to go through his tape library and select such species as happen to be best represented.

The selection of species in this set is thus necessarily rather arbitrary. Such local birds as the Dartford Warbler *Sylvia undata,* Yellow Wagtail *Motacilla flava* and Marsh Warbler *Acrocephalus palustris* are included, whereas some common species, like the tits *Parus spp.,* are entirely absent. There are six recordings each of the Robin *Erithacus rubecula,* Blackbird *Turdus merula* and Whitethroat *Sylvia communis,* and lesser numbers of the rest, including only one of the Pied Wagtail *Motacilla alba* and Stonechat *Saxicola torquata* among others. It must not be assumed, too, that where there are *n* recordings of a bird they are of *n* items in its functional vocabularly: more than one example of 'song' is given for a number of species. Care is also needed because the author's definitions of function and labelling of utterances takes little account of accepted usage or recent work. For example, the announcements and printed notes relating to the Blackbird *Turdus merula* could be construed to suggest that there is a sexual difference between the 'anxiety notes' of male and female, whereas there is no evidence to this effect. There are many more small irritating examples of loose ornithological thinking and the booklets are, in any case, couched in archaic and rather difficult English.

Ornithologists may wish to interpret the function of the sounds and to 'name' them to their own standards, but they will certainly be grateful to Mr Lewis for his tireless field work and unrivalled technical quality, and for making the recordings publicly available. The records have already been very favourably reviewed by Sellar (1966) and Thorpe (1967).

96. SHOVE, LAWRENCE C. 1966-67. *Sea Birds; Garden and Park Birds; Woodland Birds; Estuary Birds; Field and Open Countryside Birds; Moor and Heath Birds;* and *Marsh and Riverside Birds.* Shell Nature Records: British Birds Series. Seven 7-inch 33.3 rpm, DCL 701-707. Discourses, 10a High Street, Royal Tunbridge Wells, Kent.

A popular presentation of just over a hundred of the commoner, noisier, more beautiful or more interesting vocalisers. DCL 707 includes a British recording from Westmorland of the Spotted Crake *Porzana porzana.*

97. KIRBY, JOHN. 1966. *Sounds of the Countryside.* Shell Junior Record No. 1. One 7-inch 45 rpm. Discourses, 10a High Street, Royal Tunbridge Wells, Kent.

Written and narrated for children, this record includes excellent Swifts *Apus apus* and a close-up Cuckoo *Cuculus canorus.*

98. CONDER, PETER, and FIELD, A. G. 1966. *British Garden Birds.* Two 7-inch 33.3 rpm and book (56 pages). Record Books, York House, 37 Queen Square, London WC1. Obtainable from the R.S.P.B., The Lodge, Sandy, Bedfordshire.

This publication has been extremely well thought out as an entity. It is a pleasing combination of story, picture and sound, that deals with the 25 species most likely to appear in a British garden. They are written about by Peter Conder, painted in colour by H. J. Slijper and tape-recorded by A. G. Field. The Starling *Sturnus vulgaris* copies the song of the Mistle Thrush *Turdus viscivorus,* the wheezy call of the Lapwing *Vanellus vanellus,* the 'bubble' of the Curlew *Numenius arquata,* the quacking of domestic ducks *Anas sp.* and the rusty hinges of an inn sign swinging in the wind!

99. VEPRINTSEV, B., LITVINENKO, L., SHIBAEVA, Y., and NEUFELDT, I. 1966. *The Voices of Wild Nature: Birds of the Far East* (Russian). One 10-inch 33.3 rpm, 17821/2. All-Union Studio of Disc Recording, Mezhdunarodnaja Kniga, 32/34 Smolensk Square, Moscow 200, U.S.S.R.

The fifth in a series of 10-inch discs of birds of the U.S.S.R. (the first three were reviewed as **46** and the fourth as **72**). For this disc we move to the far east of the Soviet Union, to Ussuriland and Amurland, north of Vladivostok. The following list of species is derived from scientific names sent to me by Miss Neufeldt (only Russian names are given on the label):

SIDE 1

Grey-backed Thrush *Turdus hortulorum*
Rufous Turtle Dove *Streptopelia orientalis*
Black-naped Oriole *Oriolus chinensis*
Golden Oriole *O. oriolus*
Pallas's Warbler *Phylloscopus proregulus*
Crowned Willow Warbler *P. occipitalis*

Yellow-throated Bunting *Emberiza elegans*
Great Reed Warbler *Acrocephalus arundinaceus*
Jungle Nightjar *Caprimulgus indicus*
Siberian Ruddy Crake *Porzana paykullii*
Tree Frog sp. *Hyla japonica*

SIDE 2
White-throated Rock Thrush *Monticola gularis*
Blue and White Flycatcher *Cyanoptila cyanomelana*
Toad sp. *Bombina orientalis*
Cuckoo *Cuculus canorus*
Little Cuckoo *C. poliocephalus*
Oriental Cuckoo *C. optatus*
Short-winged Cuckoo *C. micropterus*
Bush Warbler *Cettia diphone*
Jankowski's Bunting *Emberiza jankowskii*
Red Deer *Cervus elaphus*

100. ROCHÉ, JEAN-CLAUDE. 1966. *Guide Sonore des Oiseaux d'Europe (Tome I, Oiseaux de France)*. Eight 7-inch 45 rpm, 20-27. Obtainable, under the title 'A Sound Guide to the Birds of France' with an English pamphlet covering the complete set of 27 discs, from J.-C. Roché, Institut ECHO, 04-Aubenas-les-Alpes, Basses Alpes, France.

With these further eight discs and 79 species, J.-C. Roché completes 'Volume I' of his 'Sound-Guide to the Birds of Europe', covering the birds of French-speaking continental Europe. The earlier discs were reviewed as **68** in the original discography (82 species, not 80 as listed) and **75** in the first supplement (95 species, not 94 as stated). The total number of species on the 27 discs is thus 256. Already Mr Roché has produced a revised and enlarged version of disc 2 (see **101** below). About 240 of the species nest in France and the remainder are important winter migrants. Nearly all the recordings were made by Mr. Roché himself, but he told me in September 1968 that Little Bittern was by Hélène Roché, Redwing and MistleThrush by André Tesson and Manx Shearwater and Puffin by Lawrence Shove. It has now been clearly established by spectrographic analysis that the recording on side B of disc 25 which is attributed there to Baillon's Crake *Porzana pusilla* is actually the same recording as in the Sveriges Radio set *Radions Fågel Skivor* of 1958-63 (**34** in the original discography) with the bird's calls rearranged by cutting and then superimposed on an entirely new background; at the same time, it has also been shown that the original recording was misidentified, being in fact the voice of a female Little Crake *P. parva* (Wahlström 1968).

No English names are given. Since all the names were printed under **68** and **75**, the remaining ones are given below, thereby making volume I complete:

20. *'Grand Echassiers'*
A Heron *Ardea cinerea*
Purple Heron *A. purpurea*
Night Heron *Nycticorax nycticorax*
Little Egret *Egretta garzetta*
B Little Bittern *Ixobrychus minutus*
Bittern *Botaurus stellaris*
White Stork *Ciconia ciconia*
Flamingo *Phoenicopterus ruber*
Crane *Grus grus*

21. *'Oies, Cygnes et Bernaches'*
A Mute Swan *Cygnus olor*
Bewick's Swan *C. bewickii*
Whooper Swan *C. cygnus*
Barnacle Goose *Branta leucopsis*

Brent Goose *B. bernicla*
B Shelduck *Tadorna tadorna*
Grey Lag Goose *Anser anser*
Bean Goose *A. fabalis*
Pink-footed Goose *A. f. brachyrhynchus*
White-fronted Goose *A. albifrons*

22. *'Canards et Sarcelles'*
A Mallard *Anas platyrhynchos*
Gadwall *A. strepera*
Pintail *A. acuta*
Shoveler *A. clypeata*
Wigeon *A. penelope*
B Red-crested Pochard *Netta rufina*
Pochard *Aythya ferina*
Ferruginous Duck *A. nyroca*
Garganey *A. querquedula*
Teal *A. crecca*

23. *'Petrels et Grand Oiseaux Marins'*
A Storm Petrel *Hydrobates pelagicus*
Fulmar *Fulmarus glacialis*
Gannet *Sula bassana*
Manx Shearwater *Puffinus puffinus*
Cory's Shearwater *Calonectris diomedea*
B Shag *Phalacrocorax aristotelis*
Cormorant *P. carbo*
Puffin *Fratercula arctica*
Razorbill *Alca torda*
Guillemot *Uria aalge*

24. *'Sternes, Mouettes et Goelands'*
A Great Black-backed Gull *Larus marinus*
Lesser Black-backed Gull *L. fuscus*
Herring Gull *L. argentatus*
Black-headed Gull *L. ridibundus*
Kittiwake *Rissa tridactyla*
B Little Tern *Sterna albifrons*
Gull-billed Tern *Gelochelidon nilotica*
Roseate Tern *Sterna dougallii*
Sandwich Tern *S. sandvicensis*
Arctic Tern *S. paradisaea*
Common Tern *S. hirundo*

25. *'Guifettes, Grèbes et Marouettes'*
A Great Crested Grebe *Podiceps cristatus*
Little Grebe *P. ruficollis*
Black-necked Grebe *P. nigricollis*
Spotted Crake *Porzana porzana*
B Little Crake *Porzana parva*
[Baillon's Crake *P. pusilla*]
Black Tern *Chlidonias niger*
Whiskered Tern *C. hybrida*

26. *'Epervier, Faucons et Pie-Grieches'*
A Great Grey Shrike *Lanius excubitor*
Red-backed Shrike *L. collurio*
Woodchat Shrike *L. senator*
Lesser Grey Shrike *L. minor*
B Sparrowhawk *Accipiter nisus*
Hobby *Falco subbuteo*
Kestrel *F. tinnunculus*
Lesser Kestrel *F. naumanni*
Peregrine *F. peregrinus*

27. *'Grands Rapaces'*
A Buzzard *Buteo buteo*
Honey Buzzard *Pernis apivorus*
Short-toed Eagle *Circaetus gallicus*
Bonelli's Eagle *Hieraaetus fasciatus*
Golden Eagle *Aquila chrysaetos*
Booted Eagle *H. pennatus*
B Marsh Harrier *Circus aeruginosus*
Hen Harrier *C. cyaneus*
Montagu's Harrier *C. pygargus*
Goshawk *Accipiter gentilis*
Kite *Milvus milvus*
Black Kite *M. migrans*

101. ROCHÉ JEAN-CLAUDE. 1966. *Guide Sonore des Oiseaux d'Europe (Tome I, Oiseaux de France)*. One 7-inch 45 rpm, 2, revised edition. J.-C. Roché, Institut ECHO, 04-Aubenas-les-Alpes, Basses Alpes, France.

This is a revised version with entirely new recordings, all by Mr Roché, of the second disc 'Merles et Grives', first published in 1964. Unfortunately, specific attention is not drawn to this fact on the sleeve, though there are additional numbers on the matrix ('2' and 'DN 380') that make this clear. Besides presenting new recordings of the songs of the eight species (see list under **68**), calls are also now included.

102. ROCHÉ, JEAN-CLAUDE. 1966. *Europe Sud: Tome II du Guide Sonore des Oiseaux d'Europe*. Thirteen 7-inch 33 rpm, 1-13, and pamphlet (32 pages). Obtainable with English translation entitled 'Sound Guide to the Birds of Southern Europe' from J.-C. Roché, Institut ECHO, 04-Aubenas-les-Alpes, Basses Alpes, France.

The 13 discs arrive in an attractive box with a booklet in French by Mr Roché, or with an English translation by E. D. H. Johnson. This is a collection of recordings of 82 of the 'at least 110 species' which we are told nest in the Alpine-Mediterranean zone. (The booklet states that the discs cover 83 species, but there are only 82; two races of *Sylvia hortensis* were probably counted separately.) As defined by Mr Roché, 'Europe' includes western Turkey-in-Asia, and so two species unfamiliar to *Field Guide* users—Krüper's Nuthatch *Sitta krueperi* and the White-throated Robin *Irania gutturalis*—find their way into this 'Sound Guide'. There is a good enough zoogeographical reason for this, one supposes, but it brings the number of strictly European species on these discs down to 80. Of these, 48 have been brought forward from volume I of the 'Sound Guide' because they are—with a couple of exceptions—essentially southern species. Thus, the number of European species additional to volume I is only 32, but these include such rarely recorded birds as the Spur-winged Plover *Vanellus spinosus,* Slender-billed Gull *Larus genei,* Mediterranean Gull *L. melanocephalus,* Sombre Tit *Parus lugubris* and Corsican Nuthatch *Sitta whiteheadi*. The Barbary Partridge *Alectoris barbara* and Olive-tree Warbler *Hippolais olivetorum* were recorded by E. D. H. Johnson in Morocco and Bulgaria, and the Eleonora's Falcon *Falco eleonorae* and the Cinereous Bunting *Emberiza cineracea* by the late Susan Taylor in Crete and Greece; all the other 78 species were taped by the indefatigable Rochés in France, Spain, Corsica, Switzerland, Greece, Romania, Turkey, Morocco and Tunisia.

I come now to the booklet, of which I read the English version, the Jersey printer having done a more presentable job than the French one. The details provided represent a most welcome advance over those given in French on the sleeves of volume I. We are told not only who made each recording but when, where and with what equipment. The species by species paragraphs aim to include '. . . as much information as possible concerning . . . the bird's behaviour in relation to the sounds, the stage of its breeding cycle, its distribution and other relevant scientific data'. Much of the information given is certainly of interest, but it is neither consistent nor free from careless errors, nor as helpful as it could and should be in a 'Sound Guide' whose declared purpose is field identification. On what would be page 4 were the pages numbered, the species omissions are openly and sensibly discussed. One sentence reads as follows: 'The pelicans, waders and larger raptors do not on the whole exhibit any important oral field-

characters.' This may be true of pelicans and big birds of prey, but surely not of waders?

But to return to the notes on each species. It is stated that the Booted Eagle *Hieraaetus pennatus* has not previously appeared on a disc, and yet Mr Roché himself included it in volume I (100) and on an earlier record (48). The Rufous Bush Chat *Cercotrichas galactotes* is not 'only found breeding in southern Spain'; it also nests in Portugal, Yugoslavia, Albania and Greece, not to mention Turkey. I cannot refute that the song of the Spotless Starling *Sturnus unicolor* 'remains unchanged throughout the year', or that 'there are no regional variations' in the output of the Blue Rock Thrush *Monticola solitarius,* but both would be difficult propositions to prove. If the Pied Wheatear *Oenanthe pleschanka* was, in fact, 'particularly numerous along the roadside, breeding between Alexandroupolis and Komotini in Greece in 1966', then it merits separate publication; the only known European breeding grounds are in coastal Bulgaria and Romania, extending up into southern Russia. We are told quite a lot about the form and quality of the songs of the various species, and the mode of delivery. So far so good. But what the field ornithologist wants is to know how the recordings will help him to identify the birds. More comments are needed like 'the duration of drumming enables one positively to identify' the Syrian Woodpecker *Dendrocopos syriacus.*

On the whole, however, this set represents a considerable advance in scientific presentation over the privately sponsored volume I; and special interest attaches to it as the first publication of the then newly formed Institut ECHO.

103. NAKATSUBO, REIJI. 1967. 100 *Singing Birds.* Four $3\frac{1}{4}$-inch—$3\frac{3}{4}$ i.p.s. tapes, and book (136 pages). N.H.K. (Japan Broadcasting Corporation), Tokyo, Japan. Obtainable from Akio Abe, 2-33-19 Umegaoka Setagaya-ku, Tokyo, Japan.

This admirably neat and functional little publication gives a coloured picture, a tape recording and some facts about each species. Although the actual text is in Japanese, any English-speaker can instantly find the English or the scientific name in the book and on the tape. Twenty-two of the 100 species also nest in Britain, and one European breeding bird whose voice has not yet been taped in Europe is the Red-flanked Bluetail *Tarsiger cyanurus.*

104. PALMÉR, STURE. 1967. *Radions Fågel Skivor.* Five 7-inch 45 rpm, RFEP 236-240. Sveriges Radio, Stockholm, Sweden.

These five bring to an end Sture Palmér's *magnum opus* of 40 records, of which approximately 120,000 individual discs have been sold since 1958—a magnificent achievement based on 30 years' field work (for details of the first 35 records, see **34** in the original discography). The

40 together present the voices of 292 European species, which is four more than J.-C. Roché's *Guide Sonore des Oiseaux d'Europe* (68, 75, 100, 102), though in neither case were all the birds recorded in Europe. Mr. Palmér obtained his recordings himself in Sweden, except as otherwise indicated in the following list which is based on a translation by Miss Rosemary Jellis of the Swedish sleeve notes (no English names are given with the discs):

RFEP 236

A (1) Little Bunting *Emberiza pusilla* (1′21″): song, Finland **(2)** Black-headed Bunting *E. melanocephala* (1′12″): call and song **(3)** Grey-headed Woodpecker *Picus canus* (2′02″): song, call and nestlings **(4)** White-backed Woodpecker *Dendrocopos leucotos* (1′50″): drumming, call and nestlings **B (1)** Roller *Coracias garrulus* (0′57″): calls of adult and nestlings **(2)** Grey Wagtail *Motacilla cinerea* (0′55″): calls **(3)** Red-flanked Bluetail *Tarsiger cyanurus* (1′30″): song, Japan (R. Nakatsubo) **(4)** Serin *Serinus serinus* (2′05″): song **(5)** Twite *Acanthis flavirostris* (1′00″): calls and song of injured bird in temporary captivity

RFEP 237

A (1) Savi's Warbler *Locustella luscinioides* (1′38″): song **(2)** Lanceolated Warbler *L. lanceolata* (1′37″): song, Japan (R. Nakatsubo) **(3)** Black-necked Grebe *Podiceps nigricollis* (1′12″): breeding season calls, Denmark **(4)** Slavonian Grebe *P. auritus* (0′45″): breeding season calls **(5)** Gull-billed Tern *Gelochelidon nilotica* (1′02″): breeding season calls **B (1)** Pintail *Anas acuta* (1′37″): two different calls, then female first at 00′47″ (beware female Teal *A. crecca* after 01′22″ and male Teal after 01′32″) **(2)** Gadwall *A. strepera* (1′33″): calls, Denmark **(3)** Red-crested Pochard *Netta rufina* (1′06″): calls of males and females, Denmark **(4)** Red-breasted Goose *Branta ruficollis* (1′44″): call of captive female

RFEP 238

A (1) Kittiwake *Rissa tridactyla* (1′41″): colony, Norway **(2)** Fulmar *Fulmarus glacialis* (0′59″): cackling, Norway **(3)** Great Skua *Stercorarius skua* (0′23″): Faeroe (Nils Dahlbeck) **(4)** Leach's Petrel *Oceanodroma leucorhoa* (0′35″): Scotland (Jeffery Boswall) **(5)** Storm Petrel *Hydrobates pelagicus* (0′32″): Wales (Lawrence Shove) **(6)** Manx Shearwater *Puffinus puffinus* (0′41″): Wales (Lawrence Shove) **(7)** Gannet *Sula bassana* (0′49″): Canada (Bob Robertson) **(8)** Shag *Phalacrocorax aristotelis* (0′37″): breeding season calls **B (1)** White-tailed Eagle *Haliaeetus albicilla* (1′07″): breeding season and alarm calls **(2)** Red Kite *Milvus milvus* (0′46″): mating season calls, Finland **(3)** Black Kite *M. migrans* (0′51″): breeding season calls, Finland **(4)** Marsh Harrier *Circus aeruginosus* (0′48″): two different calls **(5)** Hen Harrier *C. cyaneus* (1′07″) breeding season calls of female and male, Norway **(6)** Montagu's Harrier *C. pygargus* (1′10″): alarm call

RFEP 239

A (1) Sparrowhawk *Accipiter nisus* (1′21″): calls of female, then male **(2)** Gyr Falcon *Falco rusticolus* (0′20″): alarm call **(3)** Peregrine *F. peregrinus* (0′56″): alarm call **(4)** Merlin *F. columbarius* (1′07″): calls of male, then female **(5)** Golden Eagle *Aquila chrysaetos* (1′28″): calls of adult near nest, then nestling **(6)** Imperial Eagle *A. heliaca* (1′27″): calls of captive adult **B (1)** Purple Sandpiper *Calidris maritima* (1′10″): flight call, then display call **(2)** Knot *C. canutus* (0′27″): calls **(3)** Curlew Sandpiper *C. ferruginea* (2′02″): calls, Denmark **(4)** Sanderling *C. alba* (0′43″): calls, Norway **(5)** Terek Sandpiper *Xenus cinereus* (1′39″): display calls, Finland

RFEP 240

A (1) Siberian Tit *Parus cinctus* (1′30″): song and alarm call **(2)** Long-tailed Tit *Aegithalos caudatus* (0′51″): two different

calls **(3)** Firecrest *Regulus ignicapillus* (0′45″): song, Germany **(4)** Short-toed Treecreeper *Certhia brachydactyla* (0′48″): call and song, Denmark **(5)** Ring Ouzel *Turdus torquatus* (1′47″): song and alarm call, Norway **B (1)** Great Northern Diver *Gavia immer* (1′00″): wailing song **(2)** Smew *Mergus albellus* (0′13″): breeding season calls **(3)** Scaup *Aythya marila* (1′43″): calls of males and females **(4)** Common Scoter *Melanitta nigra* (0′38″): calls of males and females **(5)** Steller's Eider *Polysticta stelleri* (1′39″): calls and instrumental wing sounds, Norway **(6)** King Eider *Somateria spectabilis* (1′05″): calls of females and males, Norway

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British bird-photographers

11 M. D. England

Plates 9-16

Derrick England was born 60 years ago and was educated at Epsom College before joining the London Foot Hospital where he has since spent 42 years 'in a rut' (to use his own words). Rather against his inclination, he is now the principal there, but he hopes that this is only temporary because he has recently built a house by the Norfolk Broads. Unusually for a field-ornithologist, he is also a keen aviculturist, being a member of the council of the Avicultural Society and one of the few surviving founder-members of the British Aviculturists' Club. He is very much against keeping birds in small cages, however, and at his new house has aviaries with flights 45 feet long. His wife Joan, who is herself very interested in natural history and has taken part in many of Derrick's expeditions abroad, is an expert at feeding birds by hand and has helped in the successful rearing of such unusual species as Hoopoes *Upupa epops,* Rollers *Coracias garrulus,* Rufous Bush Chats *Cercotrichas galactotes* and Black-eared Wheatears *Oenanthe hispanica.*

Although ornithology is Derrick's chief hobby, it is by no means his only one. He is very fond of music, particularly Bach and Handel, though his appreciation 'not only reached its summit, but ended, with Elgar'. He is a railway fanatic who has far more negatives of steam locomotives than of birds and whose insistence on hanging about train yards and level crossings is a regular and surprising source of exasperation to those who go abroad with him. He was keen on driving what he terms 'real' cars, being at one time a member of the Fraser-Nash 'chain-gang', and one of his dearest possessions is the Triple Award for 1933. He is also immensely proud of the memory of his old father who, destined for the Church, let himself down from a window of his boarding school and ran away to sea: from him Derrick inherited a love of boats, of which he has several.

Our main concern now, however, is Derrick's bird-photography. He has been in the forefront of this field for many years and is president-elect of the Zoological Photographic Club, of which he has been a member for a quarter of a century. His inspiration has always been G. K. Yeates, the former photographic editor of *British Birds,* who was featured in this series 3½ years ago: if Derrick could choose to have taken only one bird photograph, it would be George Yeates's Pink-footed Goose *Anser fabalis brachyrhynchus* in Iceland (*Brit. Birds,* 58: plate 52). George was essentially an explorer who made it his aim to photograph previously unphotographed species in various countries

of the Continent and, when he very regrettably gave up bird-photography some 13 years ago, his mantle largely fell on Derrick England who had already begun making annual expeditions abroad.

So many of Derrick England's photographs have been published in this journal in the last 18 years, partly because of their excellence and partly because he has concentrated on species which hardly anyone else has covered, that any selection of his photographs would be incomplete without mention of at least some of these. Among his outstanding achievements, of course, have been Black-winged Kite *Elanus caeruleus* (*Brit. Birds,* 56: plates 65-70a), which no one was even sure nested in Europe, and Great Bustard *Otis tarda* (59: plates 1-8), which everyone thought was impossible. Other highlights, likewise involving years of planning, have included Osprey *Pandion haliaetus* (49: plates 65-72), Crane *Grus grus* (56: plates 55-59), Black Woodpecker *Dryocopus martius* (59: plates 35-38), and Little Bustard *O. tetrax* (60: plates 9, 11a), not to mention such diverse species as Red-necked Grebe *Podiceps grisegena* (50: plates 2-5) and Roller *Coracias garrulus* (56: plates 9-11).

But he is not interested only in large and colourful birds, and others published in the last decade have included Black Wheatear *Oenanthe leucura* (53: plates 64-67), Bonelli's Warbler *Phylloscopus bonelli* (54: plates 62-64), Red-rumped Swallow *Hirundo daurica* (56: plates 62-63), Cetti's Warbler *Cettia cetti* (57: plates 54-57a), Melodious Warbler *Hippolais polyglotta* (58: plates 1, 2, 4), Woodchat Shrike *Lanius senator* (58: plates 68-71b), Subalpine Warbler *Sylvia cantillans* (60: plates 13-16), Sardinian Warbler S. *melanocephala* (60: plates 58-59a), Blue Rock Thrush *Monticola solitarius* (61: plates 40-42), Bluethroat *Luscinia svecica* (61: plates 60-61) and, only in the last issue, Rock Thrush *Monticola saxatilis* (62: plates 1-3).

To show that Derrick does not photograph only exotic species abroad, several in the present selection were taken in England and they include some very familiar birds. Indeed, the Spotted Flycatcher *Muscicapa striata* on an expressive carving over a door (plate 9) and the Nuthatches *Sitta europaea* courtship-feeding (plate 16) were both photographed in his former garden at Limpsfield, Surrey—as was the Wryneck *Jynx torquilla* (plate 15a) at a time when this species was not quite so scarce as it is now. Wrynecks attracted his attention a lot in the late 1930's and 1940's. The fact that he lived in one of their penultimate British strongholds, coupled with the mysterious deaths of the first brood he photographed, intrigued him into trying to discover more about the causes of their decline. He comments that Wrynecks were the first birds to show the pre-death symptom of a bloated stomach, with which he later also became familiar in Green Woodpeckers *Picus viridis,* and he believes that this was due to their eating poisoned ants, an early example of the effect of a pesticide.

Indeed, the Wryneck in plate 15a itself sickened and then disappeared about the time its brood died. The Sparrowhawk *Accipiter nisus* (plate 10a) was also photographed in Surrey, almost 22 years ago, before the species crashed to its recent low level in eastern and southern England.

The Hen Harrier *Circus cyaneus* (plate 10b), Fieldfares *Turdus pilaris* (plate 12a), Wood Sandpiper *Tringa glareola* (plate 12b) and White Wagtail *Motacilla alba* (plate 15b) were some of the less spectacular birds photographed during a series of expeditions to Scandinavia after Cranes and Ospreys. Similarly, the Great Grey Shrike *Lanius excubitor* (plate 11) and Golden Oriole *Oriolus oriolus* (plate 14) were two of the ancillary results from his later series to Iberia after Black-winged Kites and bustards. Apart from the family of Canada Geese *Branta canadensis* (plate 13) where, having no camera with him, he seized a friend's 120 Ensign, all the photographs reproduced here were taken with a quarter-plate Gandolfi with Ross lenses varying from 6-inch to 12-inch focal length. He does not like wide-aperture lenses and usually uses a small stop, preferring to start at not more than f/6.3. As a result, now that 'increasing senility and infirmity' have compelled him to use what he describes as 'fiddling little miniature cameras', he has great difficulty because the lenses are not intended to be used at small apertures. Hence the slightly out-of-focus foreground in his recent Rock Thrush photographs (e.g. plate 1), resulting from an aperture of f/9.

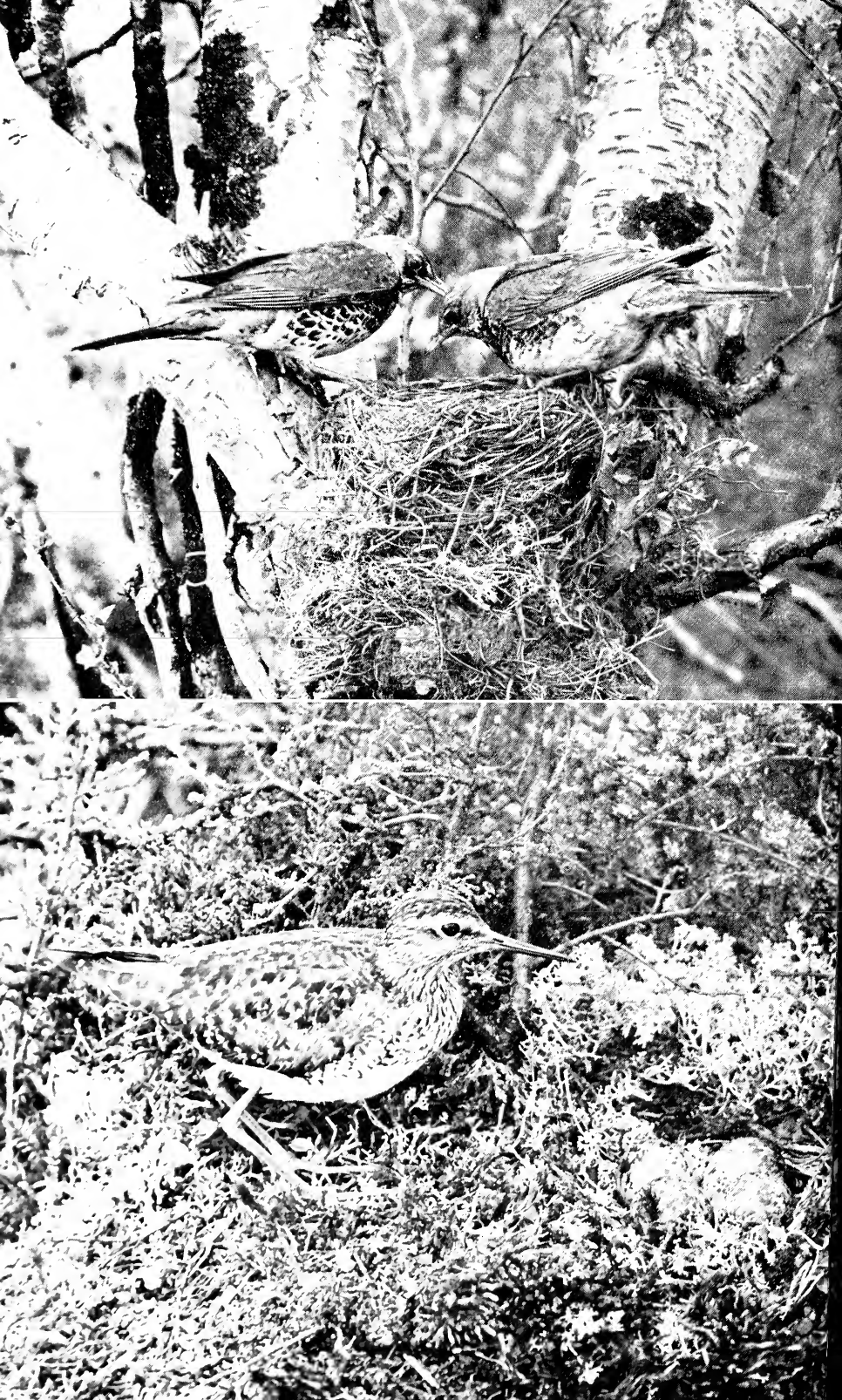
It must be emphasised, however, that the present selection of photographs is not typical, because Derrick is primarily interested in studying and photographing species which have not been worked before. He is intolerant of the efforts of other experienced photographers who repeatedly turn to such birds as Great Crested Grebes *Podiceps cristatus* which have been photographed over and over again. The places he has visited on his almost annual expeditions abroad over the last 18 years have been determined by a chosen species and not merely by being good localities for birds. His enjoyment begins when, having decided that a species needs attention, he starts to read it up, often having a more difficult search for information than eventually for the bird itself. Some years beforehand, he begins correspondence with possible helpers in the country concerned, tapping local knowledge, seeking assistance on the spot and asking permission. He takes endless trouble and spares no effort to get the results he desires. If thwarted, he tries again and again with the determination which has taken him to the top of his profession.

In spite of this singleness of purpose, Derrick's sense of humour never deserts him and he is extraordinarily generous and patient in sharing his hides with other photographers, including beginners. He often insists on his companions taking the first turns in a hide

PLATE 9. Spotted Flycatcher *Muscicapa striata* on nest, Surrey, 1946 (*M. D. England*)
(pages 66-69)

PLATE 11. Great Grey Shrike *Lanius excubitor* at nest, Spain, 1961 (*M. D. England*)

LATE 10. Upper, hen Sparrowhawk *Accipiter nisus* with small young, Surrey, 1947.
OWER, female Hen Harrier *Circus cyaneus* with eggs, Norway, 1958 (*M. D. England*)



LATE 12. Upper, Fieldfares *Turdus pilaris* feeding young, Norway, 1958. Lower, Wood Sandpiper *Tringa glareola* returning to the nest, Norway, 1958 (*M. D. England*)

PLATE 13. Canada Geese *Branta canadensis* with young, Norfolk, 1962 (*M. D. England*)

PLATES 14 and 15. Left, female Golden Oriole *Oriolus oriolus* incubating her eggs, Spain, 1961. Above, Wryneck *Jynx torquilla* on post, Surrey, 1948. Below, White Wagtail *Motacilla alba* carrying food for young into hole, Sweden, 1953 (*M. D. England*)

Plate 16. Male Nuthatch *Sitta europaea* feeding female during the pre-nesting stage while reducing the size of the entrance hole with mud, Surrey, 1946 (*M. D. England*)

over a species which he has waited for years for an opportunity to photograph. His extensive knowledge of the working of photographic equipment (and, indeed, of many other mechanical devices) is at the disposal of all the members of his party, and his expert advice on the technique of bird photography is readily given to the beginner. He shows great skill in arousing enthusiasm among the local inhabitants who can give him assistance, always travelling with large prints and transparencies of his previous results to show what he is after. Nor does he forget such people who have helped him abroad, later sending them prints of photographs taken at the nests with which they have been concerned. By these and other means he has done much to further the cause of conservation, especially in Portugal.

He considers that any success he has achieved has been due to being absolutely ruthless in rejecting all but the best results and adhering strictly to the motto 'There are only two sorts of photographs: good and dustbin'. Drs R. G. and K. J. Carlson, who have been abroad with him on several occasions, never tire of telling the story of how Derrick emerged at midnight from their improvised dark room in Norway, threw a handful of negatives in the waste-paper basket and exclaimed, 'What I like about developing each night before you go to bed is that you can throw your results away at once and save the bother of taking them home'. Most of Derrick's trips abroad have been to the remoter parts of Europe, but in 1967 an invitation to lecture professionally in Melbourne gave him an opportunity of three months round the world with a camera. From this trip about 700 bird-photographs survived his waste-paper basket.

Derrick holds some strong opinions about bird-photography which he knows are not always shared by others. Among them is the idea that photography of most birds of prey should be started on eggs, preferably during the last week of incubation, rather than on nestlings. In his experience, a nervous raptor will rarely desert eggs unless very incautiously approached, but when it has young there is a risk that it may bring food without properly tearing it up or tendering it. He considers that, except in special circumstances, the rarer British breeding species should be worked only in other countries where they are plentiful, though he pleads guilty to having photographed one of the first pairs of British Little Ringed Plovers *Charadrius dubius* in 1944 (*Brit. Birds,* 38: plates 1-4). Always putting the safety of the birds first, he also suggests that wary species need a more gradual approach with a hide than they often get, and he will never regret that he lavished so much care on his Cranes that, with floods, snow and untimely hatching also to be taken into account, it took him seven years to achieve the results he wanted (compare the Cranes in *Brit. Birds,* 56: plates 55-59 with those in 49: plates 58a, 59).

I. J. Ferguson-Lees

Effect of laying date on chick production in Oystercatchers and Herring Gulls

M. P. Harris

INTRODUCTION

It has been widely believed that birds timed their breeding seasons so that the young were raised when food was most abundant or easily obtained, but Perrins (1965, 1966) showed for two such different species as the Great Tit *Parus major* and the Manx Shearwater *Puffinus puffinus* that the pairs breeding earliest in a season left more progeny than those breeding late. In the cases of some species it may perhaps be that external factors, such as a shortage of food at the laying period, force many pairs to raise their young after the time of maximum availability of food. In the Great Tit late nestlings tend to be lighter in weight at fledging than early ones, and such light chicks survive their first three months less well than heavier ones (Perrins 1963). In the Manx Shearwater nesting success is similar among late and early nesters and the mortality comes after fledging. Young Manx Shearwaters migrate soon after fledging to wintering grounds off South America, and the early ones may either find feeding conditions easier for this migration or have more time to learn to feed efficiently before being forced to migrate (Harris 1966).

The aim of this paper is to give some pertinent information for two other species, the Oystercatcher *Haematopus ostralegus* and the Herring Gull *Larus argentatus,* studied on Skokholm and Skomer Islands, Pembrokeshire.

OYSTERCATCHER

The Skokholm population of about 50 pairs of Oystercatchers raises an average of 0.7 – 0.9 young per pair each season, but breeding success is not uniform throughout a season, being highest for early nesters at 1.7 young fledged per pair and lowest for late nesters at 0.2 young fledged per pair (fig. 1). This decline is due to a smaller average clutch-size and lower hatching and fledging success (table 1). Safriel (1967) has shown that the higher success of early nesters is due to their young being fed on terrestrial food, such as moth caterpillars and crane-fly larvae (Tipulidae) when these prey items are largest. Later young are fed either on similar prey which, although still present, are at a lower density or on limpets *Patella spp.* which are brought to them from the shore. On Skokholm limpets are apparently a less satisfactory food source.

ıble 1. Nesting success and post-fledging survival of Oystercatchers *Haematopus ostralegus* **in relation to breeding date on Skokholm, Pembrokeshire**

ıta mainly from Harris (1967), except that fledging success relates to 1963-64 and 1967-68, and the number of young surviving after fledging is brought up to November 1968

	HATCHING DATE					
	Before 20th May	21st-30th May	31st May 9th June	10th-19th June	20th-29th June	After 30th June
utches which could have hatched	14	40	111	95	29	7
verage clutch size	3.0	3.2	3.1	2.8	2.4	1.9
ıtching success	88%	70%	67%	58%	60%	38%
rcentage of hatched chicks which fledged	67%	59%	51%	44%	25%	33%
ɔtal young ringed	35	128	343	242	113	69
lculated number fledged	23	75	175	106	28	23
rcentage surviving more than one month after fledging	17%	19%	15%	14%	17%	13%

Data for the post-fledging survival of the young, as shown by retrapping and recoveries after fledging, are also given in table 1. The hatching dates of these young are not known, but, since most were ringed soon after hatching, the dates of ringing have been used and, generally speaking, the sequence of the groups shows the sequence of hatching. If the number surviving more than a month after fledging is considered in relation to the number fledging (calculated from data in table 1), it appears that the date of fledging does not have any further influence on survival. Once young leave the island they can presumably feed with post-breeders and non-breeders on the beds of Mussels *Mytilus edulis* and Cockles *Cardium edule* where food is abundant and in good condition. Thus early and late young are experiencing the same good feeding conditions, and might be expected to be equally efficient by the winter when presumably this food supply is depleted and there is competition for food.

HERRING GULL

During 1962 a study was made of 400 pairs of Herring Gulls nesting on the cliffs of Skomer (for details see Harris 1964). It must be stressed that fledging success was not known for all the young which hatched, but there is no reason to suspect any bias in the sample. Clutch-size remained constant, except in a few, probably repeat, nests, but both hatching and fledging success increased, so that late pairs produced about three times as many fledglings as early pairs (fig. 1, table 2). There were too few recoveries after fledging to determine any pattern in post-fledging survival.

Broods of two (170 young hatched, 32 known to have fledged)

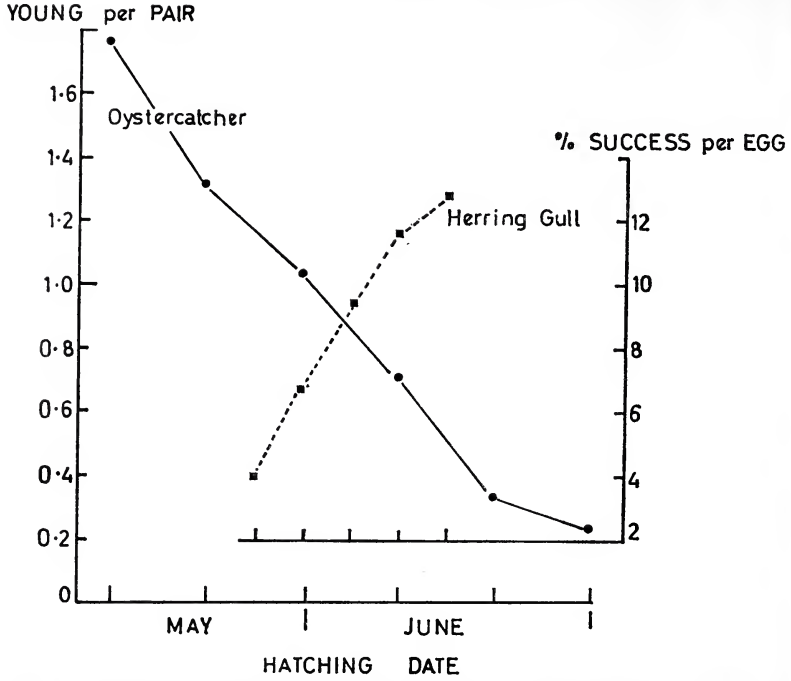


Fig. 1. Decrease in production of young per pair of Oystercatchers *Haematopus ostralegus* in relation to hatching date, contrasted with increase in nesting success of Herring Gulls *Larus argentatus*, Skokholm and Skomer Islands, Pembrokeshire. The data for Oystercatchers are analysed by ten-day periods and those for Herring Gulls by five-day periods (see tables 1 and 2)

Table 2. Nesting success of Herring Gulls *Larus argentatus* in relation to laying and hatching dates on Skomer, Pembrokeshire, in 1962

The hatching success refers to all eggs laid, whereas the young known to have fledged is only a sample

	LAYING DATE				
	Before April 30th	1st-5th May	6th-10th May	11th-15th May	After 16th May
Eggs laid	219	150	148	72	17
Percentage hatched	56%	57%	72%	68%	71%

	HATCHING DATE					
	Before May 31st	1st-5th June	6th-10th June	11th-15th June	16th-20th June	After 21st June
Young hatched	14	102	79	107	93	90
Percentage known to have fledged	7%	12%	13%	17%	14%	26%

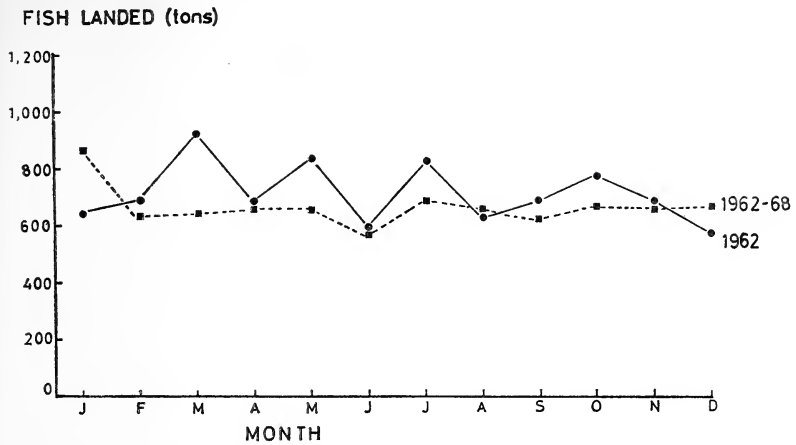


Fig. 2. The tonnage of fish landed at Milford Haven, Pembrokeshire, in each month in 1962 (circles and solid line) compared with the average for 1962-68 (squares and broken line). The 1962 figures are above the average because of a general reduction in landings in more recent years

were more successful than broods of one (82 hatched, 11 fledged), suggesting that food was not short. The slightly lower success (108 hatched, 12 fledged) of broods of three may have been due as much to the inability of adults to protect their young from bad weather as to their inability to feed them (Harris and Plumb 1965). A large proportion of Skomer Herring Gulls obtain their food from the fish docks ten miles away at Milford Haven (Harris 1965) and an examination of the fish catches landed there indicated nothing unusual during the 1962 breeding season which might have explained these results (fig. 2), for landings are normally lower than average in June.

It is difficult to see what prevents later breeding (if the 1962 results were typical) or earlier breeding (if atypical) in the resident Skokholm population of Herring Gulls. Since much of the food, including that fed to small young, comes from man, there is no reason to suppose it is in short supply either just before or just after the breeding season. Indeed, as the species is now increasing, food may well be superabundant. Possibly the breeding season evolved in response to a food supply which had remained unchanged until very recently and the species is still in the process of readjustment.

DISCUSSION

Among sea- and shore-birds, a decline in nesting success with the date of laying has been observed in the Madeiran Petrel *Oceanodroma castro* (Harris in press), Kittiwake *Rissa tridactyla* (Coulson and White 1958), Lesser Black-backed Gull *L. fuscus* (Brown 1967) and American Herring Gull *L. a. smithsonianus* (Paynter 1949), but not in the Gannet

Sula bassana (Nelson 1966), Swallow-tailed Gull *Creagrus furcatus* (personal observations) or British Herring Gull (this study, although Brown 1967 noted a slight fall off in the very latest nests). Owing to less predation, Black-headed Gulls *L. ridibundus* laying within the peak period have a higher breeding success than those laying early or late in the season (Patterson 1965), but I could find no such correlation in the Herring Gull. Post-fledging survival appears to be affected by the date of laying in the Manx Shearwater (Perrins 1966) and possibly in the Gannet (Nelson 1966), but not in the Oystercatcher.

Given that there is some advantage in early nesting, why do birds not nest even earlier? Perrins (1965, 1966) suggested that the females may be unable to obtain enough food to form the egg or eggs. Most Oystercatchers feed on an apparently rich food supply on the shore before breeding (Safriel 1967), but the frequent rough seas around Skokholm during March and April may prevent their utilising this to the full. In the month before laying, female Oystercatchers lose up to 16% of their peak pre-breeding weight (Mercer 1968), probably due to the demands of territorial defence and egg formation. These factors could well put a limit on how early a female can lay. The peak of laying is normally the end of April and early May. One pair which laid exceptionally early in mid-March 1966 lost their young during a period of adverse weather in April (C. K. Britton verbally). This pair has remained unchanged for at least six seasons and is always among the first to lay. In the five seasons for which I have data, six or seven young were reared successfully, much more than average. Possibly this experienced pair is efficient enough to get into breeding condition early, though a genetic effect cannot be ruled out. The few dates I have for individuals breeding for the first time suggest that these are usually late nesters, possibly due to inexperience in protecting a territory and finding food.

If food shortage before laying was preventing earlier breeding in some species, it might be that females nesting very early laid smaller eggs than those laying when food was more abundant later in the season. To test this I measured eggs of known date of laying in the Herring Gull (100 clutches), Lesser Black-backed Gull (11 clutches), Great Black-backed Gull *L. marinus* (27 clutches), Manx Shearwater (97 eggs) and, in Galapagos, Audubon's Shearwater *P. lherminieri* (125 eggs), Madeiran Petrel (194 eggs) and Swallow-tailed Gull (427 eggs). In none of these species was there a change in egg or clutch volume with date of laying. Therefore birds appear either to lay an egg of normal size or not to lay at all. This does not prove that food was not limiting earlier breeding, but indicates that egg size is a compromise between any advantage to be gained by nesting early and the need to have a large egg to give a chick which can better survive any adverse conditions at hatching (Lack 1968).

ACKNOWLEDGEMENTS

I am grateful to Dr David Lack, Dr C. M. Perrins and P. J. Jones for helpful criticism of this paper. C. K. Britton kindly supplied some details of the Skokholm Oystercatchers, and the Manager of the Milford Haven Dock Company allowed me access to details of fish landings.

SUMMARY

Early nesting Oystercatchers *Haematopus ostralegus* raise, on average, about eight times as many young as late ones do. Once the young are fledged, all stand an equal chance of surviving. In this species even earlier breeding may be prevented by the females' difficulty in obtaining food and defending a territory. The situation is confused in the Herring Gull *Larus argentatus* as the species is rapidly increasing in numbers. There is an increase in nesting success with laying date, but this may indicate that the species is still in the process of adjustment to a recently altered food supply. Egg size in sea- and shore-birds does not vary with date of laying.

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Notes

Manx Shearwaters following ships In September 1968, during a voyage from Piraeus to Poros in Greece, I saw that some birds were following another vessel travelling in the opposite direction. As the two ships passed, these transferred to our steamer and I was able to see that they were Manx Shearwaters *Puffinus puffinus* of one of the Mediterranean races (at the time I took them to be *P. p. mauretanicus*, but they are perhaps more likely to have been *P. p. yelkouan* on geographical grounds). After a short while a number of small fish began to dart about in the wake of our steamer and the shearwaters immediately swooped on to them. This happened several times during a period of about 20 minutes, after which the shearwaters ceased to follow. It seems likely that these birds had found that ships passing through this area had the effect of bringing fish to the surface in their wakes, although *The Handbook* states definitely that shearwaters 'do not follow ships'.

H. J. Freeman
26 Downing Drive, Greenford, Middlesex

Dr M. P. Harris, who has made a study of Manx Shearwaters on Skokholm, Pembrokeshire, and elsewhere, comments: 'This species probably does follow ships on rare occasions, but the important fact is that these particular birds were getting some food. This is always presumed to be the reason for birds following ships, but there must be little critical evidence relating to shearwaters, though Dr R. C. Murphy (1936, *The Oceanic Birds of South America*) mentioned bringing them near a ship with bait. One supposes that the fish seen by Mr Freeman were disoriented or even stunned by the boat.' Eds

Herring Gull entering window for food On 15th July 1967, in the centre of Liverpool, I saw an adult Herring Gull *Larus argentatus* land on a ledge about 30 feet from the ground. It then walked to an open office window and, after some hesitation, disappeared inside. A few seconds later, to my amusement, it emerged with what appeared to be a sandwich in its beak and flew off. Herring Gulls regularly frequent this area of the city and are often fed by office workers, but this is my first record of one entering a building for food. I have noted that adult Herring Gulls will often snatch food from an outstretched hand, but juveniles rarely.

Christopher Felton
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Woodpigeons cooing at night From 02.35 to 02.55 on 10th April 1968 I heard two Woodpigeons *Columba palumbus* repeatedly uttering the normal five-syllable call in the woods behind our house at the foot

of Loughrigg Fell, near Ambleside, Westmorland. They appeared to be close together and gave the impression that they were cooing at each other. The weather was mild at the time and there was hardly any wind. JOHN N. TOMLINSON

1 Ashley Green, Brathay, Ambleside, Westmorland

Derek Goodwin, author of *Pigeons and Doves of the World* (1967), comments: 'I cannot recall a reference to any British pigeon cooing at night in the wild and so I think that this is of particular interest. I have heard nocturnal cooing from tame Stock Doves *C. oenas,* Feral Pigeons *C. livia* and various foreign species, and it has been recorded for many others in captivity. It is particularly marked in the case of the domestic Barbary Dove *Streptopelia "risoria"* which is usually prompted into cooing by the sound of any movement at night, when all is normally still: I have been told that in some parts of the world this bird is kept primarily for its usefulness in frightening off evil spirits by cooing as soon as it hears them prowling at night! I have touched on this habit in a paper on the Barbary Dove (1952, *Avic. Mag.,* 58: 205-219) and the following is taken from what I wrote then (p. 209): "The cooing at night . . . seems such a potentially lethal habit. It is shared . . . by the domestic pigeon, but as tame Stock-Doves do the same thing, it is unlikely that it is a habit that has arisen—though it may have hypertrophied—under domestication. The night cooing . . seems to be a response to some disturbance sufficient to awaken or attract the attention of the roosting Dove, but not sufficient to frighten it seriously . . . It seems possible then that the Dove coos in response to some mildly alarming stimulus, much as a man might whistle or talk to himself in homologous circumstances." The cooing of one pigeon at night may also set off others, as recorded in the wild at least for one species of the genus *Ptilinopus.*' EDS

House Martins trapped by mud On 6th October 1968, at Rufford Abbey Lake, Nottinghamshire, my wife drew my attention to about 30 House Martins *Delichon urbica* which were swirling around and apparently settling on some very wet mud. (The lake had just been drained for the removal of silt and only a small area of water remained.) Through binoculars we saw that about nine of these House Martins were actually trapped in the mud, while the others were circling above them. After a time the latter moved away. The trapped birds were now floundering along the surface of the mud, propelling themselves forward for short distances in a laborious fashion with long pauses of rest in between. We hurried to the bank towards which they were moving and were able to throw branches and other debris to give them a better purchase, but it took some of them an hour to cover the 50-60 yards involved.

The trapped House Martins were mostly immatures and once we saw two adults fly down to one of them: they went too low and, while one managed to get airborne again, the other was held by the mud, but fortunately nearer a drier mound to which it fluttered, followed by the youngster. Because the mud was so deep there was little we could do apart from rescue the survivors as they came ashore on the branches. We washed and released two of them, but a third was too weak for immediate flight. Eventually four more got to the firmer part where they rested and dried out. Then, however, the original party of House Martins reappeared and, to our dismay, more of them fell foul of the mud. At first they were catching insects low over the water, sometimes lightly touching the surface as they did so, but when they repeated the manoeuvre over the wet mud they became ensnared. It seemed to be almost entirely the immatures which were caught in this way. Some were able to struggle into the air, but others went too far into the mud and then began the long slow flounder to the shore. This time two overturned and it was clear that there would be other casualties. The events described here lasted about 1½ hours from 11.00 to 12.30. A. DOBBS

Cloverleigh, Old Main Road, Bulcote, Nottingham NG14 5GU

Birds singing in lighthouse beams The lighthouse at St Catherine's Point, on the Isle of Wight, has four beams set at right angles and revolves to give a regular flash at five-second intervals. The balcony round the lantern is continually lit and birds close in can be watched as they circle round. On the nights of 18th/19th and 19th/20th April 1966 I was on the balcony during some spectacular arrivals of passerine migrants. Redstarts *Phoenicurus phoenicurus,* Wheatears *Oenanthe oenanthe* and warblers made up the bulk of these and I was interested to note that a few of the last were singing as they circled about 20 feet out from the lantern. I heard several complete songs from Willow Warblers *Phylloscopus trochilus,* and a Grasshopper Warbler *Locustella naevia* reeled continuously as it flew round and round; these birds could clearly be seen singing as they went past. J. H. TAVERNER

13 Stockers Avenue, Winchester, Hampshire

Derek Goodwin and K. E. L. Simmons comment that birds may sing in such circumstances because they are under stress in a situation where they are frightened, or at least ill at ease, and perhaps at times also because the close proximity of other birds makes them aggressive. We showed this note to two observatory wardens who have considerable experience of migrants at lighthouses. F. R. Clafton, of Portland Bird Observatory, Dorset, could not recall anything comparable in his experience and the only relevant reference he could find in the Portland logs related to a record by Dr J. S. Ash on 5th May 1956

when 200-300 Swallows *Hirundo rustica* and Sand Martins *Riparia riparia* 'circled the light from 00.30 hours until dawn in ceaseless twittering flight'. On the other hand, G. H. Evans, of Bardsey Bird Observatory, has a number of relevant observations and has contributed the following summary. Eds

Behaviour of the kind described by J. H. Taverner is a feature of most large-scale movements in spring of passerine migrants at the lighthouse on Bardsey Island, Caernarvonshire, but it seems to be confined to relatively common species when these are attracted to the light in appreciable numbers. It is unusual for the song to be more than brief or fragmentary, but I have heard sustained singing both from birds circling the light and more often from others grounded below. I have no proof that song started by one bird is taken up by others, but I have often found that the frequency of singing increases as the night progresses. To the species mentioned by Mr Taverner I can add Cuckoo *Cuculus canorus,* Skylark *Alauda arvensis,* Wheatear *Oenanthe oenanthe,* Sedge Warbler *Acrocephalus schoenobaenus,* Whitethroat *Sylvia communis,* Chiffchaff *Phylloscopus collybita* and Starling *Sturnus vulgaris,* all of which are usually heard singing at the lighthouse on Bardsey every year.

G. H. Evans
The Observatory, Bardsey, Aberdaron, Pwllheli, Caernarvonshire

Magpie attacking putty Towards the end of November 1968 I noticed that the putty on one of the upstairs windows of my home at Wembdon, Somerset, was being pecked. At first I suspected either a Great Tit *Parus major* or a Blue Tit *P. caeruleus,* but then I found the culprit at work and was greatly surprised that it was a Magpie *Pica pica.* I can find no previous reference in the literature to this particular species attacking putty.

Eileen M. Palmer
Highfield, Sandford Hill, Bridgwater, Somerset

Song Thrush found in nest of Blackbirds On 29th May 1965, at Bramcote, Nottingham, E. D. Steel and I found a two-week-old Song Thrush *Turdus philomelos* begging for food in a nest of three six-day-old Blackbirds *T. merula.* Initially only the adult Blackbirds were seen feeding the young and showing alarm. Our disturbance caused the young Song Thrush to leave the nest, however, whereupon its own parents became distressed and attended it. A second young Song Thrush was found dead near-by without sign of injury or disease. We knew that two days previously the two young Song Thrushes had left their own nest only ten yards away in the same hedge. Since then the weather had become unusually cold and we suggest that, while one fledgling had moved to the warmth of the Blackbirds' nest and survived, the other had not and had died of

exposure. After detailed enquiries, we ruled out any possibility of human interference. B. D. BELL

52 Mercia House, The Precinct, Coventry, Warwickshire

Song of female Blackbird In 1967 and 1968 a pair of Blackbirds *Turdus merula* nested on a ledge just above the garden door by our house at Romford, Essex. On 23rd April 1968, when the first brood was almost ready to fly, I saw the female fly on to garden wall with a beakful of grubs and one very long earthworm. Her struggles to get the worm tucked tidily into her bill amused my husband and me, standing only three yards away, and we watched until she succeeded. Then, to my astonishment, she uttered several phrases of typical Blackbird song before flying to her nest. I have been unable to find any reference to song by a healthy female Blackbird in Dr D. W. Snow's *A Study of Blackbirds* (1958), and it seemed to me at the time that this bird was confused by our unusual display of interest in her from such a close range. MARGARET K. JONES

2 Collier Row Lane, Romford, Essex

Dr D. W. Snow comments: 'A snatch of song by the male before flying to the nest is quite common. In this case, therefore, it seems that the female sang in a context in which the male also sings. No explanation occurs to me.' EDS

House Sparrows feeding in factories throughout night Since 1965, at all seasons, I have regularly seen House Sparrows *Passer domesticus* feeding throughout the night at the Transmission Plant of the Ford Motor Company at Halewood, Lancashire. The factory is highly illuminated and these nocturnal sparrows occur anywhere in it, but tend to concentrate where the men sit for their tea-breaks. Here they appear to find an ample supply of food in the form of bread crumbs and other scraps. On several occasions I have even watched adult sparrows feeding fledged young on the ground or among the roof girders. Since September 1968 I have also noted House Sparrows feeding at night in a factory at Kirkby, near Liverpool, where the main attraction is again the tea-break area. The sparrows in both places seem quite unperturbed by the presence of machines and passing vehicles. It seems likely that this interesting behaviour is widespread in factories operating at night. CHRISTOPHER FELTON

54 Delfby Crescent, Southdene, Kirkby, Liverpool, Lancashire

In London Feral Pigeons *Columba livia,* but not apparently House Sparrows, often feed nocturnally at such centres as Paddington, Waterloo, Victoria and Charing Cross Stations and outdoors in Piccadilly Circus. EDS

Reviews

Danske Ynglefugle i Fortid og Nutid (Danish Breeding Birds: Past and Present). By Bernt Loppenthin. Odense University Press, Denmark, 1967. 609 pages with maps of Palearctic and subregions; extensive English summary of 46 pages. Danish Kr. 100.

This, so far as I can discover, is the first full treatise in book form which has attempted to relate the whole history of the modern avifauna of a country, although no living bird community can be understood without a full analysis of the evidence from unwritten as well as written history. Denmark had hardly any significant existence as a biotope for birds at the height of the last (Würmian) glaciation of the Pleistocene Ice Age, when only western Jutland south of Limfjord was free of ice. Virtually the whole of its modern avifauna has therefore colonised the country since about 20,000 years ago. Dr Løppenthin, himself a senior scholar of avian palaeontology and archaeology, has made fine use of the deep analyses of the fauna and flora of Palaeolithic, Mesolithic, Neolithic, Bronze Age, Iron Age and Dark Age Denmark carried out by himself and his predecessors and colleagues.

Over 70 non-passerine species and a small number of passerines are known from prehistoric Danish deposits, but there are 282 species which may have bred since the Würm maximum. Not all Dr Løppenthin's hypotheses about the times of late glacial and post-glacial entry (and in some cases temporary exit) of the Danish avifauna are therefore based on bones unequivocally identified by osteological masters with the use of comparative museum series. But over a quarter of them are. A bone is not itself evidence of a breeding bird (as no modern palaeontologist needs to be told) and few identifiable fossil or sub-fossil eggs are available. But Dr Løppenthin's detailed scholarship and his hypotheses (many of which are admittedly educated guesses, and evaluated much more fully in the main Danish text than in the English summary) are very useful indeed as a first approximation to the ecological succession of the avifauna through all its climatic, vegetational and human cultural phases. This succession has been beautifully worked out and correlated by the pioneer pollen-analysts and faunal researches of the peats, mosses and kitchen-middens of Denmark.

It is, of course, the duty of our senior ornithologists to speculate, and the best of them speculate to encourage the flow of further hypotheses. In Dr Løppenthin's book the realms of speculation and of fact are carefully made clear, at least in the Danish text. The lesson we have to learn from the prehistoric part is to take the evidence of avian palaeontology more seriously, and to encourage more research. This lesson is particularly apt for Britain and Ireland, where the Records Committee of the British Ornithologists' Union has lately

rejected the suggestion that our forthcoming new (and overdue) list should include the properly identified fossils of our modern fauna, as does that of the American Ornithologists' Union. Today vast numbers of bird bones from prehistoric digs are filed without identification, and some simply abandoned, largely through lack of interested and trained workers; and our Pleistocene and post-glacial avifauna is far richer than that of Denmark! There is a bigger cadre of bird palaeontologists operating in New Zealand at present than there has been in Britain and Ireland for years.

Denmark is the nearest part of the Continent to much of Scotland and England, and the fate of its modern (i.e. post-1600) avifauna has interesting parallels with ours. Its recent losses among breeding species are largely in wetlands and open land in the succession Hobby 1851, Slavonian Grebe 1854, Arctic Skua 1864, Roller 1868, Hoopoe 1876, Booted Eagle 1882, Eagle Owl 1884, Lesser Spotted Eagle 1885, Great Snipe 1902, White-tailed Eagle 1911, Osprey 1916, Bearded Tit 1921, Caspian Tern 1944, Black Stork 1951 and Middle Spotted Woodpecker 1960. Recent colonisations or recolonisations outnumber these and include Gull-billed Tern 1819, Crossbill 1850, Pochard 1857, Moorhen 1865, Coal Tit 1871, Black Redstart 1872, Chiffchaff 1873, Montagu's Harrier 1901, Little Gull 1903, Scaup 1904, Kingfisher 1910, Bullfinch 1916, Grey Wagtail 1923, Red-backed Shrike 1927, Guillemot 1929, Great Black-backed Gull 1930, Curlew 1934, Cormorant 1938, Red-crested Pochard 1940, Kittiwake 1941, Stonechat 1942, Collared Dove 1948, Gadwall 1950, Short-toed Treecreeper 1952, Black Woodpecker 1961 and Penduline Tit 1964.

Nearly two dozen other species are decreasing, 15 are irregular and 13 are increasing (in addition to most of the colonists). Besides the Canada Goose and the Pheasant, the Partridge is a feral species after deliberate introduction (or reintroduction) in the 16th century. Introduced in 1893, the Red Grouse did not survive feral after 1912.

Dr Løppenthin's book reflects the general state of Danish ornithological culture in the depth of its scholarship, the breadth of its historical and geographical scope and the multiplicity of information from modern field workers. It will be stimulating for our islands' ornithologists to read, and not only for its prehistoric background. It is a major *historical* faunal work also, and gives the most comprehensive and up-to-date account of the faunal changes of the Danish birds that has yet appeared. Dr Løppenthin's exhaustive reading and precise summary of what has been published since scientific ornithology began in his country (with Bishop Pontoppidan in the 18th century) gives him a solid standpoint of high scholarship. From this strong stance his excursions into justifiable and interesting speculation, always carefully identified as such, can only arouse positive and critical thought, and exacerbate none but reactionaries who consider

intelligent free thought dangerous. Dr Løppenthin may be mistaken in some of his guesses—history alone will show—but it is Dr Løppenthin who has pushed history along with this well-produced, learned and benignly provoking book. It is a credit to the influence and strength of the Danish Ornithological Society. JAMES FISHER

Extinct and Vanishing Birds of the World. By James C. Greenway, Jr. Dover Publications, New York, and Constable, London, 1968. Second revised edition. 520 pages; 86 line-drawings and 8 maps. 33s 6d.

This scholarly study of the vanished and threatened birds of the world was published originally by the American Committee for International Wild Life Protection in 1958, but has not been readily available for some years. It covers 42 species and 44 subspecies known from museum specimens and now extinct, 19 probably extinct, others known only from recent osseous remains, hypothetical birds based on pictures or travellers' descriptions, and many existing forms whose small populations may be in danger.

There is first a long essay on the geography of extinction, describing the main areas of the world and the losses known to have occurred. Generally, the continental land masses have fared reasonably well, except for North America where massive shooting for food in the 19th century greatly reduced numbers of shore birds and, aided by habitat destruction, wiped out a species as abundant as the Passenger Pigeon. The great losses have been among island forms, often specialised and with small populations, and the author paints a grim picture of the destruction, mainly within the last 280 years, caused by hungry sailors, introduced predators, loss of habitat and possibly disease, from the Hawaiian islands to the Mascarenes and from the West Indies to the Aleutians. The second and larger part of the book consists of very full accounts of extinct and vanishing forms, covering status, history, range, habitat, description (many illustrated by D. M. Reid-Henry's drawings), habits and the location of known specimens.

These admirably detailed accounts have been revised to 1967, thus including the rediscovery of the Ivory-billed Woodpecker in east Texas. In all, between the two editions, three species and three subspecies have been rediscovered against one species and four subspecies now thought to have finally vanished. It is a pity that space did not allow more details of recent conservation battles, such as the reintroduction of Ne-nes into Hawaii from Slimbridge or the desperate and fluctuating battle to save the Whooping Cranes of North America. Nevertheless, this is a most valuable book for bird conservationists and historians, and Dover Publications are to be congratulated on adding this revised edition to their excellent series of reprints of books on natural history. STANLEY CRAMP

Letters

Turtle Dove migration in Iberia and the Middle East Dr R. K. Murton's suggestion that the autumn passage of Turtle Doves *Streptopelia turtur* through Portugal is misleadingly represented by the recovery of marked individuals seems to mar his otherwise excellent paper (*Brit. Birds,* 61: 193-212). His suggestion was made on the strength of English radar experience and on the expectation that the doves should take a direct route south through eastern Spain. The implied explanation is that the birds fly high at night directly south and that it is only drifted or off-course individuals which are recovered.

The migrating behaviour of the species east of the Mediterranean indicates that this is unlikely. In Iraq so many Turtle Doves pass in daylight within easy range of a shot-gun that I have put forward the theory that most of the eastern populations from Turkestan to north-west India migrate westwards over Baghdad in this manner. Their further passage to Africa has not been traced, but, by analogy with the migrating larks (Alaudidae) in the same region, it is quite possible that they fly round the Fertile Crescent in a huge loop before heading south through the Levant. I have also suggested that, at least in the Middle East, this and a handful of passerine species are the only ones of which 'the greater part of the population passes within sight of the ground during the day'. Details may be found on pages 377-378, 391-392 and 395 of my paper on 'Migration in Iraq' (*Ibis,* 105: 369-398).

It seems that an autumn migration of Turtle Doves round the western margin of the Iberian peninsula is supported not only by recovery of marked birds, but by analogy with the behaviour of the species at the eastern end of its range and that this is better support than deductions from English radar experience. Certainly the theory of passage by Palearctic migrants at great heights by night and in one flight to their African quarters is fruitful and attractive and sustained by much direct radar (as well as circumstantial) evidence, but it is unlikely to apply to all individuals from their point of origin at their breeding site or to all species. I believe that the Turtle Dove is one exception.

S. MARCHANT

36 Arthur Circle, Forrest, Canberra, Australia

Escaped birds at Dungeness A series of letters in 1967 and 1968 concerned escaped birds and the confusion they cause to British ornithology (*Brit. Birds,* 60: 344-347 423-426, 529-530; 61: 41-43, 92-93). During the course of this correspondence it was stated that the Records Committee of the British Ornithologists' Union had agreed that the Red-headed Bunting *Emberiza bruniceps,* the species at the centre of the discussion, should be deleted from the British and Irish

List. Reference was also made to the variety of escaped birds that have appeared at observatories, although the vast majority of these have never been published. Since 1966 I have kept records of escaped birds at Dungeness, Kent, and it may be of some value to list them:

Chilean Pintail *Anas georgica*. Three on 19th July 1967.

Cape Shelduck *Tadorna cana*. One on 16th August 1967.

Bar-headed Goose *Anser indicus*. One immature on 10th October 1966.

Eagle *Aquila sp.* One, with jesses, on 7th October 1968 was possibly a Golden Eagle *A. chrysaetos*.

Budgerigar *Melopsittacus undulatus*. One 'blue' on 8th July 1966, one 'yellow' moving west with party of Yellow Wagtails *Motacilla flava* on 14th August 1966, and one 'blue' on 25th April 1968.

Levaillant's Parrot *Amazona ochrocephala*. One on 11th-15th July 1968.

African Grey Parrot *Psittacus erithacus*. One found dead on tide-line on 8th April 1968.

Ring-necked Parakeet *Palaeornis torquata*. One on 26th August 1967, one on 5th October 1968 and two on 7th October 1968.

Parakeet *Palaeornis sp.* One on 2nd November 1968.

Chestnut Mannikin *Lonchura ferruginosa*. Two on 4th August 1966.

Tri-coloured Mannikin *Lonchura malacca*. Singles on 4th and 18th August 1966 and 5th October 1968.

Zebra Finch *Taeniopygia castanotis*. One on 1st September 1968.

Rufous-necked Weaver *Ploceus cucullatus*. A male on 20th November 1968.

Weaver *Ploceus sp.* Singles on 31st August 1966 and 5th September 1968; these were out-of-colour males or females, but belonged to different species.

Yellow-fronted Serin *Serinus mozambicus*. Two males on 24th July 1966 and one, probably of this species, on 7th August 1966.

Red-headed Bunting *Emberiza bruniceps*. A male on 19th-20th May 1967.

In addition, two records are probably as likely to have referred to escaped birds as to genuine vagrants:

Scarlet Grosbeak *Carpodacus erythrinus*. A male on 2nd May 1966.

Red-creasted Pochard *Netta rufina*. Two males from 15th October to 6th November 1968 and one on 7th.

There have thus been 33 or so individuals in three years, but the origins of only four are known: the three Chilean Pintail escaped from a private wildfowl collection at Hythe, Kent, some 14 miles north of Dungeness, and the Amazon Parrot from a house only about four miles north along the coast. Origins in some cases will always be open to doubt and discussion, but careful records of escaped birds will surely add something to our knowledge of the problem. Unfortunately few bird-watchers are prepared to keep records of species which they do not feel justified in adding to their 'life-lists'—even though the identification of an African weaver can be just as exciting and a little more exacting than running down a Palearctic *Phylloscopus* or an American wader.

R. E. Scott

Dungeness Bird Observatory, Romney Marsh, Kent

News and comment *Robert Hudson*

The vectors of foot-and-mouth disease Foot-and-mouth is not indigenous to our islands, yet it appears here all too often. The means by which the disease spreads have been the subject of much controversy, and farmers in particular have been only too ready to assume that immigrant birds are largely responsible. In July 1964 Dr R. K. Murton, of the Ministry of Agriculture, Fisheries and Food, published a paper in *Ibis* (106: 289-298) in which he examined primary outbreaks and concluded that the coastal bias of those of obscure origin was indicative of the virus being carried by shipping; it had been particularly noticeable that there were fewer outbreaks during the 1939-45 war when there was less shipping, though presumably migrant birds came and went normally. The massive epidemic in the 1967/68 winter brought the question into the public eye once more, and again there were allegations that birds, especially Starlings, were responsible. A paper by Dr D. W. Snow in the December 1968 issue of *Bird Study* (15: 184-190) has examined the course of this recent epidemic, and correlated it with Starling movements within Britain as shown by 1967/68 ringing recoveries. It was noticeable that from the primary outbreak in the area of Oswestry, Shropshire, the disease spread slowly north-eastwards, with the prevailing winds, thus lending support to the idea that the virus is airborne. Despite an extensive south-westerly cold-weather movement of farmland birds, including Starlings, in December 1967, no cases were found south-west of Oswestry. A big roost in Denbighshire was used by Starlings feeding in the Oswestry area, yet there were no outbreaks on farms surrounding this roost. The implications are clear: probably most primary outbreaks are due to human agencies, but once here the virus is spread by wind; it must be rare for birds to be successful vectors of foot-and-mouth.

New chairman for Scottish bird protection committee Professor V. C. Wynne-Edwards has been appointed Chairman of the Advisory Committee on the Protection of Birds for Scotland; he succeeds Commander Sir Geoffrey Hughes-Onslow who has resigned for health reasons. Professor Wynne-Edwards is Regius Professor of Natural History at the University of Aberdeen, also Chairman of the Natural Environment Research Council and President of the British Ornithologists' Union.

Encroachment on Dartmoor National Park In 1962 the North Devon Water Board revealed plans to construct a 54-acre reservoir in the Meldon valley inside the Dartmoor National Park. Though the project was not a large one as reservoirs go, a matter of principle was involved, for this was yet another encroachment on Dartmoor—but, despite a hard six-year fight by the Dartmoor Conservation Association and the Dartmoor National Park Committee, the Ministry of Housing and Local Government has now approved the scheme. Moreover, no sooner had the Minister given his ruling than further proposals were made to construct another and much bigger reservoir of 600-700 acres, also inside the Dartmoor National Park; alternative sites exist outside the Park, but these would involve the flooding of farmland and, consequently, greater expense. The Council for the Preservation of Rural England has joined in protests against this latest proposal; but the Meldon valley scheme has set a discouraging precedent. When it comes to the crunch, amenity and conservation run a poor third to planning and farming interests.

National Exhibition of Cage Birds This exhibition took place from 5th to 7th December and for the second consecutive year was held in Alexandra Palace, a more spacious building than the Olympia venue used up to 1966. I wish it could be reported that the extra space was employed to encourage more attractive exhibits: unhappily, one found the same regimented rows of tiny cages—just more of them.

The emphasis, as always, was very much on 'caged birds'; how much more pleasant the exhibition could be with some aviary displays, while these might help to persuade sceptics that 'fanciers' regard their birds as living entities and not as mere pawns in the trophy-winning game. Needless to say, Budgerigars and Canaries dominated the exhibition, with class after class of aberrant plumages and exaggerated structures that travestied natural selection. This year there were no novelties among foreign birds (though a Masked Hawfinch *Eophona personata* attracted much attention) and it was a relief not to find any Nutcrackers among the British classes. Assuming obedience to the 1954 and 1967 Protection of Birds Acts, all British birds in the exhibition should have been aviary bred; yet the numbers of Waxwings and Crossbills were large in relation to the few successful aviary breedings and one noted several such species as Redstart, Black Redstart, Nightingale, Spotted Flycatcher and Rock Pipit, for which authenticated avicultural breeding records are rare.

Recent reports

I. J. Ferguson-Lees and J. T. R. Sharrock

These are largely unchecked reports, not authenticated records

This summary is concerned mainly with December 1968 and, unless otherwise stated, all dates refer to that month.

LITTLE BUSTARDS

Among the most interesting records of the winter were several **Little Bustards** *Otis tetrax*. Unlike the Great Bustard *O. tarda*, this south Eurasian and north African species has never been known to breed in Britain and the grand total of records in these islands is only just over a hundred, mostly in England but including some eight each in Scotland and Ireland. The ten years 1958-67 produced but five, of which the most recent was in Wigtownshire in April 1964. Against this background, therefore, it is of no little interest that at least four (and apparently two or three others of which we have not yet received details) have been reported this winter. The first was regrettably shot at St. David's (Pembrokeshire) on 23rd November. Then two were found dead in Norfolk, a female which had hit some wires near Scole on 19th and an adult male at North Wooton on 31st. Rather luckier was one seen alive on Dengie Marshes (Essex) on 28th January. This may seem a strange season for records of a species which in Europe winters mainly in the Mediterranean basin, particularly as three of the five during 1958-67 were in April, June and July. October-January has, however, always been the most frequent period for British records, though the species has occurred in every month.

LITTLE AUKS AND OTHER SEABIRDS

Last month we mentioned that a small-scale wreck of **Little Auks** *Plotus alle* began in November (*Brit. Birds*, 62: 48) and these birds continued to be reported down the east coast in December when there were also some in the south. For example, three were seen alive and five found dead in the general area of Swanage (Dorset) between 15th and 29th and several appeared as far west as Co. Cork, including four at Cape Clear Island on 20th and three there on 24th. Also from Cape Clear Island came unseasonal records of **Sooty Shearwaters** *Puffinus griseus* on 15th (three) and 20th, and of a **Balearic Shearwater** *P. puffinus mauretanicus* on 11th. A juvenile **Pomarine Skua** *Stercorarius pomarinus* was seen inland at Sevenoaks (Kent) on 29th.

STORKS, DUCKS, RAPTORS, CRAKES AND WADERS

Following the belated **White Stork** *Ciconia ciconia* in Lincolnshire in November

(*Brit. Birds*, 62: 47), one was recorded at Gissing, near Diss (Norfolk) on 24th December. **Ferruginous Ducks** *Aythya nyroca* were seen at Leybourne (Kent) on 8th and at Frome (Somerset) from 20th. Several American ducks included two male **Green-winged Teal** *Anas crecca carolinensis* at Cors Tregaron (Cardiganshire) from 11th; a male **American Wigeon** *Anas americana* at Akeragh Lough (Co. Kerry) on 28th, which was thought probably to be one of the 13 seen there in October (*Brit. Birds*, 61: 577); and a female **Surf Scoter** *Melanitta perspicillata* on the Kingsbridge estuary (Devon) from 15th to 23rd January. Birds of prey included several **Red Kites** *Milvus milvus*, but the only three of which we have details were at Minsmere (Suffolk) on 24th, Leigh-on-Sea (Essex) on 26th and East Malling (Kent) on 28th (all the same individual?). On the other hand, **Rough-legged Buzzards** *Buteo lagopus* continued to be scarce and, apart from the one in Kent from November onwards (*Brit. Birds*, 62: 47) and one at Horsey (Norfolk) on 24th November, our only report came from Beaumaris (Anglesey) on 2nd. A **Little Crake** *Porzana parva* was seen in the Winspit valley (Dorset) on 19th and a **Spotted Crake** *P. porzana* at Surlingham (Norfolk) on 28th, as well as one a month earlier, on 28th November, at Wisbech sewage farm (Lincoln/Norfolk). Among waders, a **Great Snipe** *Gallinago media* near Dymchurch (Kent) on 27th continued the pattern of winter records which has been noticeable in the last decade (eight out of a total of 16 or 17 during 1958-67). In contrast, a **Black-winged Stilt** *Himantopus himantopus* at Marston (Lincolnshire) from 25th through to the start of the snow in early February was most unexpected as this species is a summer visitor to Europe. Other unusual winter waders were a **Kentish Plover** *Charadrius alexandrinus* at Breydon Water (Norfolk) on 14th-15th and a **Temminck's Stint** *Calidris temminckii* at Ecton sewage farm (Northamptonshire) from 21st to 11th January.

NUTCRACKERS AND OTHER PASSERINES

The **Nutcrackers** *Nucifraga caryocatactes* that were such a feature of autumn 1968 (*Brit. Birds*, 61: 428, 473-4, 536) were still represented by some 17 stragglers during November-December in Kent (two), Essex (three), Suffolk, Hertfordshire (three), Cambridgeshire (two), Hampshire, Dorset, Devon, Cornwall and Lancashire (two), bringing the 1968 total firmly past the 200 mark. Four out of seven seen in December—one each in Suffolk and Hampshire and two in Kent—established themselves in gardens and three of these were recorded daily over several weeks. At least three Nutcrackers were still present in Kent and Norfolk in January. Attention is drawn to the recent request for records to be sent to J. N. HOLLYER, 21 TEMPLE WAY, WORTH, DEAL, KENT (*Brit. Birds*, 62: 37).

Other passerines included a late **Yellow-browed Warbler** *Phylloscopus inornatus* at Holkham (Norfolk) on 1st, as well as a **Greenish Warbler** *P. trochiloides* on Cape Clear Island on 5th and two at Lisagriffin (Co. Cork) on 29th (together with six **Chiffchaffs** *P. collybita*). Winter **Firecrests** *Regulus ignicapillus* were reported from Kent north to Norfolk and west to Dorset and Devon. A **Richard's Pipit** *Anthus novaeseelandiae* at Marazion (Cornwall) on 8th continued another remarkable autumn for this Asiatic vagrant (*Brit. Birds*, 61: 578; 62: 48). Further **Serins** *Serinus serinus* were a male on Tresco (Isles of Scilly) on 28th and, belatedly, one as far north as Scalloway (Shetland) on 17th November. Two **Cirl Buntings** *Emberiza cirlus* in a mixed flock of finches in Anglesey on 31st were well outside their normal range. Two more Americans were a first-winter male **White-throated Sparrow** *Zonotrichia albicollis* at Lowestoft (Suffolk) from 16th November to 1st January (when it died) and, more unexpected, the remains of an **Ovenbird** *Seiurus aurocapillus* (not previously recorded in Britain or Ireland) on Formby Sands (Lancashire) on 4th January. Finally, late summer visitors continued to be noted and among the most remarkable were a **Nightingale** *Luscinia megarhynchos* at Portland (Dorset) on 2nd and **Yellow Wagtails** *Motacilla flava* at Beddington sewage farm (Surrey) on 7th and Chew Valley Lake (Somerset) on 21st-23rd, as well as in Co. Cork on 8th, 15th and 28th-29th.

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LACK, D. 1960. 'Autumn "drift-migration" on the English east coast'. *Brit. Birds*, 53: 325-352, 379-397.

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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. Before submitting his paper, the author must neatly insert any lettering or numbering that is an integral part of the figures and, as this is perhaps the most difficult aspect of indian ink drawing, he is advised to use stencils or seek the aid of a skilled draughtsman.

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Reversed migration as the cause of westward vagrancy by four Phylloscopus warblers

Jørgen Rabøl

When one studies the annual 'Report on rare birds in Great Britain' in this journal, one finds a clear tendency for particular species of rarities of comparable origin to be recorded in different parts of the country. Such distinct patterns seem likely to be due to something rather more than the effects of weather bringing together randomly dispersed individuals or even the distances away of the breeding areas of the species concerned.

Apart from the various papers by Williamson (1959 and others) relating to his hypothesis of downwind drift, the British literature contains few attempts to explain the causes of autumn occurrences of rarities, but two should be mentioned. Nisbet (1962) pointed out that arrivals of Barred Warblers *Sylvia nisoria* and Red-breasted Flycatchers *Muscicapa parva* were associated with high temperatures and light south-west or south-east winds in Germany, but not strongly correlated with north-east winds in the North Sea, thus being significantly different from the arrivals of the commoner Scandinavian migrants. He also went on to suggest that in warm weather juveniles were liable to reverse their orientation from south-east to north-west in central Europe and that, if the winds were favourable, they might then overshoot to reach areas far to the north-west of their ranges. Rooke (1966) has unfortunately not yet published his study in full, but he concluded that the pattern of European records of Pallas's Warbler *Phylloscopus proregulus* could be explained in terms of reversed migration along a great circle track by a population having an eastward standard direction.

The breeding range of Pallas's Warbler is shown in fig. 1 and at first sight it seems highly improbable that a reversed standard direction could be stable over such a great distance. The present paper, however,

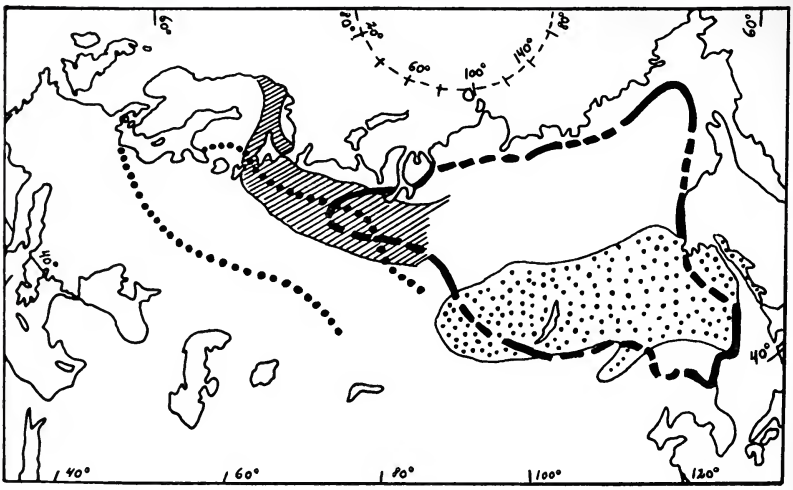

Fig. 1. Breeding ranges of Pallas's Warbler *Phylloscopus proregulus* (dotted area), Yellow-browed Warbler *P. inornatus* (thick line, broken where uncertain), Greenish Warbler *P. trochiloides* (dotted line) and Arctic Warbler *P. borealis* (hatched area), but only the western parts in the cases of the last two species (after Voous 1960 and Dementiev and Gladkov 1951-54)

compares the areas of Britain and Ireland in which this species and the closely related Yellow-browed Warbler *P. inornatus*, Greenish Warbler *P. trochiloides* and Arctic Warbler *P. borealis* have most frequently been recorded, and I believe it establishes that the seemingly improbable is, in fact, probable. It is based on totals for the 17 years 1951-67, but the unprecedented influx of 18 Pallas's Warblers in October 1968 (Ferguson-Lees and Sharrock 1968) is included at the head of table 1. Though the records have been taken from a variety of sources and so may include a few errors or omissions, particularly for the earlier part of the period before the Rarities Committee began to operate in 1958,

Table 1. Pallas's Warblers *Phylloscopus proregulus* **and Yellow-browed Warblers** *P. inornatus* **in Britain and Ireland during 1951-67, analysed according to regions**

The figures in the last two columns are also included in the first two; in the final column the east coast of England takes in Kent. Chi-square tests have been used to examine the probability (P) that the differences in distribution may be accidental: in the first two columns P is between 0.005 and 0.001; and in the last two $P<0.001$. In 1968 18 Pallas's Warblers almost doubled the total and if these be added the top figures in the four columns become 2, 36, 2, 24 ($P<0.001$ in both cases now)

	Scotland N Ireland	England Wales S Ireland	East coast Scotland	East coast England
Pallas's Warbler	1	19	1	13
Yellow-browed Warbler	117	183	110	98

Table 2. Greenish Warblers *Phylloscopus trochiloides* and Arctic Warblers *P. borealis* in Britain and Ireland during 1951-67, analysed according to regions

The figures in the last two columns are also included in the first two; in the final column the east coast of England takes in Kent and Sussex. The first two columns include all records for August-December ($P < 0.001$), but the last two only those for August-September (P between 0.005 and 0.001)

	Scotland N Ireland	England Wales S Ireland	East coast Scotland	East coast England
Greenish Warbler	6	39	4	14
Arctic Warbler	21	13	20	8

they are considered complete enough to show the general picture.

All the Irish records have been taken from Ruttledge (1966) and the *Irish Bird Reports* for 1966 and 1967. All the British records have been collated as far as possible from *British Birds,* but for Pallas's Warbler also from Hollom (1960) and for Greenish Warbler also from Williamson (1962, 1967). At first it seemed likely that records of Yellow-browed Warbler could be included only up to 1963, for after that the Rarities Committee ceased to list this species, but I am indebted to Dr J. T. R. Sharrock who has been collecting the records for 1958-67 in connection with a more detailed analysis of the pattern of occurrences in Britain and Ireland and who has kindly provided me with his totals.

RESULTS

Tables 1-3 show the numbers of records of each of these four warblers in various regions of Britain and Ireland. From tables 1 and 2 it is clear that the two northern species (Yellow-browed and Arctic) produce significantly more northerly patterns in Britain and Ireland than the two southern ones (Pallas's and Greenish). In the last two columns of tables 1 and 2 I have tried to eliminate dispersal within Britain by comparing observations from the two regions of the east coast alone. Furthermore, the last two columns of table 2 deal only with August-September records of Greenish and Arctic. As table 3 clearly shows,

Table 3. Greenish Warblers *Phylloscopus trochiloides* in Britain and Ireland during 1951-67, analysed according to regions and months

This table is confined to coastal records and, as there are none from Hampshire, east England takes in Kent and Sussex and south-west England includes Dorset (P between 0.02 and 0.01)

	Scotland E England N Ireland	S Ireland Irish Sea SW England
August to September	18	8
October to December	6	12

Greenish Warblers tend to occur later in the south-west than in the north and east. This later south-westward tendency seems fairly general among several eastern species and, for example, was referred to by Ferguson-Lees and Sharrock (1967) when discussing Yellow-browed Warblers in 1967.

CONCLUSIONS

The standard directions for the westernmost populations of all these four warblers should first be eastward in the autumn, since they migrate east and then south to winter in south-east Asia. If the occurrences in Britain were due to random dispersal around a mean eastward direction, there should be no regional differences between the four species in Britain and Ireland. As tables 1-3 show, however, this does not hold true. Instead, the British and Irish patterns tend to mirror the breeding ranges around an east-west axis. To explain this we have to conclude that there is some reversed migration in a westward direction by a part of the population of each species. Certainly there is little deviation from this westward mean and the stability of the 'wrong' direction seems high. The south-west tendency in late autumn could point to a random dispersal from the main areas of arrival in Scotland and east England or could be a manifestation of the then southerly standard direction of all four species.

This hypothesis of reversed migration and my treatment of the material are open to criticism, and the role which weather factors play in channelling randomly dispersed birds in the same direction should not be underestimated. I think, however, that the phenomenon of reversed migration contributes significantly to the autumn occurrences of east European and Asiatic passerines in western Europe.

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Uncompleted moult in Sterna terns and the problem of identification

R. E. Scott and P. J. Grant

Plate 23a

INTRODUCTION

From 23rd June to 18th July 1966 we and others regularly watched a *Sterna* tern in an unfamiliar plumage among the gulls and terns feeding at the offshore outflow from the power station at Dungeness, Kent. From 16th May to 8th July 1967 there were two similar terns at the same place. Their presence for such long periods enabled us to take detailed field notes, sometimes at very close range, both in flight and on the ground. Exhibiting such characters as white forehead and collar, a marked carpal bar, and dark legs and bill, they were readily distinguishable from the other terns in normal summer dress. They bore a superficial resemblance to juvenile Common Terns *S. hirundo* and were eventually identified as this species in a plumage equivalent to that of the so-called '*portlandica*' phase of the Arctic Tern *S. paradisaea*, in which some winter features are retained into the summer.

Such a plumage of the Common Tern appears to have received little attention in the literature and we can find no previous detailed field descriptions of this phase of either Arctic or Common Terns. The purpose of this paper is therefore to draw attention to this plumage of the Common Tern and give descriptions and drawings in the hope that these will be of assistance to other observers faced with a similar identification problem. The causes of the '*portlandica*' phase and the differences between Arctic and Common Terns in this plumage are also discussed.

DESCRIPTIONS

The two terns in 1967 differed in several ways from the original one in 1966, as described below, but features common to all three in the field, even at long range, were the completely pure white under-parts, the white forehead and the striking upper-wing pattern formed by the combination of a dark carpal bar and a varying number of blackish primaries and secondaries. Compared with adult Common Terns in normal plumage, the tail appeared shorter and less forked without streamers, the wings shorter and more rounded, and the wing beats perceptibly quicker. At first, these latter features confusingly suggested structural differences from *Sterna*, the birds appearing closer to the marsh terns *Chlidonias spp.* in their method of flight.

The head pattern was similar to that of a juvenile *Sterna,* with a white

forehead and a sooty, not glossy, cap which was rounded at the nape and extended over the ear-coverts in a lobe behind the eye. A fairly broad white collar separated the cap from the mantle. In good light the rump was obviously pale grey, darker in the centre. The tail was pale grey, the outer three or four feathers edged blackish. The bill in all three was black, the same size and shape as that of a normal Common Tern. The legs of the one in 1966 were black, but those of both birds in 1967 showed a dull red at close range.

The 1966 tern had all the primaries and secondaries blackish, whereas only the outer three or four primaries and inner secondaries were dark in the 1967 ones. This resulted in the former's having more contrast on the upper wing, the pale median coverts making an oblong whitish area between the dark carpal bar and the flight feathers. This pale area was very noticeable in the field and even showed through the wing when viewed from below. The differences can be seen in the sketches on plate 23a.

PROBLEM OF IDENTIFICATION

As already stated, these birds presented us with quite an identification problem, and at first we considered the possibility that they might belong to a species other than *Sterna*. Reference to Williamson (1960) suggested that they might be Whiskered Terns *Chlidonias hybrida* in an immature or winter plumage, but that species attains breeding dress in its first summer. Williamson also mentioned the '*portlandica*' phase of the Arctic Tern, but his brief description did not entirely fit our birds. Further investigation was hampered by the lack of previous descriptive material, although Cullen (1957) described many plumage variants in a breeding colony of Arctic Terns.

Although a plumage phase of the '*portlandica*' type had not apparently been described previously for the Common Tern, except by Palmer (1941) who also referred to its occurrence in the Roseate Tern *S. dougallii*, it was considered that the Dungeness birds were Common Terns on the lack of translucent primaries and secondaries, the greyish (not pure white) rump, and the fact that the bill was the same size as those of the other Common Terns present (Richardson 1953, Witherby *et al.* 1938-41). In 1967 this identification was reinforced by the observation of display activity with locally breeding Common Terns in normal plumage.

Subsequently we examined skins at the British Museum (Natural History) and were able to confirm the identification. One specimen in particular, a female Common Tern from Sierra Leone dated 5th June 1920, was almost identical to our two in 1967.

CAUSE OF 'PORTLANDICA' PLUMAGE

As this paper is intended primarily as an aid to field observers faced

with terns in similar plumage, it seems sufficient merely to outline the cause of this aberration as judged from the detailed observation of these Common Terns at Dungeness and the subsequent examination of museum skins. Snow (1967) has also summarised the rather complicated moults of the genus *Sterna*.

The autumn moult of the Common Tern is started on the breeding grounds, then halted and completed on reaching the winter quarters. It appears that some individuals do not finish the spring moult on the wintering grounds, but retain features of adult winter or first winter plumage, such as the juvenile head pattern, the dark carpal bars and the dark bill and legs, right through the spring and summer, presumably until the next autumn's moult. The unmoulted primaries and secondaries are also retained for a second season, thus receiving an excessive amount of wear in which their pale grey 'bloom' is steadily lost until they appear blackish by the time the terns reach Britain in the spring. At the same time, the tail feathers in particular, but also the primaries, become extremely abraded through age and this explains why all three birds at Dungeness appeared to have shorter wings and tail than the other Common Terns present.

Although this is considered the cause of the abnormal plumage, we could find nothing conclusive in previous literature to show why the moult should not be started again after the spring migration northward. Palmer (1941) found that individuals in winter dress on the breeding grounds had small and undeveloped gonads; he suggested that these might be first- or possibly second-year birds that normally stayed in the winter quarters. Ringing recoveries (Spencer 1959 *et seq.*) also indicate that some first-year Arctic Terns remain on the wintering grounds in their first full summer. Hollom (1962) likewise thought that '*portlandica*' Arctic Terns were probably non-breeding immatures. Cullen (1957) discussed this question in relation to age and found white foreheads among known two-year-olds, also noting that they sometimes occurred at greater ages up to six and even twelve years.

The point at which the moult is halted appears to be variable. The two birds at Dungeness in 1967 had renewed some of the inner primaries and outer secondaries, whereas all the flight feathers of the one in 1966 were old. Critical examination of other Common Terns at Dungeness and of museum specimens also showed that a few old (blackish) primaries or traces of the carpal bar were not infrequently retained by individuals in otherwise full summer dress. Thus it appears likely that all stages between normal summer dress and the plumage of the virtually unmoulted bird of 1966 could occur, but only in extreme cases do they look so strikingly different in the field. Certainly such extreme examples seem to be rather rare in Britain, for many thousands of other *Sterna* terns in more or less normal plumages were observed at Dungeness in 1966 and 1967.

SPECIFIC IDENTIFICATION OF 'PORTLANDICA'

The term '*portlandica*' has previously been applied specifically to the Arctic Tern, but observations at Dungeness have shown that a similar retarded plumage occurs in the Common Tern. We have also examined a small number of museum specimens of Roseate Terns which had retained old primaries, and the reference by Palmer (1941) to a '*portlandica*'-like plumage in this species suggests that it as well as Common and Arctic Terns can have a retarded phase. We suggest that the term '*portlandica*' should in future be used for this type of plumage in any *Sterna* tern.

Specific identification of Common and Arctic Terns in this plumage is possible on rump colour (pale grey in Common and white in all plumages of Arctic) and on the translucency of the wing of the Arctic. The flight feathers and carpal bar of a '*portlandica*' Arctic Tern seen at Dungeness on 2nd July 1967 were also paler, providing less contrast with the rest of the upper wing. The smaller bill of the Arctic is of use only when direct comparison with Common is possible. Separation is certainly no easy matter, the colour of the rump and the degree of wing translucency being obvious only in favourable light conditions or at close ranges.

Discussing the identification of the Whiskered Tern, Hollom (1962) stated that this species 'has also to be separated from the "*portlandica*" phase of the Arctic Tern, which latter is however distinguished by having a complete white collar and white rump'. We now know that the Common Tern has a '*portlandica*' plumage too and that it bears an even closer resemblance to the Whiskered Tern as both have grey rumps. This gives the impression that the only safe difference is the colour of the nape (greyish in Whiskered, white in '*portlandica*' birds), but we feel that this exaggerates the problem. In spring and summer Whiskered Terns (even in their first year) have acquired normal breeding plumage, and are thus quite different from any '*portlandica*' at that time of the year. In autumn the upper-wing pattern of '*portlandica*' bears a resemblance to that of the juvenile Whiskered Tern, but the latter also has dark markings on the mantle (the mantle of the '*portlandica*' may appear patchy worn grey, but will never show dark brown or black markings); the juvenile Whiskered will also be in fresh plumage, not showing the excessive wear on the primaries and tail of the retarded '*portlandica*'. Misidentification of Whiskered Terns should not be a problem if observers are aware of the occurrence and appearance of these plumages in *Sterna* terns.

ACKNOWLEDGEMENTS

We wish to express our thanks to J. D. Macdonald and the staff of the Bird Room at the British Museum (Natural History) for assistance and for making the skins of *Sterna* terns readily available for examination. H. A. R. Cawkell kindly read the first draft of this paper.

SUMMARY

Three unusual terns seen over periods of several weeks in the summers of 1966 and 1967 at Dungeness, Kent, were identified as Common Terns *Sterna hirundo* in plumages equivalent to the '*portlandica*' phase of the Arctic Tern *S. paradisaea*. Such plumages are considered to be due to an uncompleted moult resulting in a contrast of old and new feathers; there is also considerable individual variation through the moult progressing to different extents before becoming arrested. Field characters are given for distinguishing Common and Arctic Terns in these plumages, together with criteria for separating both from the somewhat similar plumages of immature Whiskered Terns *Chlidonias hybrida*.

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The Fulmar 'wreck' of 1962

B. S. Pashby and J. Cudworth

Plate 21

INTRODUCTION

During the latter half of February 1962 numbers of dark-phase Fulmars *Fulmarus glacialis* were reported off various parts of Britain and many were subsequently found dead, mainly on the east coast of England. An appeal for information regarding dead Fulmars in the early months of 1962 was made in this journal and the following account of the 'wreck' is based on the material received from individual observers and county and local recorders as a result.

The wreck was also noted on other coasts of north-west Europe, notably in the Netherlands and Sweden. A summary of the Dutch data has kindly been supplied by J. J. C. Tanis (*in litt.*) and the Swedish records were fully reported by Mathiasson (1963a, 1963b). Unpreced-

ented as this wreck may have appeared in Britain, it was not the first time that numbers of Fulmars had been known to perish in north European waters: in 1959, also in February, a similar disaster took place on the Danish and Swedish coasts (Larsson 1960, Joensen 1961).

The Fulmars of the north Atlantic and adjacent Arctic vary in the colour of their plumage and in the length and robustness of their bills. The species is dimorphic, there being dark (or 'blue') and light phases. Fisher (1952) distinguished four colour types amongst the two phases—double-light (LL), light or light intermediate (L), dark (D) and double-dark (DD)—and these are illustrated in Palmer (1962). This classification will be followed in the present paper (see also pages 103-104) and two of the colour types are seen on plate 21. The dark phase predominates in such areas as Baffin Island (Admiralty Inlet), north-east Greenland, Spitsbergen and Franz Josef Land (all 95%), as well as south-east Greenland (Scoresby Sound) and Bear Island (both 50-60%). On Jan Mayen and in west Greenland and Iceland, however, the light phase predominates (99%) and in Faeroe and the British Isles only the light phase breeds (Fisher 1952). Indeed, Fulmars other than LL are unusual at any time in British waters. Little is known about the distribution of intermediates, mainly 'due to a lack of unanimity among field-ornithologists as to what constitutes a dark Fulmar' (Fisher 1952).

Bill-size varies throughout the range, the smallest being found in the west and north. Wynne-Edwards (1952) divided the populations into three groups according to bill-size: Baffin Island, smallest; east Greenland, Jan Mayen, Bear Island and Spitsbergen, intermediate; and Iceland, Faeroe and British Isles, largest and heaviest. The Baffin Island population was considered sufficiently distinct to be separated as *F.g. minor* (Salomonsen 1950, supported by Wynne-Edwards 1952 and Watson 1957, but not Vaurie 1958-65). Salomonsen (1965) considered that small-billed individuals occurred in all high arctic populations and proposed only two groups: Baffin Island, north-east Greenland, Jan Mayen, Bear Island and Spitsbergen; and west Greenland, Iceland, Faeroe and the British Isles. He confirmed, however, that the Fulmars from Baffin Island had the shortest bills.

THE 1962 WRECK IN BRITAIN

In the first half of February 1962 strong westerly winds over the North Atlantic culminated in severe gales across the British Isles, the North Sea and western parts of the Continent on the 11th-12th and 15th-16th. Most of the dead Fulmars were found during eleven weeks from late January to mid-April and this period can be split into three stages. A break-down of the stages by individual counties is given in table 1. The records are necessarily summarised very briefly in this section, but complete lists under counties are being deposited with the editors of

British Birds and in the files of the Edward Grey Institute at Oxford.

Stage 1. Late January to 18th February

The first dead Fulmars reported were one at Holbeach (Lincolnshire) on 27th January, two at Freshfield (Lancashire) on 4th February and one at Southport (Lancashire) on 6th February. On the 14th twelve dark-phase or blue Fulmars flew north-east past Hunstanton (Norfolk). On the 17th an L (or an intermediate between L and D) flew over the Humber at Spurn (Yorkshire), and the remains of another bird were found at Cuckmere Haven (Sussex). On the 18th one classified as D was seen off Bridlington (Yorkshire), the observer stating that several more far out in Bridlington Bay 'looked similar', and further casualties included one on the shore of Lough Neagh (Co. Antrim), several dark-phase individuals near Hunstanton, and a live bird picked up at Spurn Point; the last died later and was classified as L. No more Fulmars, dead or alive, were recorded until 22nd February, when the second stage began.

Stage 2. 22nd February to 15th March

On 22nd February two dead Fulmars were found at Minsmere (Suffolk) and then on the 24th a number of corpses were reported along the east coast from Yorkshire to Kent. These included 33 at Bridlington, two at Winterton (Norfolk), nine at Lowestoft (Suffolk), two at Walton (Essex) and one each at Lower Hope Point and Dungeness (both Kent). That

Table 1. Numbers of Fulmars *Fulmarus glacialis* found dead in individual counties of Britain during each stage of the 1962 wreck

The bracketed figures under stage 3 show the totals described as 'freshly dead' between 18th March and 15th April

	STAGE 1 27 Jan-18 Feb	STAGE 2 22 Feb-15 Mar	STAGE 3 After 18 Mar	TOTALS
Sussex	1			1
Kent		47	37 (3)	84
Essex		17	20	37
Suffolk		81	5	86
Norfolk	8	144	49 (1)	201
Cambridgeshire		1		1
Lincolnshire	1	35	11 (7)	47
East Yorkshire	1	261	26 (22)	288
North Yorkshire		55	1 (1)	56
Co. Durham		5		5
Northumberland		31	2 (2)	33
Anglesey		1		1
Lancashire	3	4		7
Co. Antrim	1			1
Sutherland			1	1
	15	682	152 (36)	849

same day blue Fulmars were seen in flight off Seaton Sluice (Northumberland), South Shields and Hartlepools (Co. Durham), and Bridlington; at the last locality five were watched close enough for them to be classified as one DD, three D and one L. Eight were also found dead at Seaton Sluice during the last week-end in February and it is very possible that these, too, had been washed ashore on the 24th—or on the 25th when an intermediate L-D was seen flying north off St. Mary's Island (Northumberland), two more were found dead at Dungeness and three more at Bridlington. Meanwhile, three or four blue Fulmars were observed from a trawler fishing 10-15 miles west of the Outer Hebrides between 23rd and 27th February: these were among a party of 300-400 Fulmars following the ship and they all appeared quite healthy, feeding on whole small fish from the trawl.

The interval of five days between 18th and 24th February, during which only two dead Fulmars were reported, may appear to reflect a 'week-end bias', but this was probably not the case for various reasons. First, observations were made daily at three or four points on the east coast from Spurn to Minsmere and Dungeness, yet no dead Fulmars were reported then at these places. Secondly, the occurrence of a Ross's Gull *Rhodostethia rosea* at Bridlington on 17th February (*Brit. Birds,* 55: 480-481) ensured a daily watch there throughout the following week. In fact, the 2½ miles of beach on which the 33 dead Fulmars were found on the 24th were actually covered on the 22nd without any being seen. These 33 corpses can therefore be said to have been the first real evidence of a large-scale wreck, but reports of similar concentrations soon followed before the end of February. Particularly noteworthy were 79 dead along four miles of beach at Hornsea (Yorkshire) on the 26th and 'dead Fulmars every few yards' between Gorleston (Norfolk) and Hopton (Suffolk) on the 28th. It was obvious from the notes of various observers that fresh corpses were being washed ashore on each high tide and that, unless these were counted immediately, the strong winds quickly caused them to be hidden by the blown sand.

The following week-end, 3rd-4th March, can be called the key period. Large numbers of dead Fulmars were found on the shores of all the eastern counties of England, plus a single one on the Lancashire dunes. Examples of counts of corpses during early March were 39, 32 and 30-40 on three stretches of Norfolk beach between 2½ and 4½ miles in length; 36, 34 and 29 on three Yorkshire beaches of similar length; and 14 in the quarter-mile between the two lighthouses at Dungeness, plus another 14 on one mile of beach to the north. During the following two weeks up to 18th March all but four miles of the Holderness beach from Spurn Point to Sewerby (Yorkshire), a distance of about 43 miles, was searched and a further 149 bodies were found. This was in spite of the fact that the very high tides of 7th-9th March had washed large

stretches of beach clean and had caused extensive cliff falls which had probably buried many corpses.

Whether these tides had a similar effect on other east coast beaches we do not know, but in that case many dead Fulmars would have gone unrecorded. The difference caused by the high tides on the Yorkshire beaches is illustrated by the fact that before 7th March an average of 15-20 dead Fulmars per mile was calculated and yet after the 9th the beaches not previously searched showed averages of ten and under per mile, a figure similar to that in Norfolk at the same period. The last freshly dead Fulmar during stage 2 was found on 11th March, after which no fresh ones were reported until the 18th when stage 3 began. Although many dark-phase corpses were recovered along the whole of the east coast of England, the sight records of live blue Fulmars were restricted to the coasts of Norfolk, Yorkshire, Co. Durham and Northumberland, the latest being off Holy Island (Northumberland) on 10th March.

Stage 3. 18th March to 15th April

This stage could almost be classed as a second, but very minor wreck, 36 freshly dead Fulmars being recorded between 18th March and 15th April. These new ones included a higher proportion of LL than had stages 1 and 2. Nevertheless, a freshly dead D was found at Swanscombe Marsh (Kent) on 31st March.

THE WRECK ON OTHER NORTH SEA COASTS

Dead Fulmars were also reported on the coasts of Sweden, Denmark and the Netherlands and the numbers are summarised very briefly in this section.

On the west coast of Sweden the wreck also occurred in three stages, the first corpses being picked up in late January and early February at Skälderviken. After an interval of about a week more dead bodies were seen along the whole of the west coast during 16th-20th February: a total of 96 were found between Hunnebostrand and Ystad during the 10th-28th, including 32 at Båstad on the 20th. None was reported from the beginning of March up to the 10th, after which the third stage began with 23 between Rörö (Gothenberg archipelago) and Skälderviken during the 11th-25th. Reports of live and dead Fulmars indicated a peak around 20th February, some six days earlier than in Britain (Mathiasson 1963a).

In the case of Denmark Dr Finn Salomonsen informs us that the coasts are not regularly searched for the bodies of seabirds, but that incidental observations reported in *Feltornithologen* (1962) showed that Fulmars were found dead or exhausted along the coast of Öresund in February and March 1962 and that numbers of Fulmars, many of them dark-coloured, were seen south of the island of Funen after the storm

of 17th February. In addition, nine were found dead on the Kattegat island of Anholt in 'spring' (L. Ferdinand *in litt.*).

In the Netherlands large numbers of dead Fulmars were recorded in early 1962. Counts on the coast from Walcheren in the south-west to the German frontier (nearly 400 km) totalled 2,389. Most were found near Ijmuiden and on the beaches of the West Friesian Islands, particularly Terschelling and Schiermonnikoog, and there were many fewer in Zeeland. The first corpses occurred about 14th January and the greatest numbers reached the shores between the first half of February and the middle of March, but fresh bodies were still being washed up until the second half of April. On Terschelling two stages could be distinguished: from the middle to the end of January and from mid February to about 13th March, the latter period being the more important (J. J. C. Tanis *in litt.*). Between Zandroost and Katwyk (a distance of about 11 km) 128 were found during 17th-25th February with a peak of 65 over seven km on 25th (F. Niesen *in litt.*).

SIZE OF THE WRECK

Joensen (1961) estimated a total of 7,000 casualties in the 1959 wreck, basing this on the finding of only 153 over a wide area, but he himself admitted that such a figure was questionable! To attempt to estimate the number of Fulmars which died in the 1962 wreck is impossible. The only parts of the coast of Britain that were thoroughly checked for dead birds were some of the shoreline of Yorkshire and a good many of the beaches of Norfolk, Co. Durham and Northumberland. It is a pity that no information from counties further north was forthcoming, as we think that the number of dead Fulmars per mile began to fall from Teesmouth northwards. The only possible evidence of any wreck in Scotland, however, was the remains of one long dead on the shore of Loch Badenloch (Sutherland) on 6th June. Similarly, the seven recovered on the Lancashire coast, the one at Lough Neagh and one at Newborough Warren (Anglesey) were the only indications that the wreck had affected the west coast in any way. This may have been partly due to the fact that much of the west coast is unsuitable for the finding of birds cast ashore, a situation similar to that in Norway (Dr H. Holgersen *in litt.*). In addition to the one in Scotland, other inland occurrences involved single birds at Pyemore near Ely (Cambridgeshire), at Abberton Reservoir (Essex) and at Ludham (Norfolk).

The total number of dead Fulmars found and reported to us was 849, a figure that excludes such vague references as 'every few yards' and 'many'. No less than 489 of these were recovered in east Yorkshire and Norfolk alone, which is probably a reflection of the strength of coastal watchers in these two counties rather than of any other factor, though the more open beaches doubtless made the finding of dead birds easier than on coastal saltings or rocky shores.

COLOUR PHASES

The four colour types distinguished by Fisher (1952) are explained on page 98. Separating these is straightforward enough with the LL and D examples on plate 21, but this was not always a simple matter in 1962 when the bodies were dishevelled and waterlogged, and some had also been in contact with oil. Indeed, close inspection of corpses on wind-swept beaches in showers of snow and sleet to divide L and D birds could hardly have been expected. Consequently, most observers who made any distinction at all simply separated 'light', 'dark' and the occasional 'intermediate'. Greater accuracy was possible if the corpses were collected and brought indoors to be examined at leisure, although any reluctance to introduce dead Fulmars into the home is fully understandable!

A total of 92 of the bodies found on the Yorkshire and Lincolnshire coasts were grouped according to Fisher's classification, including 36 collected at Spurn Bird Observatory on 3rd March. These are set out in table 2, together with broader groupings (based on colour details supplied by the observers) for 344 others found elsewhere on the English coast. The 62 listed as 'dark' included some which the observers described as showing grey on the head and which could therefore have been either L or D (perhaps even DD). In view of the proportion of LL to L found in Yorkshire and Lincolnshire, it seems likely that only about half of the 276 listed as 'light' would have been classified as LL if they had been examined in detail. (The finding of a dead Fulmar was an unusual event for most observers, many of whom doubtless never considered the possibility that the birds were other than the British LL.)

Three observers in Norfolk, Suffolk and Essex each stated that the great majority of the dead Fulmars found were 'dark'. High pro-

Table 2. Colour phases of Fulmars *Fulmarus glacialis* found dead on the coast of England in 1962

The numbers listed for Spurn Bird Observatory were all picked up on 3rd March, and they are included in the figures for the East Riding of Yorkshire and north Lincolnshire in the second line. These birds were all classified according to the colour types distinguished by Fisher (1952) (see page 98 in the present paper). This was not done, however, in most cases from the rest of the coast of England, for which a broader grouping has had to be based on colour details provided by observers

	LL	L	Undetermined	D	DD	TOTAL
Spurn Bird Observatory	15	14	6	1	—	36
E Yorkshire-N Lincolnshire	46	40	15	5	1	92
	Light		Intermediate	Dark		TOTAL
Rest of English coast	276		6	62		344

portions of darker populations were also noted in Sweden where, out of 126 dead, only 39 were certainly 'light', 31 were 'unclassified' and 56 were 'dark', as were 20 or more seen alive at Båstad on 20th February (Mathiasson 1963a). In the Netherlands, similarly, F. Niesen (*in litt.*) stated that 'only very few' of the 128 corpses found by him were 'light', although he could not give exact figures.

When the dead Fulmars collected at Spurn were laid out on their backs with wings spread, we noted what seems to be a clear character for distinguishing LL from L in the field. The under-wing of LL is white except for a blackish leading edge from the carpal joint outwards and a dark trailing edge, whereas that of L is uniformly pale grey until it darkens towards the tip. (Types D and DD also have uniform underwings, but darker than L.) This is mentioned by Witherby *et al.* (1938-41) under 'Description', but they do not suggest it as a field character for separating the two light phases.

BILL-SIZES

With so many dead Fulmars on the Yorkshire beaches, it soon became obvious that, in addition to differences in colour, there were also differences in bill length, and that the darker-headed individuals had the smaller bills (plate 21). Several observers elsewhere also remarked on the small sizes of the bills and of the birds themselves, though without taking measurements. We measured the bills of six Fulmars from east Yorkshire which had been preserved as specimens and of 37 others from east Yorkshire and north Lincolnshire to the nearest 0.5 mm. Boylan (1967) examined these data and attributed two of the specimens to the Baffin Island race *F. g. minor*. It is also likely that two more specimens and possibly two of the measured but unsexed corpses belonged to this race, and that a substantial proportion of the others measured were from western or northern populations. At the same time five specimens from the Swedish coast (Mathiasson 1963a, 1963b) and one from Schleswig-Holstein in north Germany (Ruthke and Frantzen 1963) were attributed to *F. g. minor*.

P. J. Boylan (*in litt.*) considers that the reappraisal by Salomonsen (1965) of the grouping of Fulmars according to bill-size does not really affect the conclusion that those with bills of less than 34.5 mm come from the Baffin Island population. He prefers to follow the widely (but not universally) accepted separation of *F. g. minor* to describe this population, particularly as Salomonsen proposed renaming the North Atlantic Fulmars by adopting *F. g. glacialis* for the high-arctic populations and *F. g. auduboni* for the boreal ones.

Of 18 white-headed Fulmars (LL) found dead along the coasts of the Netherlands and measured by Professor Dr K. H. Voous, two were males with bills of 37 mm and 38.5 mm and the remainder females with bills ranging from 35 mm to 39 mm.

PHYSICAL CONDITION

Several observers remarked on the extremely light weights and emaciated condition of the Fulmars they handled. Others noted superficial wounds in the regions of skull, neck and breastbone. A small proportion of the birds had oil marks on the under-parts, but none showed evidence of any other maltreatment (such as shot wounds).

Post-mortem examinations were carried out independently on a total of ten Fulmars by B. Fewster (Whitby), E. Gorton (Bolton), A. H. Rider (Hull) and P. Yeoman (Newcastle). All found a complete lack of subdermal fat, gross wastage of muscular tissue, and only small pieces of debris in the digestive tract (a few feathers in two cases). Superficial wounds which had been sustained after death may have been due, in part at least, to live Fulmars mauling the carcases in an attempt to find food: several instances of this behaviour were reported. Oil contamination may have followed or preceded death; there was no evidence that preening of oiled parts had taken place, but it was not possible to establish whether oil was a contributory cause of death in any case. All the four people who carried out the post-mortems were of the opinion that death was due to exhaustion from lack of nourishment over a considerable period.

In addition to the post-mortems, other specimens were tested for radioactivity to determine whether, as had been suggested, there was any possible link between this wreck of more northerly populations of Fulmars and the series of nuclear trials carried out in the Arctic in 1961. Tests made on a total of about 15 corpses by T. J. Tulley of the Hull Royal Infirmary, Dr Hughes of the Leeds Royal Infirmary, Dr G. H. Spray of the Radcliffe Infirmary at Oxford, Mrs E. Lloyd of the Churchill Hospital at Oxford, and L. Salmon of the Atomic Energy Research Establishment at Harwell did not support this. Duplicated details of the results of these tests can be obtained by sending a stamped, addressed envelope (9″ × 4″) to B. S. Pashby at the address on page 109.

Only two of the freshly dead Fulmars examined in Sweden weighed more than the lowest established weight for healthy individuals of this species. Examination of corpses showed that they were emaciated and that most had intestinal parasites. Signs of oiling or external injury were found in very few cases (Mathiasson 1963a). In the Netherlands, too, where the beach surveys were primarily to find victims of oiling, it was concluded that only a few Fulmars died from this cause.

WEATHER CONDITIONS

A study of the Daily Weather Reports for the North Atlantic during January and February shows that the pressure systems follow a fairly regular pattern each year: depression follows depression in the north, while ridges of high pressure are maintained further south, causing a series of storms accompanied by west and north-west winds. In early

1962, indeed from late autumn 1961, the severe westerlies were more widespread and frequent than usual, commonly reaching force 10-11 and often force 8 over a large area. In January 1962 the Ocean Weather Stations each recorded between 20 and 44 six-hour periods with winds of gale force or higher, and from 1st to 16th February between 16 and 33 such periods. At the same time, very high waves of over 16 feet persisted for up to 66 six-hour periods in January, and up to 37 such periods in the first 16 days of February (*Ocean Weather Station Reports*, January-February 1962).

Snow and sleet showers were frequent and in some areas the factors producing the phenomenon of 'black ice' were present. Generally, these storms abated somewhat before reaching European waters, but one came right across the Atlantic on 11th-12th February to be followed on the 15th-16th by another which was severe enough to cause widespread damage in Britain and serious flooding at some points on the west coast of continental Europe. This latter storm was the result of a very deep depression which originated in the Davis Strait on the 13th-14th and which moved quickly eastwards; it was east of Iceland by the 15th and centred over central Scandinavia on the 16th, producing very strong northerly winds over the sea area between Iceland and Norway.

By the 17th this depression had moved over the Baltic and a high to the south-west of the British Isles, with a ridge extending north, resulted in strong north winds over the whole North Sea area. The high moved slowly north, at first causing westerly winds in the North Sea, but by the 21st, when it was centred over south-east Scotland, light easterly winds were affecting the very southern part of the North Sea. The high continued to move north-east and was centred over Scandinavia by the 22nd with easterly winds over the whole North Sea area. These easterly winds, very strong at times and affecting all of the east coast of Britain, continued until 1st March.

From 16th February conditions in the North Atlantic were much better until 6th March, when a very deep depression developed south of Denmark Strait and caused gale or severe gale force winds until at least the 15th. This depression was centred further south than those of mid-February, so that the gales affecting Denmark Strait and the seas south of Greenland and west and south-west of Iceland were easterly. From 12th to 15th March a northerly airstream blew down into the North Sea.

REASONS FOR THE WRECK

Many writers have described the wonderful flight of the Fulmar and how this species apparently revels in stormy conditions. But how long can Fulmars endure such conditions if they are unable to get food? Studies at breeding colonies have shown that they can go almost nine

days without food (Williamson 1952), but this is during incubation and not while being buffeted by gales at sea.

In January and February Fulmars collect in great numbers on the Newfoundland Banks. These are mixed populations, mainly from Greenland and arctic Canada, but including some from Europe as has been shown by British-ringed recoveries in that area (Fisher 1952). Large numbers also occur in the southern part of Davis Strait, in the Cape Farewell Seas and in Denmark Strait, and some are probably scattered south to latitude 50°N and east to longitude 20°W.

Conditions in these areas were particularly severe in January and the early part of February 1962. One observer described the sea as 'a huge mass of froth'. Sir Alister Hardy (*in litt.*) suggests that in these circumstances Fulmars may have been unable to obtain plankton, even if it was available, owing to their specialised method of feeding by 'dabbling'. At the same time, as trawling was severely curtailed by the continual storms and also in some areas by the hazard of 'black ice', they could not even rely on the offal from man's fishing operations. Thus they faced a double shortage and it seems likely that populations of Fulmars in the western North Atlantic had little or no food for a month or more, while subjected for long periods to gale force winds and heavy seas.

The gales reached a peak with those that affected western Europe on 11th-12th and 15th-16th February, having originated in the region of the Davis Strait. Large numbers of already weakened Fulmars must then have been carried into the sea area between Iceland and Norway. There, with some probably already dead and others physiologically beyond the point of no return, they came under the influence of strong to gale force north winds on the 17th and were driven down into the North Sea. Those that were still alive evidently sought sheltered areas, such as Bridlington Bay and the Wash. Some of the dead or dying were caught on the north-facing coasts of Norfolk and the Netherlands. Many more were drifted eastwards by the west winds of the following three to four days and found dead off the Swedish west coast.

Dead or dying birds were probably scattered throughout the southern North Sea and, with easterly winds from 20th February, strong at times, they were gradually washed ashore in eastern England, first in the south at, for example, Minsmere on the 22nd and then, as the high moved northwards, at Bridlington on the 24th. A few may have been swept direct to Britain by the storms of January and early February, accounting for the early casualties and west coast records.

The first two stages of the wreck can thus be explained, but the third stage is more difficult to understand. The only weather factor common to the main wreck and this minor one was the northerly airstream blowing into the North Sea for several days beforehand. There had been severe weather in the North Atlantic in early March, but the

winds had been easterly. We can only conclude that some numbers of Fulmars had been carried east by the February gales, but not far enough to be affected by the northerly winds that followed. These birds, still very weak, may then have moved into the sea areas north of Britain and been driven down into the North Sea when the northerly winds developed again from 12th to 15th March. Shortly afterwards more dead Fulmars were found on the coasts of the Netherlands, Sweden and eastern England.

Only small numbers of other species of seabirds were reported. Guillemots *Uria aalge* and Razorbills *Alca torda* probably represented 'normal' winter casualties, but Kittiwakes *Rissa tridactyla* were certainly affected. On 14th February about 1,000 were seen off Hunstanton and later in the month several extremely exhausted individuals were seen resting on the harbour wall and beach at Bridlington. In March dead Kittiwakes were found in Northumberland, Co. Durham, Yorkshire, Norfolk, Essex and Kent, and some were recorded inland in Cambridgeshire. The fact that Kittiwakes obtain a certain amount of their food in a manner similar to that of Fulmars supports the impression that the specialised surface-feeders suffered worst in the gales, while the submarine feeders were unaffected.

Wrecks of Fulmars may be more frequent than we realise. Only the northerly winds following the conditions that weakened the birds brought this one to our notice. If the winds had remained westerly the deaths of many Fulmars would probably never have been recorded.

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PLATE 17. Female Red-throated Pipit *Anthus cervinus* with six nestlings, Swedish Lapland, July 1968. The upper-parts are boldly marked with blackish-brown streaks extending to rump and tail-coverts, and in summer there is a varying area of red or pink on face, throat and breast (pages 110-115) (*photo: J. B. and S. Bottomley*)

PLATES 18 and 19. Male Red-throated Pipit *Anthus cervinus* and, facing, female and habitat, Swedish Lapland, July 1968. Note that the male of this pair was the more heavily streaked beneath. The nest (near hide) was of grasses in a swampy area of crowberry, dwarf birch and blue willow (page 113) (*photos: J. B. and S. Bottomley*)

PLATE 20. Red-throated Pipit *Anthus cervinus*, Swedish Lapland, June 1960. Note the lightly streaked breast compared with plate 18a, but some have even fewer streaks than this and such birds often show the richest and most extensive pink: males are generally pinker and less streaked than females (page 112) (*photo: C. C. Doncaster*)

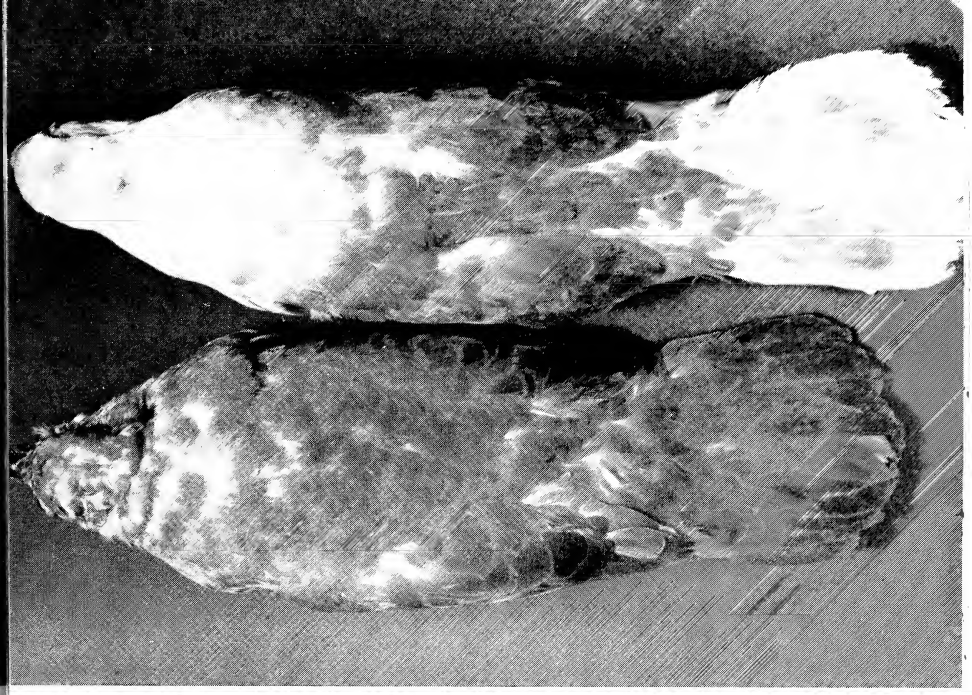


PLATE 21. Two Fulmars *Fulmarus glacialis,* both females, out of 835 found dead on the east coast of England in February-April 1962 when many arctic 'blue' ones were seen. Here a double-light (LL), bill 37.8 mm, is compared with a blue or dark (D), bill only 34.3 mm and thought to be *F. g. minor* (pages 97-109) (*photos: A. Marshall*)

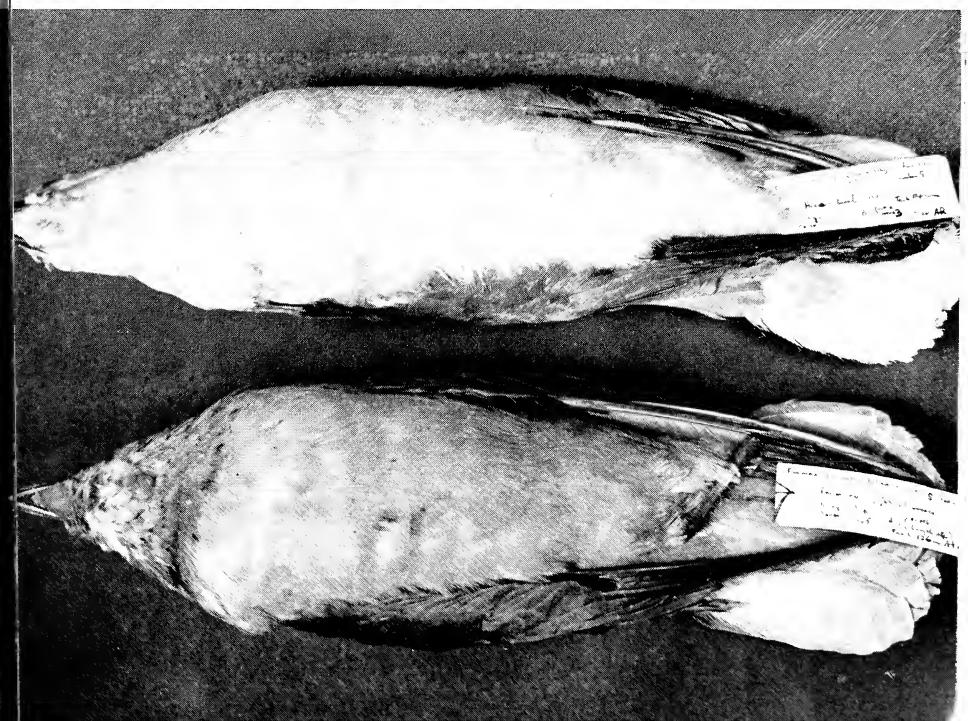


PLATE 22. Wren *Troglodytes troglodytes* feeding Cuckoo *Cuculus canorus*, Somerset, July 1968. The Wren is an unusual fosterer and this one bird apparently reared the Cuckoo on its own, feeding it mainly on caterpillars and other larvae and, as shown below, looking likely to be swallowed itself (pages 117-119) (*photos: Brian Curtis*)

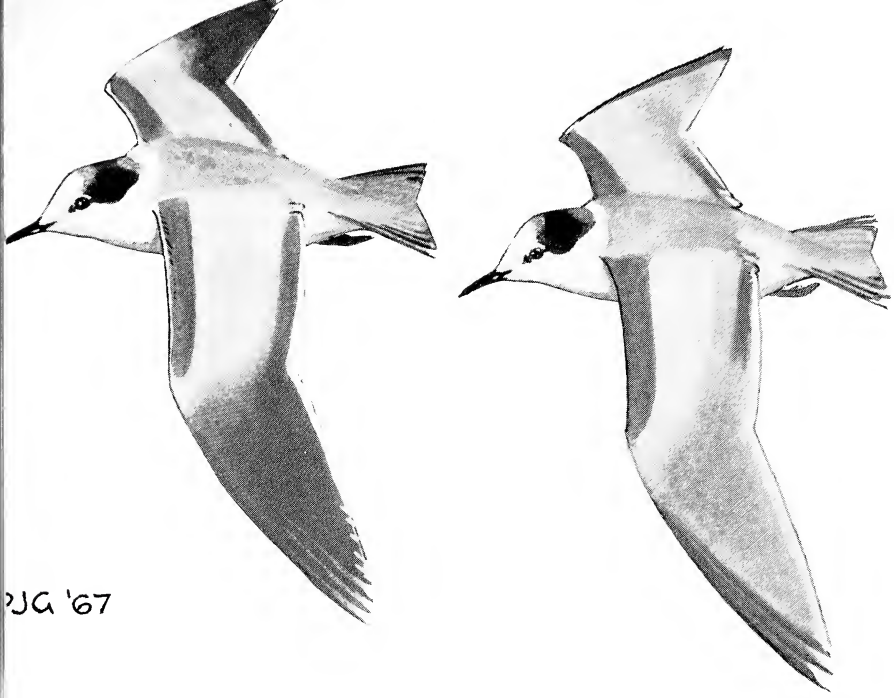
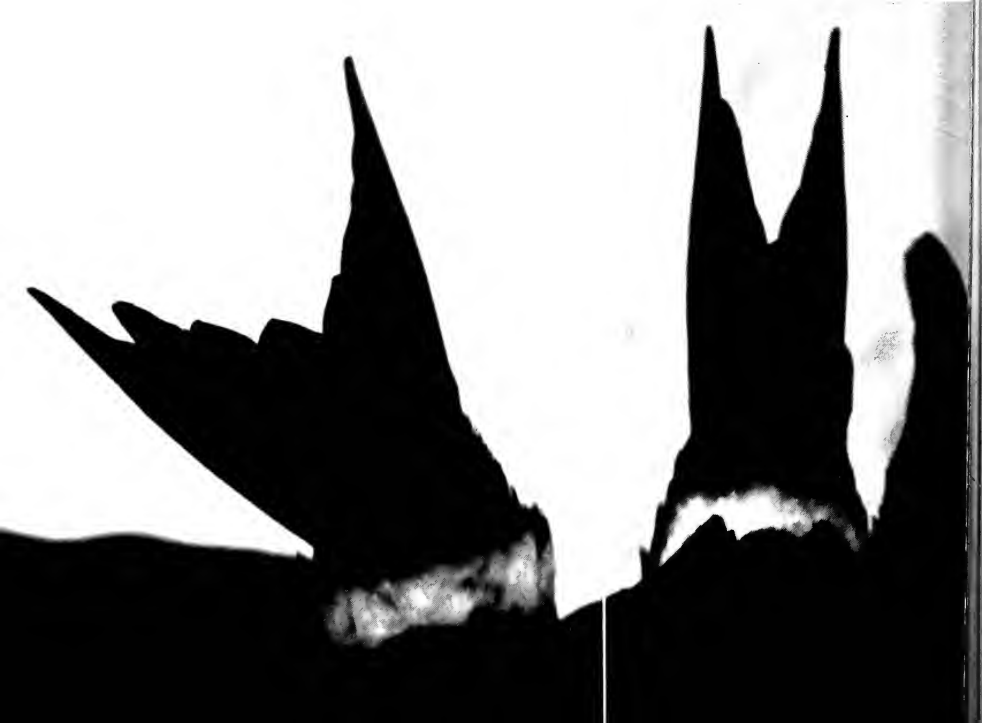


PLATE 23. Above, '*portlandica*' Common Terns *Sterna hirundo*, Dungeness, Kent: left, unmoulted remiges and tail, 1966; right, part-moulted remiges, 1967 (pages 93-97) (*sketch: P. J. Grant*). Below, Great Skua *Stercorarius skua* tangled with dead Herring Gull *Larus argentatus*, Shetland, July 1966 (pages 116-117) (*photo: Douglas J. Chinery*)

PLATE 24. White-rumped Swifts *Apus caffer* flying and in the hand, Spain, May and July 1968 (pages 122-124). The flight shots (three undersides) show the tail open, fully spread and almost closed (*photos: H. Morrey Salmon*). Below, note the narrow rump, deeply forked tail and attenuated outermost feather (*photos: Albert Penning*)



Observatory, P. J. Stead, I. F. Stewart, Sussex Bird Report, Dr C. G. B. ten Kate, J. J. C. Tanis (of the Netherlands State Institute for Nature Conservation Research), Tyneside Bird Club, A. D. Townsend, H. Vidal, A. Walgate, A. B. Wassell, E. H. Wear, Mr and Mrs J. K. Weston, and P. Yeoman.

SUMMARY

A 'wreck' of Fulmars *Fulmarus glacialis* in Britain in February-April 1962 was divided into three parts: sight records of 'blue' Fulmars, the main wreck and, after an interval, some further casualties. This 'double-wreck' was also recorded in the Netherlands and west Sweden. In all, 849 Fulmars were reported dead in Britain (835 in eastern England, four inland in south-east England, seven in north-west England, one in Wales, one inland in Northern Ireland and one inland in north Scotland). Unusual numbers of blue Fulmars were found: two out of seven preserved as museum specimens were assigned to the race *F.g. minor*. Individuals of this race were also identified in Sweden and Germany.

It is concluded that large numbers of Fulmars in the western North Atlantic were unable to obtain food, either natural or provided by man, because of the weather conditions during January and early February 1962. These birds were so weakened that they were swept eastwards by the two intense depressions of mid-February into the sea areas between Iceland and Norway. They were then caught in a northerly airstream and driven down into the North Sea, where many died through long-term starvation.

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Studies of less familiar birds

153 Red-throated Pipit

I. J. Ferguson-Lees

Photographs by J. B. and S. Bottomley and C. C. Doncaster

Plates 17-20

The Red-throated Pipit *Anthus cervinus* is a vagrant to Britain and a scarce nester in north-east Europe. In the following account the notes on distribution are based, in the first place, on such authorities as Dementiev and Gladkov (1951-54) and Vaurie (1959-65), with additional data on migration and winter quarters from other references cited and personal observations in Jordan and Nigeria. The notes on habitat and breeding are largely from Bannerman (1953), Dementiev and Gladkov, J. B. Bottomley (*in litt.*) and personal observations in Finland and Norway.

This pipit has one of the most northerly breeding distributions of any passerine. It reaches probably to 77°N in the Taimyr Peninsula (though, despite *The Handbook*, it is not certainly known to breed on Novaya Zemlya) and its southern limits do not extend as far south as those of, for example, the Lapland Bunting *Calcarius lapponicus*, the Snow Bunting *Plectrophenax nivalis* and the northern races of the Shore Lark *Eremophila alpestris*. It nests right across the northern Palearctic in a narrow belt 150-500 miles wide from Scandinavia to the Chukotski Peninsula in north-east Siberia, almost entirely well north of the Arctic Circle, but extending south to 65°N in Russia and 64°N in western and extreme eastern Siberia. An abundant breeding species east of the Urals and common enough in parts of arctic Russia, it is much less numerous in Fenno-Scandia. Bannerman (1953) quoted Dr H. M. S. Blair to the effect that in Norway it is most plentiful in east Finnmark, but there 'almost entirely restricted to the neighbourhood of the sea and its inlets . . . . no more than twenty-five miles from salt water'. Its southern limit in Norway is about Tromsö, but it appears rather further south in Swedish and Finnish Lapland. Rudebeck (1947) stated that 'evidently the species is rather scarce' in Scandinavia as a whole and Merikallio (1958) estimated only 300-350 pairs in Finland, adding that it had declined since the end of the 19th century.

The Red-throated Pipit is highly migratory, more so than any of the other arctic passerines mentioned above, and winters in the northern half of Africa south to the Congo, Kenya and Tanzania and in southern Asia from Iran and India eastwards, especially in southern China, the Indo-Chinese countries, the Philippines, Borneo and the Celebes. It is

accidental on islands in the Bering Straits and in Alaska, where it bred at Wales in 1931 (1932, *Condor*, 34: 47), and has occurred south to Baja California (1883, *Proc. U.S. Nat. Mus.*, 6: 156-157). As one might expect with such a migratory species of limited latitudinal breeding range and restricted habitat, its plumage characters are fairly constant and, although the populations from the western part of the range have been rather doubtfully separated on wing-length as *A. c. rufogularis* (Dementiev and Gladkov 1951-54), most authorities recognise no subspecies.

Huber (1954) published a detailed paper on the passage of Red-throated Pipits through Europe, with an extensive list of references, but increased knowledge since then has changed some aspects of his picture. The species is regular in small numbers in southern Sweden and southern Finland, and elsewhere in the Baltic area, but most Red-throated Pipits evidently pass well to the east of the Baltic and they are generally regarded as south-east migrants in Fenno-Scandia. Rudebeck (1947) summarised autumn observations in south Sweden and showed that the peak at Falsterbo in 1942-45 was during 16th-25th September, with smaller numbers between 6th September and 20th October; this accords with the period of occurrences in Denmark 'from the beginning of September to the middle of October' (Palm 1951). Against this background it is not surprising that, as in Sweden and Denmark, only very small numbers are recorded in Germany, Poland, Czechoslovakia, Austria, Hungary, Italy and the western Balkans—though big flocks occur at times in Romania and Bulgaria—and that only vagrant or even very rare vagrant status is achieved in Britain and Ireland, the Netherlands, Belgium, France, Spain, Portugal and the western Mediterranean islands. In the Netherlands, for instance, there was no record until May 1960 (Kist and Waldeck 1961) and in Corsica none until April 1965 (Lévêque 1965).

Yet small numbers reach north-west Africa and the Rio de Oro, with a few down the coast of west Africa, and this is a fairly common winter visitor as far west as Nigeria (Lake Chad) from October to April: it is not known what breeding grounds these have come from, but eastern Europe (including Russia) seems the most likely origin. Much larger numbers are seen on passage in, for example, the Middle East and this is an abundant winter visitor to east Africa. Many winter north to Egypt and the species has been recorded in Cyprus during December-February (Bannerman 1958). Most leave Africa (Nigeria to Kenya and Tanzania) by the end of March and the last stragglers have usually gone by mid April. At the oasis of Azraq, Jordan, during 1963-66, D. I. M. Wallace and I recorded concentrations of between 50 and 500 in the second half of April and up to 115 in the first week of May, but few thereafter; incidentally, those seen arriving or departing there had a standard direction of SSE/NNW and diurnal passage was often sus-

tained, once throughout the day. There is nothing exceptional in these numbers, for Red-throated Pipits on migration occur in concentrations of six or a dozen up to hundreds or even thousands. A few reach the northern breeding grounds from mid-May onwards, but the majority not until early or mid June.

The pattern of records in Britain and Ireland fits well enough into this European migration pattern of May-June and September-October. Witherby *et al.* (1938-41) were able to amass a grand total of only 'over twenty' individual occurrences, and five of those (since rejected by Nicholson and Ferguson-Lees 1962) were in the geographically unlikely 'Hastings Area'. Since the late 1940's, however, the species has been identified with greater frequency (probably more as a result of greater efficiency in observation than any genuine increase) and the ten years 1958-67 produced no less than 27 records involving some 32 individuals (Smith 1968). These were chiefly in Shetland and otherwise south in east coast areas to Norfolk, but included several in the Isles of Scilly and others west to Co. Wexford in the south and the Outer Hebrides in the north. The peak months in the ten years were May (ten), September (five) and October (seven) with others during April-November (except July). The concentration of records in May may be partly due to the fact that in spring the summer plumage is distinctive, while in autumn the species moults on the breeding grounds before moving south and the juveniles lack the red coloration.

Plates 17-20 give a good impression of the general plumage pattern of the Red-throated Pipit, which is similar in size to a Meadow Pipit *A. pratensis*, but has darker and greyer upper-parts without the Meadow Pipit's olive tinge, the crown, mantle, back *and rump and upper tail-coverts* being heavily marked with black, while the under-parts are also more strongly streaked. The brick-red or pink which gives the species its name is mainly a feature of summer plumage, but it is by no means confined to the throat. Frequently the whole area from the supercilium and lores to the breast is suffused with this colour and sometimes it extends even down to the belly. Some females are as red as the males, but generally the latter are more highly coloured and also less streaked below. (See plates 18 and 19a, however, the birds in which were sexed on behaviour; it is possible that first-year males are more heavily streaked or less red below.) The brick-red colour is assumed by the adults during January-April, but some individuals begin to show a few red feathers in November and it may be that the birds of the year moult earlier (Bannerman 1953). The majority of those migrating north in April certainly have the colour well-developed and I have seen numbers at Lake Chad, Nigeria, from the last part of March and at Azraq, Jordan, from mid April onwards in full summer plumage.

As already stated, the red is lost (entirely by the females and largely by the males) before the species moves south in autumn, and Red-

throated Pipits are then most easily distinguished by their distinctive flight calls, a ringing and explosive *chup* and a hoarse *tseez*, though the latter is very reminiscent of the similar call of the Tree Pipit *A. trivialis*. The song on the breeding grounds is more musical, vigorous and prolonged than any Meadow Pipit's, with a more spectacular song-flight. The song opens with four shrill notes which are rather higher-pitched than the closing notes of the Tree Pipit's song and these are followed by a short trill and a variety of more sibilant sounds before ending, in the full song-flight, with a 'parachute' descent to a perch or the ground on a series of trilling notes. In song-flight the Red-throated Pipit goes much higher than any Meadow or Tree Pipit and the song is sufficiently sustained to recall that of some lark. A shortened version is frequently delivered from a variety of perches, ranging from the top of a tree or a post to low down in a tree or even on the ground.

The habitat where plates 17, 18 and 19a were taken is shown in plate 19b. This was flat and partly swampy ground at an altitude of 1,180 feet, dotted with small lakes and willow thickets, and surrounded by a higher area of birch forest. The ground vegetation consisted mainly of dwarf birch *Betula nana*, blue willow *Salix glauca,* bilberry *Vaccinium myrtillus*, crowberry *Empetrum nigrum*, cloudberry *Rubus chamaemorus* and blue mountain heath *Phyllodoce caerulea*. Here at least five pairs were located and there were also fair numbers of Meadow Pipits (the two species often share the same habitat north of the Arctic Circle). The Red-throated Pipit is a bird of the tundra, scrub tundra and forest tundra zones south to the northern limits of true forest, being found typically in swampy areas overgrown with willow and birch scrub, sometimes even where this grows to a height of ten or twelve feet, but it readily adapts to drained areas of cultivation near settlements in Lapland. In the northern parts of its range, including Norway, it occurs chiefly near the sea where it frequents marshes and the shoreline, feeding with White Wagtails *Motacilla alba,* Lapland Buntings and waders on insects amongst the seaweed (Bannerman 1953). Insects and their larvae, especially mosquitoes, other Diptera and small beetles, form the bulk of its food, but spiders, small molluscs, worms and grass seeds have also been recorded. On migration and in winter quarters it remains associated with rivers, lakes, marshes and other wet areas, including flooded cultivation, but also occurs on moorland and was found by Colonel R. Meinertzhagen at 13,000 feet on Mount Kenya (Bannerman 1953).

Nests with eggs may be found from the end of May to July, but most Red-throated Pipits lay in the second, third and fourth weeks of June as one proceeds north. The nests I have seen were indistinguishable from those of Meadow Pipits, and this seems to be the general conclusion. They are usually made of coarse grasses with a little moss and a few dead leaves in the base, and no really distinct lining apart from a

few finer grasses and sometimes the hair of Reindeer *Rangifer tarandus* or domestic mammals (but not feathers). Here the structure and position are best shown in plate 18b. Nests are often sited in the sides of hummocks or banks, or sheltered by small shrubs; some are well hidden at the ends of short 'tunnels' in mossy tussocks. Where the species breeds on islands in rivers, such as the Yenisei, nests are sometimes built in heaps of 'wood-drift' on the banks (Mrs E. V. Kozlova in Bannerman 1953). Four to seven eggs are laid, but clutches of six are much the most frequent; these, like the eggs of other pipits, vary considerably in colour from bluish-grey or greenish-grey to yellowish-brown or pinkish with speckles, streaks or large blotches of pale to dark brown or reddish. The eggs are incubated by the female alone and the period was given by Dementiev and Gladkov (1951-54) as 'ten days or a little longer' (though, by comparison with other pipits, one would expect it to be 13-14 days).

During incubation the female is fed on or near the nest by the male at intervals of 10-25 minutes. On 4th-5th July 1958, at 70°N in Finnmark, Haftorn (1959) kept a nest with heavily incubated eggs under continuous observation for 24 hours. The female was fed 90 times by the male between 02.27 and 18.09. Whenever he arrived she left the nest to take the food about 20 metres away. She crouched, shivered her wings and called while being fed, and then either returned to the nest immediately or first spent a few minutes feeding. She left the nest only twice in the absence of the male and during the 24 hours (actually 1,457 minutes) spent only 153½ minutes away, including 61 minutes of active feeding: she was never absent for more than nine minutes at a time and usually much less.

When the female is flushed from the nest she sometimes 'injury-feigns' and the male becomes bold in defence, flying around and perching on hummocks and bushes in full view. The young are fed by both parents which, like other pipits, either land on a perch and then pause before flying straight to the nest or walk the last few yards through the ground vegetation. On the Yenisei River Miss M. D. Haviland (*Ibis*, 1915: 396-397) found that the young were fed almost entirely on mosquitoes. J. B. Bottomley described the six nestlings shown in these photographs as having, at the age of about eight days, blue-grey down, vivid crimson gapes and yellow bill edges. The period spent in the nest is 13 days (Dementiev and Gladkov 1951-54) and there is only one brood, but late nests and repeat laying result in some chicks not fledging until the first half of August. The northern breeding grounds are gradually deserted between mid August and late September.

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Notes

Mute Swans sunbathing On 22nd August 1968, on the Lancashire side of Windermere, I saw a family of five Mute Swans *Cygnus olor* on a gravel bank. They were quite tame and did not move off when I sat down ten yards away. The sun then came out and they started sunning themselves. The adults each spread out one leg and wing on the side facing the sun, extending the wing down over the leg so that the tip touched the ground. They held this position for at least a minute and repeated the same actions several times in the next ten minutes (after which the whole party moved off). The cygnets apparently tried to copy the adults, but their wings were so short that their attempts merely looked comical.

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K. E. L. Simmons comments: 'This is a fair description of what Dr D. F. McKinney calls "wing-and-leg-stretch" in Anatidae and yet it certainly seems to have been induced by the sun on this occasion; the normal wing-stretch, a comfort movement, is not held for long, though the leg-stretch may be more sustained. It is interesting to note that a totally unrelated group, the noddy terns *Anous spp.*, have a sunning posture similar to this (see Dr J. M. Cullen and Dr N. P. Ashmole, *Ibis,* 103b: 425).' EDS

Moorhen feeding own egg to chicks In April 1968, at Bakewell, Derbyshire, a pair of Moorhens *Gallinula chloropus* built their nest on some debris near an island in the River Wye. From the 16th I watched them for half an hour in the middle of each day. On the 24th two of the eggs hatched, and on the 25th I was looking through binoculars from a distance of about 40 yards when I saw one of the adults take another egg from the nest, break a hole in it, carry it to the island and feed the contents to the chicks, beak to beak. I could not see whether any more eggs were left. This was the only pair of Moorhens in the vicinity and I have no doubt that the one which took the egg was one of the owners of the nest. L. PLATER

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It is well known, of course, that adult Moorhens take the eggs of other birds. Dr J. S. Ash comments that at times they may become a serious pest, flying into poultry and game-bird laying pens to eat and even carry off eggs. Through him we have received the following note relating to the finding of egg shell in the gizzard of a Moorhen chick. EDS

On 21st May 1968 I examined the corpse of a young Moorhen *Gallinula chloropus* less than a week old, which had died from chill at Fordingbridge, Hampshire. Its gizzard contained grass, fine grit and small pieces of egg shell. The thickness, texture and colour of this shell suggested that it came from the egg of a Mallard *Anas platyrhynchos*. Many Mallards and Moorhens breed in the area. N. A. WOOD

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Great Skua entangled with Herring Gull On the morning of 4th July 1966, on Ullins Water, Bressay, Shetland, B. Labram and I came across a Great Skua *Stercorarius skua* swimming along and dragging behind it the body of a Herring Gull *Larus argentatus* which seemed to be attached to it. It crossed the loch and floated on the water near the bank. We approached cautiously and managed to get within six feet, which enabled us to see that both of the dead gull's wings were forced through the skua's right wing. We could not determine exactly how they were fixed, however, as the tangle of feathers obscured the view, and we could only guess that the two birds had collided in flight.

After I had taken photographs (plate 23b), we tried to get nearer with a view to catching and freeing the skua, but it promptly set off across the loch again, still pulling its burden. We watched it arrive on the far side where it stood on the edge and started preening, though it made no attempt to free itself. Some six hours later we passed the loch again and saw the skua in much the same position, but we left Shetland the following day and were unable to find out how it fared afterwards. We

had no evidence that the skua or even the gull had been nesting in the immediate area. DOUGLAS J. CHINERY

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Fledgling Lesser Black-backed Gull regurgitating Mole In July 1968, when examining an almost fledged Lesser Black-backed Gull *Larus fuscus* on the Lancashire fells, I waited for it to regurgitate some recently swallowed food, a not infrequent habit of this species when handled. The bird appeared to be having difficulty, but I was surprised when it eventually threw up a complete Mole *Talpa europaea*. Although Moles are stated in *The Handbook* to be taken by Great Black-backed Gulls *L. marinus* and Herring Gulls *L. argentatus* (but not by this species), it seemed remarkable that one should be swallowed whole by a fledgling. P. C. QUIN

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Black-headed Gulls following boats at night On several occasions while travelling at night across the River Mersey, between Liverpool and Wirral, I have observed gulls following the ferries in the dark. Most are Black-headed Gulls *Larus ridibundus,* which readily pick up food by the lights of boats and landing stages, but other observers have also seen both Herring Gulls *L. argentatus* and Lesser Black-backed Gulls *L. fuscus*. Apparently this behaviour is quite regular here and I understand that it has been noted for years, but it does not seem to have been put on record. CHRISTOPHER FELTON

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Dr J. S. Ash comments that it is not uncommon for Black-headed Gulls to follow ships at night on Southampton Water, Hampshire, and we believe that this habit is probably widespread where conditions are right. EDS

Observations on Wren rearing young Cuckoo On 2nd July 1968, near Yeovil, Somerset, I revisited the nest of a pair of Wrens *Troglodytes troglodytes* which I had found nearly a fortnight earlier and was surprised to see that it contained a young Cuckoo *Cuculus canorus* about a week old. From then on, until it left the nest on 17th July, I made regular observations and took a number of photographs, of which two are reproduced on plate 22. The nest was in ivy on the side of a tree and about four feet from the ground. When I originally found it by seeing a Wren go in, I did not disturb it by feeling inside; the Cuckoo's egg must already have been there, although the nest showed no sign of being disarranged. The entrance hole was so close to the side of the tree that the adult Cuckoo's only possible foothold would have been the ivy stems (plate 22a) and even then direct ovipositing must have

been difficult as the dome of the nest formed a slight porch over the entrance.

When I first revisited the nest on 2nd July, however, the entrance hole had already become a bit ragged. It occurred to me that this might have been caused when the nestling Cuckoo threw out the eggs or young of the Wrens—incidentally, I searched unsuccessfully for remains of these on the ground—but it seems more likely that it was due to the later activities of the growing youngster. Indeed, the next two weeks saw the entrance hole getting steadily bigger and untidier until, finally, the whole of the domed roof was pushed away. This was partly due to the size of the young Cuckoo, but most damage was caused by the movements of its large head while it looked around for the returning foster-parent. The base of the nest proved to be very strong, and held to the end.

I saw only one Wren come to the nest throughout these 16 days. During the first week it seemed to be feeding the Cuckoo at very irregular intervals of one to twenty minutes, although my presence may have been partly responsible for this as I was watching, crouched in the hedgerow, from a distance of only about ten feet. While the Wren was away, the Cuckoo often fidgeted about, but on the return of the foster-parent would call and quiver its wings. The Wren also spent much time preening near the nest, whereupon the Cuckoo would become very restless as if trying to catch the other's attention. During the last week, however, there was a considerable increase in the feeding rate and the Wren excelled itself over the final three or four days; then the Cuckoo was receiving food with great regularity, about every two minutes, and the Wren's longest timed absence was six minutes.

The food was mostly caterpillars and other larvae (plate 22), which were abundant along an adjacent hedgerow and ditch with thick undergrowth, but I also noted moths, other insects and spiders being brought. Once the Wren returned with four large caterpillars which all immediately disappeared into the Cuckoo's cavernous mouth; by this time the Wren itself seemed in danger of being swallowed (plate 22b). Incidentally, the photographs were taken without a hide as I had then visited the nest so often that I was able to stand only a yard away without apparently disturbing either the nestling or its foster-parent. The Wren always used the same approach to the nest, stopping first on a dead branch in the hedge near-by, from which point it was in full view of the Cuckoo, and then flying from there to the ivy above the nest before dropping down. From the moment the Cuckoo sighted the Wren on the hedge it would call and quiver its wings continuously until the food was pushed down its gullet.

After each feed, until the final week, the young Cuckoo laboriously turned itself about in the nest to extrude a faecal sac, whereupon the Wren took up a position at the edge of the nest and, as the sac ap-

peared, collected it and flew off with it. I did not note this in the last few days, but the nest was still remarkably clean after the young Cuckoo left. In the end, the Wren 'enticed' the Cuckoo from the nest by bringing food to a perch two or three feet above and waiting there with it. On the first occasion this had no effect and the Wren eventually brought the food down. The next time, however, the Cuckoo struggled up the ivy to take the food from its foster-parent. I returned to the nest on 18th July and on several subsequent occasions, but never saw the Cuckoo again.

BRIAN CURTIS

46 Abbey Road, Yeovil, Somerset

The Reverend Edward A. Armstrong, author of the monograph on *The Wren* (1955), has contributed the following comment. EDS

This contains some valuable data, especially on feeding, and it is interesting that one Wren alone can apparently rear a Cuckoo. I say 'apparently' because it is always difficult, without colour-ringing, to be certain that the same individual is involved. Yet the fact that the Wren invariably approached in the same way tends to support this belief, as does Mr Curtis's observation, interesting in itself, that the Wren did not bother about him when he was only a yard from the nest, since two birds would hardly both get so bold. Yet, in spite of this apparent boldness, I wonder if Mr Curtis's presence was not causing more disturbance than he thought because, apart from the irregular feeding visits in the early stages, the long periods spent preening are puzzling; this might have been displacement-preening due to anxiety at his presence, as a hard-pressed Wren feeding a young Cuckoo on its own would hardly take much time off for activities of this kind. The one Wren is likely to have been the female as she does sometimes feed the young alone. In this connection, however, I have one extraordinary personal observation made at Cambridge about 1956. A ringed female disappeared at the stage of feeding young, whereupon the male, which hitherto had been singing around the territory and paying comparatively little attention, turned himself into a female as far as behaviour was concerned: he ceased to sing, fed the young so assiduously that he would perch on my hand at the entrance hole—something quite unprecedented—and, even more remarkable, spent the night with the young in the nest. He reared the brood successfully. These observations indicate that psychological and environmental conditions can sometimes overrule physiological factors. On the question of ovipositing, one of the photographs (plate 22a) shows what I think would have been sufficient foothold for the adult Cuckoo on the stem on the left; my book on *The Wren* (1955) gives data on, and references to, Cuckoos laying.

EDWARD A. ARMSTRONG

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Reviews

The Problem of Birds as Pests. Edited by R. K. Murton and E. N. Wright. Institute of Biology Symposia No. 17. Academic Press, London, 1968. xiv + 254 pages. 70s.

This report of a recent Institute of Biology symposium deals with the relationship of birds to aircraft and agriculture—two modern industries increasing in importance and sophistication.

The first section contains graphic details of the type and magnitude of structural damage caused to aircraft by birds, which are remarkably efficient projectiles, and emphasises the potentially terrible hazards of such bird strikes to aircrew and passengers (E. R. Stables and N. D. New). Investigations of the basic acoustics of various bird calls (R. G. Busnel and J. Giban) may prelude the synthesis of a single highly efficient 'super signal' to scare a variety of species, but currently the use of broadcast distress calls coupled with starcrackers is meeting with only limited success (T. Brough). Similarly impracticable, apparently, with the awful example of the Midway Island albatrosses in mind, is the modification of airfield habitat to discourage birds (E. N. Wright). This is cheaply done by allowing tall grasses to grow: although deterring some open-land roosting species, the small rodent population may rise and create problems with the arrival of predators! There would seem here to be scope for fresh approaches, but very interesting both to the student of migration and to those interested in bird strikes is the novel science of recognition to species of radar echoes (Dr G. W. Schaefer). The techniques are based largely on wing-beat frequencies and on changing body geometry associated with the use of flight muscles. The PPI radar equipment commonly in use at airfields may be developed to provide warning forecasts of bird movements, in much the same way (and with much the same accuracy) as weather forecasts (W. W. H. Gunn and V. E. Solman). The discussion, reported fairly fully, is as interesting and revealing as the text, and occasionally as turbulent as the air over Aldabra. In this section the physically or mathematically unsound reader should not be deterred as he can avoid the hazards without material loss.

The second section on agriculture contains rather more familiar material. For the agriculturist a rather gloomy picture is painted of some aspects of predator-prey relationships (Dr R. K. Murton)—the activities of predators (including man) having little demonstrable effect on prey population fluctuations. That birds may in some circumstances be voracious predators is shown by the 500 cockles-per-day consumption of a Burry Inlet Oystercatcher. These may be materially affecting the local shellfish industry (P. E. Davidson); regrettably, but in the interests of objectivity, the editors have drastically condensed the

electrifying discussion on this topic. Population and movement studies of the Rook in north-east Scotland (Dr G. M. Dunnet) indicate, amongst other things, that the population is most vulnerable during the summer due to the difficulties in obtaining food. Nearer to home, such urban birds as the Starling, House Sparrow and feral pigeon appear to present intractable problems (R. J. P. Thearle) on the lines predicted by Dr Murton, but the value of having a full biological understanding of a species and its ecology before embarking on control measures is shown for the Bullfinch (Dr I. Newton). Dr Murton's prophecies also seem to hold for *Quelea* over vast areas of Africa (Dr J. H. Crook and Dr P. Ward) where an annual highly efficient slaughter of 'hundreds of millions' has little effect. Changes in agricultural practice may here be more satisfactory.

On the face of it expensive, this book provides such a stimulating and diversified approach to birds as pests that it is good value, and merits the title 'recommended reading' to all thinking students or watchers of birds. J. J. M. FLEGG

Some Safety Aspects of Pesticides in the Countryside. Edited by N. W. Moore and W. P. Evans. Joint A.B.M.A.C./Wild Life Education and Communications Committee (Alembic House, 93 Albert Embankment, SE1), 1968. 124 pages; paperback. 25s.

These are the proceedings of a conference organised by the Joint Association of British Manufacturers of Agricultural Chemicals/Wild Life Education and Communications Committee, a fundamental aim of which was to launch the leaflet *Pesticides: A Code of Conduct*. The contents include the code itself and four chapters headed 'Development', 'Use', 'Control' and 'Pesticides as tools'. Each chapter comprises several papers, followed verbatim by mainly trivial or irrelevant discussion which could have been omitted without loss. The chapter on 'Control', with papers on reducing the pesticide hazard to wildlife (Dr N. W. Moore), the role of voluntary societies (Stanley Cramp) and agricultural chemicals and honeybees (A. G. Horton) covers the horrible history already familiar to ornithologists, against which background Dr Moore's claim that 'organochlorine insecticides are uncontrollable and they should be replaced as soon as possible by less stable compounds' seems a model of restraint.

Many facts and view points given in other chapters are unfamiliar, but are vital to a proper understanding of the toxics problem. Thus, even under favourable conditions, six years are required to develop a new chemical, the firm's toxicologist having power of veto throughout. Only after five years of deliberate heavy overtreatment with chlorthiamid did crops start to show signs of mild phytotoxicity. Because large raptors hunt over many square miles, pesticide residues may not show up until large areas of land have been treated. Average wheat yield per

acre in Britain has doubled in the last 25 years. Where *is* it safe for the peripatetic contract worker to wash down his spraying machine? And so on. The problems are all set forth, often most impartially in a spirit of mutual understanding. 'While no one can afford to put the clock back, the time may have been reached when we could pause to allow research in some of the indirect effects of pesticide use to catch up' is the suggestion of a technical officer of the National Farmers' Union and typifies the desire to co-operate, which is manifest in most of the papers.

It is sad, and surely short-sighted, that a book which really ought to reach the widest possible public is so unreasonably priced. Perhaps A.B.M.A.C. could sponsor a cheap edition. ROBERT SPENCER

Letters

White-rumped Swifts in southern Spain During 1964-67 a number of observations were made on swifts with white rumps in southern Spain, and in 1966 and 1967 breeding was proved; the species was identified by me and others as *Apus affinis* (Little Swift), the only swift with a white rump whose known range came within 1,750 miles of southern Spain (*Ibis,* 109: 113-115; *Brit. Birds,* 60: 286-290). A photograph by F. G. H. Allen of one of these birds was first reproduced in *The Ibis* and then at a much larger scale in *British Birds* (60: plate 34). As a result, P. le S. Milstein, Dr C. H. Fry and Professor J. H. Elgood, and C. W. Benson *et al.* published their reasons for concluding that this bird was not *A. affinis* but *A. caffer* (White-rumped Swift), a species of central and southern Africa from Nigeria, Sudan and Eritrea south to Cape Province (*Brit. Birds,* 61: 36-40; *Ibis,* 110: 106). Since *A. affinis* breeds just on the other side of the Straits of Gibraltar, it was then thought possible that both it and *A. caffer* might be nesting in southern Spain.

It now seems desirable to bring the story up to date. Dr David Lack, who was in southern Spain in the spring of 1968, came to Zahara de los Atunes in April and identified the one pair that he saw in the adjacent Sierra de la Plata as, unquestionably, *A. caffer*; further, having inspected the nest sites, he concluded that only the one species was involved (though it was still possible that *A. affinis* might be found in the towns of southern Spain). In 1968 at least four pairs bred in the Sierra de la Plata, but none was found nesting at Los Barrios where nests had also been located in 1966 and 1967, although a single bird was seen there once by Mrs F. G. H. Allen. On 4th July one of the swifts was at last mist-netted by O. del Junco and John G. Bellak, who also kindly showed it to me, and photographed by Albert Penning (see O. del Junco and B. González, *Ardeola,* 13: 115-127). This bird was clearly identified as *A. caffer* and two of Mr Penning's photographs are re-

produced on plate 24b: the deeply forked tail, frequently not visible or noticeable in flight, is seen to be perfectly obvious in the hand.

The nearest known breeding area of *A. caffer* is, as already implied, some 1,750 miles away in Nigeria and the geographical improbability of a small group establishing an isolated colony at such a distance is very great indeed, particularly since the birds are absent from the south of Spain in winter and have now returned in spring in at least five consecutive years. The logical explanation must surely be that *A. caffer* has been extending northwards more or less gradually over a period of years and in that case it is likely, though unrecorded as yet, to be present in Morocco. That it could be repeatedly seen and misidentified is proved by our experience in Spain; and in Morocco, where *A. affinis* is common, a swift with a white rump would seldom be looked at critically. I therefore urge that ornithologists visiting north-west Africa should watch out for *A. caffer*, especially in wild and rocky country or where Red-rumped Swallows *Hirundo daurica* are found to be nesting.

The rapid northward extensions of range by the Red-rumped Swallow (which is continuing unabated), by *A. affinis* (which has evidently stopped at the moment at the Straits of Gibraltar) and now by *A. caffer* are interesting, especially if interdependent. The small Spanish colonies of *A. caffer* certainly depend on Red-rumped Swallows for their nesting sites and, although I originally suggested (*Ibis*, 109: 114-115) that a nest could be used by both species in succession without competition, I have subsequently come across evidence of the swallow being ejected by the swift. Even if it is not at the moment possible to show a connection between the northward movement of *A. caffer* and *A. affinis*, some such connection is suggested by the fact that both species now occur near the Straits of Gibraltar where neither was found 30 or 40 years ago.

P. G. C. Brudenell-Bruce
Hotel Cortijo de la Plata, Zahara de los Atunes (Cadiz), Spain

Unfortunately, not all of Mr Penning's photographs were suitable for reproduction, but we are indebted to Dr C. H. Fry (*in litt.*) who is very familiar with *A. caffer* in Nigeria and was one of those who originally queried the identification of *A. affinis*, for comparing these photographs with specimens of *A. caffer* in the British Museum (Natural History) and at the same time checking them against all other species of swifts with white rumps. He was quite satisfied that the photographs are of *A. caffer* and added that there was no reason to think that they might be of any undescribed species, similar as many swifts are. Which race of *A. caffer* is involved in Spain can only be determined, however, when captured live birds are compared with a lengthy series of, say, 40-50 skins of each of the known races. In plate 24b Dr Fry drew attention to the attenuated outer tail feathers, particularly the outermost

pair, which 'are diagnostic and exclude the possibility of any other fork-tailed, white-rumped, non-spine-tailed swifts, such as *A. affinis subfurcatus* or *A. pacificus*.' He also pointed to the narrowness of the white rump patch and, in another photograph, to the shape and extent of the white throat patch, which is well defined and bordered by a dark moustache between it and the gape, this being a further distinction from the Horus Swift *A. horus* of Africa. He concluded by adding that 'I have already shown that the wing formula, as it appears in the original photograph in *British Birds,* fits *A. caffer*'. We are also publishing below a letter from Colonel H. Morrey Salmon which makes some additional points and at the same time describes the flight photographs reproduced on plate 24a. EDS

I have been very interested in the discussion relating to the identity of the white-rumped swifts in southern Spain, particularly as I was involved in one of the first sightings in 1964; I have also seen *A. caffer* breeding in nests of Striped Swallows *Hirundo abyssinica* in Uganda and have watched both *A. affinis* and *A. caffer* in Nigeria. On joining F. G. H. Allen in Spain in May 1968, therefore, I hoped that it would be possible to take some photographs of the Spanish swifts which might further help to confirm their identity. I also went prepared with mist-nets and rings, but we did not use these, partly because it was rather early in the season and more particularly because, on consideration, we felt that it was more appropriate for Spanish ornithologists to carry out this operation on a species new to their country. When at the Coto Doñana, therefore, we invited Dr J. A. Valverde to send one of his ringing staff in July when the birds were breeding and F.G.H.A. offered his co-operation, but, in the event, this plan was not fulfilled. On 4th July, however, one of the swifts was trapped by O. del Junco and John G. Bellak, and the identification as *A. caffer* was confirmed (*Ardeola*, 13: 115-127).

Nevertheless, I think that the accompanying long-range flight photographs (plate 24a) may be of interest. They were taken on 17th May 1968 in the Sierra de la Plata where we found at least seven of these swifts and possibly one or two more. These were flying around high in the air without entering the caves where they had bred in previous years, though one or two approached them fairly closely. I think that my photographs show distinctly the characteristics of *A. caffer*. The rear view illustrates the white rump restricted to the back (i.e. not wrapped around the flanks) and the pointed outer rectrices, while the three underside silhouettes show (1) the shape of the rear part of the body and the tail with the fork open; (2) the tail fully spread when turning; and (3) the forked tail almost closed (in straight flight it often appears completely closed).

H. MORREY SALMON

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The B.T.O. Ornithological Atlas

After a successful start in 1968, the British Trust for Ornithology's ambitious project to map the breeding distribution of every species nesting in Britain and Ireland is now entering upon the second of its five years of field work. It is already clear that support in 1969 is going to be even greater than in 1968, the enthusiasm of observers who took part in the first year being contagious. Even so, much more help is required if the project is to achieve its aim of full coverage of Britain and Ireland. Most of the work is being done by individual observers taking responsibility for one of the 3,650 10-km squares in Britain and Ireland (generally the one nearest their home) and recording all evidence of nesting that they come across in that square during the year. In addition, however, everyone is asked to make a note of any nesting activity that they see anywhere in Britain or Ireland. These casual records are essential, especially in the remoter parts where resident ornithologists are thin on the ground. **Every single bird-watcher in Britain and Ireland can make a contribution to this project.**

Anyone willing to help, either by taking on a 10-km square or by supplying casual records, should contact their local organiser. A list of these organisers is given in the Ornithological Atlas Supplement to *B.T.O. News* no. 33, sent to all B.T.O. members. But participation in this important scheme is not limited to B.T.O. members and copies of the Atlas Supplement are obtainable from any of the following:

England and Wales Dr J. T. R. Sharrock, 59 Curlew Crescent, Bedford (full-time Atlas Organiser)
Scotland C. G. Headlam, Foulis Mains, Evanton, Ross-shire
Eire Major R. F. Ruttledge, Doon, Newcastle, Co. Wicklow
Northern Ireland J. S. Furphy, 119 Graystown Avenue, Upper Malone, Belfast BT9 6UM

From the list of names and addresses in the Atlas Supplement you can contact the local organiser for your home area or for any area which you may be visiting on holiday. He will supply full details and recording cards. Your help could be especially valuable if you live or are holidaying in Scotland, Wales or Ireland.

Request for information

Gulls nesting on buildings The Seabird Group is conducting an enquiry into the spread of the habit of gulls nesting on buildings in Britain and Ireland. It is hoped that Operation Seafarer will provide details of all such coastal sites in use this summer, but information is also required on nests on buildings and other sites in urban areas away from the coast in 1969, as well as any unpublished details of such nesting in earlier years, especially numbers, breeding success and action taken by local authorities. Please send all information to **Stanley Cramp, 32 Queen Court, London WC1.**

News and comment *Robert Hudson*

Zoos and endangered species Zoological gardens are popular with the general public, and we live in an era when small privately-owned zoos are proliferating, both in this country and abroad. There has to be justification for the resulting traffic in largely wild-caught stock. In particular, an increasing trade in birds of prey is causing concern to conservationists. Certainly zoos have an educational role, the importance of which should not be underestimated; but their potential value in maintaining breeding stocks of species that are threatened in the wild state exists more in theory than in practice. One can point out a few outstanding exceptions—Oryx, Père David's Deer, Hawaiian Goose (Ne-Ne), Swinhoe's Pheasant—yet these are few in relation to the numbers of zoos, and numbers of species in them, that exist today. Moreover, it is less important to conserve captive stocks than wild ones; for example, American ornithologists have expressed fears that projects to build up captive breeding stocks of Whooping Cranes and California Condors may lead to the abandonment of the far more difficult, but more worthwhile, task of maintaining viable wild populations (*Audubon*, 70, no. 6). It was good to learn recently that the Union of German Zoo Directors had agreed that its member bodies would not acquire specimens of eight endangered bird species: Monkey-eating Eagle, Whooping Crane, Crested Ibis, Great Indian Bustard, Kagu, and three *Amazona* parrots. When shall we hear that its counterparts in other countries have made similar declarations?

B.T.O. Ringing and Migration Conference For nearly two decades the British Trust for Ornithology has held annual weekend conferences of bird observatory workers. Of recent years these had increased greatly in size and also in scope of subject matter, so that in content, though not in name, they had evolved into more general gatherings of migration enthusiasts. Recognising this, the B.T.O. held its first Ringing and Migration Conference at Nottingham University from 3rd to 5th January 1969. The ringing aspect loomed large at this gathering, for, in addition to a longish session on the financing and future of the ringing scheme, this research technique was the backbone of many other contributions, which ranged from work on weights, moults and measurements of trapped birds to ageing and sexing techniques and long-term population studies. Dr S. M. Taylor gave a stimulating talk on the uses (and misuses) of statistics, with particular reference to planning quantitative studies; his appreciative (if sometimes bewildered) audience asked for this subject to be written up for publication as a B.T.O. Guide. Sunday afternoon was given over to contributions from the bird observatories.

1969 bird observatory courses Bardsey Bird Observatory (Caernarvonshire) is running four one-week courses this year, designed for beginners as well as more experienced observers; these courses are for the periods 31st May to 7th June, 7th to 14th June, 21st to 28th June and 28th June to 5th July. Full particulars from Mrs R. A. C. Bond, Wensheda, Clapper Green, Hunton, Maidstone, Kent.

The British Trust for Ornithology is organising two courses for next autumn, at Gibraltar Point (Lincolnshire) from 30th August to 6th September and at Spurn (Yorkshire) from 4th to 11th October. These courses are intended for experienced ringers and bird observatory workers, and applications should be made to the B.T.O., Beech Grove, Tring, Hertfordshire.

Nature Conservancy progress report Until 1964 the Nature Conservancy submitted annual reports to Parliament, but in 1965 it became a component body of the Natural Environment Research Council, which has the statutary duty to present formal reports to the Government. The Conservancy has now published the first

of a new series of reports on its work, entitled *The Nature Conservancy: Progress 1964-1968* (H.M.S.O., 7s 6d). This *Progress* series is aimed at the widening public interested in conservation, and emphasises the importance to society of the work it does. This first issue deals at length with coastal conservation and gives an account of the Nature Conservancy's involvement in the *Torrey Canyon* disaster. There is a short chapter on the Cow Green reservoir fiasco, in which, unhappily, the Conservancy found itself on the losing side. Public impact on National Reserves is discussed; and a chapter entitled 'Working with Others' shows how the Conservancy collaborates with a great many Government and voluntary bodies.

Other publications We have just seen *Occasional Publications* numbers 1 and 2 (1967, 1968) of the Association for the Study and Propagation of European Birds in Aviaries. These small bulletins are written by and for aviculturists, but tables of breeding records for 1965 and 1966 are of general interest in showing the range of species now nesting in private aviaries: these include Hoopoe, Skylark, Long-tailed Tit, Wren, Wheatear, Black Redstart, Bluethroat and Yellow Wagtail.

The Cap Gris Nez Bird Observatory has issued a combined report for its 1966 and 1967 activities, 94 stencilled foolscap pages and obtainable from P. J. Oliver, 53 Ember Farm Way, East Molesey, Surrey. Perhaps inevitably, this bird observatory experiences manning difficulties; so who wants a holiday with a difference?

Also to hand is the first issue of a new Portuguese journal, *Cyanopica*; it contains two papers on the Azure-winged Magpie (one in English, the other in French) and an article on the Tubinares of the Salvages, plus a number of short notes, 100 pages in all. Hitherto Portugal has lacked a national ornithological journal and thus *Cyanopica* is doubly welcome. It is available from the Sociedade Portuguesa de Ornitologia, Zoology Department, The University, Oporto; no price is given.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

J. T. R. Sharrock and I. J. Ferguson-Lees

These are largely unchecked reports, not authenticated records

This summary is concerned mainly with January 1969 and, unless otherwise stated, all dates refer to that month. It was a rather more eventful period than January 1968: as well as the usual crop of rare wildfowl and gulls, there were a number of overwintering summer visitors, a few vagrants remaining from the exceptional autumn of 1968, and some exciting seabirds.

SEABIRDS AND GULLS

Pride of place must go to a **Black-browed Albatross** *Diomedea melanophris* which spent most of 18th feeding with Gannets *Sula bassana* off Portland Bill (Dorset). In this connection, it seems relevant to mention a belated report of an unidentified albatross off Cape Clear Island (Co. Cork) on 3rd September. From their former position of being exceptional vagrants, albatrosses are now fast becoming the just rewards for patient sea-watchers. In 1968, indeed, there appear to have been more seen in British and Irish waters than **Long-tailed Skuas** *Stercorarius longicaudus,* one of which was, however, identified at Whitstable (Kent) on 15th. **Manx Shearwaters** *Puffinus puffinus* (some at least of which were **Balearic** *P.p. mauretanicus*) were seen regularly off Cape Clear Island in January, including as many as six on 30th. Even though it is now very stale news, it is worth mentioning that we have only recently received full details of two rafts totalling over **374 Cory's Shearwaters** *Calonectris*

diomedea at the same locality on the extraordinary date of 16th June 1968. In addition to **Iceland Gulls** *Larus glaucoides* and **Glaucous Gulls** *L. hyperboreus* in various coastal localities, single Glaucous Gulls were also seen inland at Norwich (Norfolk) on 3rd and at Ogston (Derbyshire) on 6th. The only three **Mediterranean Gulls** *L. melanocephalus* reported were from Clevedon (Somerset) on 13th, Burham (Kent) on 25th and Cley (Norfolk) in mid-month. Much rarer, an **Ivory Gull** *Pagophila eburnea* was identified at West Wittering (Sussex) on 19th. Other noteworthy seabirds in January were several more **Little Auks** *Plotus alle,* mainly between the Isles of Scilly and Cornwall, but including one found dead at Aberdaron (Caernarvonshire) on 17th (cf. *Brit. Birds,* 62: 48, 87), and a **Grey Phalarope** *Phalaropus fulicarius* at Allhallows (Kent) on 16th.

WILDFOWL

Sawbills seem, from the records which we have received, to have been scarcer than usual, with especially few records of **Smew** *Mergus albellus.* Nearctic ducks included a male **Ring-necked Duck** *Aythya collaris* at Lurgan Park (Co. Armagh) throughout the winter from 20th October and another male on the south shore of Lough Neagh (Co. Armagh) for several weeks from 12th January (these birds have reappeared each year since 1960 and 1966 respectively); a first-year male **Surf Scoter** *Melanitta perspicillata* at Toormore Bay (Co. Cork) on 12th; and a male **Green-winged Teal** *Anas crecca carolinensis* trapped at Lough Carra (Co. Mayo) on 15th and retrapped there on 17th. Two eastern species of wildfowl were a **Baikal Teal** *A. formosa* trapped and ringed on Brownsea Island (Dorset) on 1st and a **Red-breasted Goose** *Branta ruficollis* seen at Slimbridge (Gloucestershire) from 19th to early February; what may have been the same Red-breasted Goose appeared with Whitefronts *Anser albifrons* at Ringwood (Hampshire) in mid-month. Less unusual were **Ferruginous Ducks** *Aythya nyroca* at Chew Valley Lake (Somerset) on many dates from 5th, at Pagham (Sussex) in mid-month, and on the Serpentine in Hyde Park, London, from 31st into February, the last seeming to be wild in spite of the unlikely locality.

LATE SUMMER VISITORS AND AUTUMN VAGRANTS

Following the records of Turtle Doves *Streptopelia turtur,* Swift *Apus apus,* Wryneck *Jynx torquilla,* Nightingale *Luscinia megarhynchos* and Yellow Wagtails *Motacilla flava* staying into November or December (*Brit. Birds,* 62: 47-48, 87-88), further unseasonal observations included a **Ring Ouzel** *Turdus torquatus* at Lickeys (Worcestershire) on 26th December and two at Prawle (Devon) on 11th January, another **Turtle Dove** with Collared Doves *S. decaocto* at Wells (Norfolk) on 2nd, and a **Willow Warbler** *Phylloscopus trochilus* at Brewood (Staffordshire) from 25th to 5th February. At the same time, more wintering **Chiffchaffs** *P. collybita* and **Blackcaps** *Sylvia atricapilla* than usual were reported in the Midlands and southern England. **Black Redstarts** *Phoenicurus ochruros* and **Firecrests** *Regulus ignicapillus,* though regular every winter, also seemed to be more frequent.

The continued presence of at least three **Nutcrackers** *Nucifraga caryocatactes* in January has already been mentioned (*Brit. Birds,* 62: 88). Other reminders of the autumn included **Great Spotted Woodpeckers** *Dendrocopos major* in Co. Galway on 2nd and in Co. Cavan for two or three weeks up to 14th (cf. *Brit. Birds,* 61: 474, 538; 62: 48), and a **Richard's Pipit** *Anthus novaeseelandiae* at Clevedon (Somerset) on 12th-13th (cf. *Brit. Birds,* 61: 578; 62: 48, 88).

SCARCE WINTER VISITORS

There was the usual scatter of **Great Grey Shrikes** *Lanius excubitor* in January, but the only **Waxwing** *Bombycilla garrulus* reported was one at Great Billing (Northamptonshire) on 12th-19th. A number of **Dippers** *Cinclus cinclus* in eastern England from East Anglia southwards were most, if not all, of the **Black-bellied** nominate race, including at least six in Norfolk and one in north-west Kent.

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Sexual differences in measurements of Herring and Lesser Black-backed Gulls

M. P. Harris and P. Hope Jones

Between 1961 and 1965 many hundreds of freshly killed gulls from colonies on Skokholm and Skomer Islands, Pembrokeshire, and Newborough Warren, Anglesey, were examined for stomach contents and helminth parasites. The majority of these birds were measured and sexed by dissection, and the data obtained for the Herring and Lesser Black-backed Gulls *Larus argentatus* and *L. fuscus* are shown in tables 1 and 2. Measurements for Great Black-backed Gulls *L. marinus* have already been given (Harris 1964a).

The measurements of the freshly dead birds were taken as shown in Witherby *et al.* (1938-41). Bill length was measured from the tip of the hook to the edge of the feathers at the base of the culmen, and bill depth from the dorsal surface of the upper mandible vertically to the angle of the gonys. A few freak individuals with no well-developed gonys or malformed bills have been excluded. Since Herring and Lesser Black-backed Gulls in third-year plumages are probably capable of breeding, and since there is considerable doubt about the usefulness of plumage characters as a guide to age at this stage, we have treated all these as adults. There were no significant differences between the measurements in the two colonies.

In general, males are larger than females, but there is considerable overlap (see table 1). The range of weights must be treated with reserve as the heaviest had recently fed and the lightest had empty stomachs. It is known that the difference in the weights of the two sexes is not affected by hormonal injections and is presumably genetically fixed (Boss 1943).

It has been shown that the ratio of bill length to bill depth is an accurate method of sexing gulls, males having heavier and slightly

Table 1. Measurements of Herring Gulls *Larus argentatus* from Pembrokeshire and Anglesey

Weights in grams and measurements in millimetres. SD=standard deviation

		MALES				FEMALES			
		No.	Average	Range	SD	No.	Average	Range	SD
Weight	Adult/3rd year	36	977	750-1,150	68	32	813	690-940	69
	2nd year	5	1,041	950-1,110	—	—	—	—	—
	1st year	4	898	790-959	—	2	815	790-840	—
Wing	Adult/3rd year	129	426	399-455	9.1	116	406	382-427	9.4
	2nd year	14	426	415-440	9.7	5	411	394-428	13.4
	1st year	13	416	406-435	7.0	8	395	373-418	15.2
Tail	Adult/3rd year	36	172	158-203	9.8	29	165	147-185	9.6
	2nd year	4	170	163-173	—	1	150	—	—
	1st year	2	166	164-168	—	—	—	—	—
Bill length	Adult/3rd year	148	54.6	49.0-64.4	3.0	130	50.0	43.0-56.2	2.5
	2nd year	13	53.1	49.0-57.0	2.2	5	50.0	46.0-53.0	2.6
	1st year	10	55.2	50.0-59.8	2.8	6	49.2	44.0-63.0	4.3
Bill depth	Adult/3rd year	148	19.0	16.9-21.4	0.6	130	17.1	14.8-20.9	0.9
	2nd year	14	18.6	16.9-20.1	1.0	3	16.2	15.6-16.9	—
	1st year	12	17.6	15.5-18.4	0.8	5	16.3	15.0-17.8	1.1
Tarsus	Adult/3rd year	126	63	55-71	3.0	112	58	52-69	2.6
	2nd year	13	65	58-73	5.0	3	60	56-64	—
	1st year	14	62	57-68	3.1	6	60	55-63	3.3

Table 2. Measurements of adult and third-year Lesser Black-backed Gulls *Larus fuscus* from Pembrokeshire and Anglesey

Weights in grams and measurements in millimetres. SD = standard deviation

	MALES				FEMALES			
	No.	Average	Range	SD	No.	Average	Range	SD
Weight	22	880	770-1,000	61	31	755	620-908	58
Wing	26	430	417-446	6.6	35	409	394-430	9.7
Tail	19	163	153-169	4.5	30	154	144-168	6.0
Bill length	30	55.6	49.0-60.0	2.3	50	50.0	45.5-54.9	2.2
Bill depth	30	17.4	17.2-19.1	0.6	30	15.9	14.1-17.9	0.9
Tarsus	26	65	56-70	2.9	33	60	55-68	3.0

longer bills than females (Drost 1938, Harris 1964a, Barth 1966-67). The relation of bill length to bill depth for our samples is given in figs. 1a-1c. The Herring Gull data are separated for the two localities and indicate that the distinction between the sexes is similar in both areas.

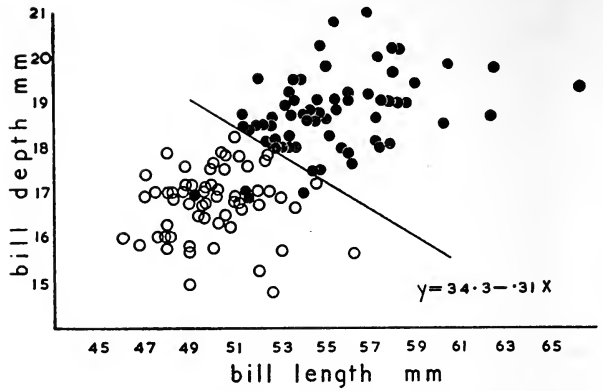
Although there are few points the 'wrong' side of the separating line, this does not necessarily indicate anything more than a high chance of a male falling above the line or a female below. Both Harris (1964a) and Barth (1966-67) wrongly interpreted this as a high chance of a point above the line being a male, or below it a female, without any consideration of how close or far away from the dividing line the point was. However, taking a single plot (the product of bill length and depth) for each individual and assuming that the measurements of males and females fit normal distribution, we can calculate the chances of any pair of measurements belonging to a male or a female. The levels for 90% and 95% certainty for sexing birds correctly are shown in table 3.

The different bill sizes may have been evolved to reduce intra-specific competition for food: presumably larger bills are more suitable for some feeding activities, such as predation, than thin bills. Perhaps the best indication of food preferences is the endoparasitic fauna of the birds. In Herring, Lesser and Great Black-backed Gulls there are

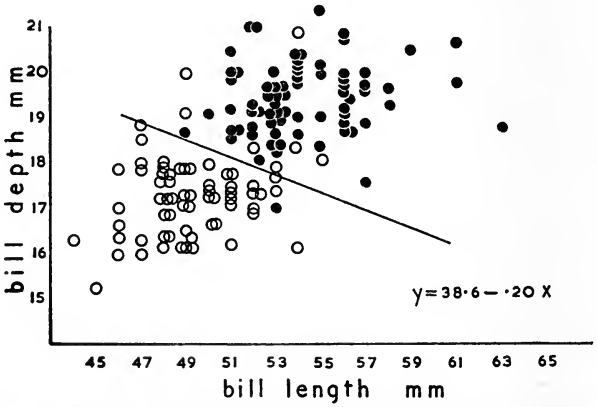
Table 3. Chances of sexing Herring, Lesser Black-backed and Great Black-backed Gulls *Larus argentatus, fuscus* and *marinus* by bill measurements

Measurements in millimetres. SD = standard deviation. The SEPARATION columns show the chances of correctly separating the sexes at the 90% and 95% levels

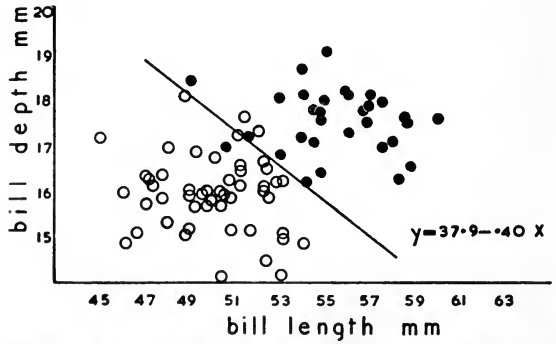
		BILL LENGTH × DEPTH			SEPARATION	
		No.	Average	SD	90%	95%
Herring Gull	♂	148	1054.0	80.5	> 980	> 1000
	♀	130	845.3	63.6	< 880	< 850
Lesser Black-backed	♂	30	972.3	52.3	> 930	> 950
	♀	50	799.0	59.4	< 850	< 840
Great Black-backed	♂	99	1734.6	107.2	> 1615	> 1635
	♀	117	1428.8	77.9	< 1495	< 1470



A. Herring Gulls *Larus argentatus* from Skokholm and Skomer, Pembrokeshire



B. Herring Gulls *Larus argentatus* from Newborough Warren, Anglesey



C. Lesser Black-backed Gulls *Larus fuscus* from Pembrokeshire and Anglesey

Fig. 1. Relation between bill length and bill depth in two species of gulls. The filled circles relate to males and the open circles to females

marked differences between the sexes in both the rate of infestation and the absolute numbers of cestodes (Williams and Harris 1965) and of at least one species of trematode (Harris 1964b). These parasites are picked up as larvae in the food, thus reflecting some difference in the diets of male and female gulls. The examination of 152 stomachs indicated no significant differences in food, but the method used (scoring presence or absence of any given food) was perhaps too crude to indicate any subtle distinctions, such as size of food, which might be important in reducing competition between the sexes and affecting the incidence of parasites.

We were able to examine both individuals from 15 pairs of gulls and each male had a much larger bill than his mate. Field observations of other pairs confirmed this in every case. Additional support was given by four male Lesser Black-backed Gulls which were mated with female Herring Gulls: usually the latter is the larger species, but these were small-billed females and large-billed males, with the result that the difference was still present. Presumably the bill size is important in pair formation, but the way in which it might act is obscure, as it is difficult to see how a bird could possibly know the size of its own bill before pairing with either a larger-billed male or a smaller-billed female.

SUMMARY

Measurements are given of 295 Herring Gulls *Larus argentatus* and 82 Lesser Black-backed Gulls *L. fuscus* from Pembrokeshire and Anglesey. It is possible to sex these species by the length and depth of their bills and a table is presented which indicates the confidence limits for determination by this method. The sexual difference in bill size is probably important in reducing intersexual competition for food and in mate selection.

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Breeding biology of the Coot

Bryan L. Sage

Plate 25

INTRODUCTION

Although the Coot *Fulica atra* nests commonly in Britain and is relatively easy to watch, there are few published accounts of its breeding biology in the British literature. The most recent appears to be that of Alley and Boyd (1947), describing observations at Blagdon Reservoir, Somerset, in 1946. Later surveys on the Continent have been published by Lelek (1958), Askaner (1959) and Wagner (1961) in Czechoslovakia, Sweden and Germany, though I have not been able to consult the last of these.

This paper is based on my studies at Hilfield Park Reservoir, Hertfordshire, from 1955 (when the reservoir was filled) to 1968, excluding 1958 when I was abroad. It describes the changes in the habitat, the development of the breeding and non-breeding populations of Coots, nest construction, clutch size, laying period, hatching and fledging success, causes of egg failure, and other related matters. Every nest was found in each year (except 1958) and a full record maintained of the laying and subsequent fate of the eggs. I did not attempt to keep track of the young Coots once they had fledged, but I do know that even after that stage there was considerable mortality.

HABITAT

Construction of Hilfield Park Reservoir on the London Clay of south-west Hertfordshire began in 1952 and was virtually complete by late 1954. Filling started in May 1955 and was finished by the following autumn. The maximum capacity is approximately 600,000,000 gallons and the surface area is then 115 acres. Over the reservoir floor the greatest depth is 37.5 feet, but in the wash channel at the foot of the valve tower this increases to 45.5 feet. With the exception of a high concrete retaining dam on the western side, the banks are formed naturally by the gently sloping sides of the depression in which the reservoir is situated, and shallow water thus occurs around some three-quarters of the perimeter.

In 1955 the banks were devoid of any vegetation of importance other than rough grass. It was not until 1957 that clumps of rushes *Juncus* appeared at a number of points around the edge and subsequently increased quickly to become widespread by 1961. In 1958 reedmace *Typha latifolia* established itself in the south-west corner, also spread rapidly and from 1964 has been present in increasingly dense belts until

Table 1. Breeding statistics of Coots *Fulica atra* at Hilfield Park Reservoir, Hertfordshire, during 1957-68

'Percentage fledged' expresses the proportion reared of the young which hatched, whereas 'Breeding success' is based on the number of eggs laid. In 1960 five of the six pairs built nests, but did not lay

Year	Pairs nesting	Eggs laid	Young hatched	Hatching success	Young fledged	Percentage fledged	Breeding success
1957	1	8	0	—	0	—	—
1959	1	5	4	80.0%	4	100%	80.0%
1960	6	3	0	—	0	—	—
1961	6	34	25	73.5%	25	100%	73.5%
1962	5	19	0	—	0	—	—
1963	1	6	0	—	0	—	—
1964	4	21	0	—	0	—	—
1965	2	12	8	66.7%	5	62.5%	41.7%
1966	11	66	22	33.3%	6	27.3%	9.1%
1967	18	69	17	24.6%	15	88.2%	21.7%
1968	15	100	40	40.0%	16	40.0%	16.0%
TOTALS	70	343	116	33.8%	71	61.2%	20.7%

it is now found everywhere except along the dam. Another dominant species of the marginal flora is the hairy willow-herb *Epilobium hirsutum,* but this has little significance for nesting Coots. In autumn 1968 a few reeds *Phragmites communis* appeared at one place on the southern edge and these may become an important element in due course.

BREEDING POPULATION

Although the reservoir was filled by autumn 1955, it was not until 1957 that Coots nested, unsuccessfully, for the first time. Details of the breeding population from 1957 to 1968 are shown in table 1. It can be seen that the growth of this population has been somewhat erratic. A rise to six pairs in 1961 (with five in 1962) was followed in 1963 by a drop to one pair, clearly a result of the hard winter of 1962/63. There were four pairs in 1964, but only two in 1965. Then, however, came a sharp increase to eleven pairs and a degree of stability was reached during 1966-68. It will be noted that five of the six pairs in 1960 built nests without laying any eggs; there was no obvious explanation. The sixth pair completed an abnormally small clutch of three, which were afterwards taken by Carrion Crows *Corvus corone.*

There is no doubt that the development of the breeding population depends almost entirely on the establishment and spread of suitable nesting cover, in this case *Typha* and, to a lesser extent, *Juncus.* Nests built in exposed sites (plate 25a) almost invariably came to grief.

NON-BREEDING POPULATON

The numbers of non-breeding Coots present in the summer varied

considerably. In calculating the size of this non-breeding population, I took the months of May and June in every year and deducted the breeding numbers from the smallest and largest counts in each case. The results in table 2 show the minima and maxima of non-breeders. A regular feature of the pattern of Coot movements at Hilfield Park Reservoir is a rapid build-up in early July, presumably at least partly involving failed breeders from elsewhere. This starts sometimes in mid-June, however, and, as can be seen from the figures, such early increases took place from 1959 to 1962. Numbers usually decline as September approaches and then build up again to the winter peak.

Table 2. Minimum and maximum counts of non-breeding Coots *Fulica atra* during May and June at Hilfield Park Reservoir, Hertfordshire

	MAY		JUNE	
	Minimum	Maximum	Minimum	Maximum
1957	1	2	4	14
1959	5	30	38	106
1960	21	26	45	102
1961	0	11	50	176
1962	24	26	36	130
1963	0	0	0	1
1964	0	0	2	12
1965	12	17	40	58
1966	0	0	0	0
1967	0	0	0	4
1968	6	12	10	44

NEST CONSTRUCTION

In 1957, 1959 and 1960, before either *Juncus* or *Typha* were at all widespread, nests were built from such vegetable material as happened to be available and they generally contained a large proportion of sticks of varying sizes (plate 25a). After those first years *Juncus* and *Typha* were used almost exclusively. From 1961 most nests were both sited in and built of *Juncus*, often only an inch or two above the water (plate 25b), until *Typha* became really common in 1964. After that *Typha* was the dominant component in nearly all nests, most of which were of substantial size and the majority also sited in beds of *Typha*.

A breakdown of 18 nests in 1968 serves to illustrate the general pattern. Ten were both sited in and built of *Typha*, though the cups of some of these were lined with *Juncus* or Canadian waterweed *Elodea canadensis* which is the commonest aquatic weed in the reservoir. Of five other nests also sited in *Typha*, one was constructed of *Typha* and *Epilobium* (willow-herb), three of a mixture of *Typha* and *Juncus*, and one entirely of *Juncus* which was subsequently increased in height by the addition of more *Juncus* and also *Elodea*. Lastly, of three sited in

clumps of *Juncus*, one was built entirely of *Typha*, another of a mixture of *Typha* and *Juncus*, and the third largely of *Typha* but with a cup lining of *Juncus*.

CLUTCH SIZE

As shown in table 1, the total of eggs laid in the eleven years was 343, but 26 of these were lost before the clutches concerned were completed. The 54 completed clutches comprised 317 eggs, a mean of only 5.9. This is less than the normal clutch of six to nine eggs quoted by most authorities (e.g. Witherby *et al.* 1938-41) and, indeed, only 31 of the completed clutches, or 57.7%, actually fell within this range: the comparable figures for Czechoslovakia and Sweden, based on the data of Lelek and Askaner, were 68.2% and 91.3%. Completed individual clutches at Hilfield Park Reservoir ranged in size from three to eleven eggs. Table 3 summarises my own records and those of Lelek and Askaner to show the number of clutches in each size category and the three averages; Alley and Boyd did not give the information required for this calculation.

Table 3. Sizes and means of completed clutches of Coots *Fulica atra* in three different areas of Europe

The data for Hertfordshire are from this study and those for Czechoslovakia and Sweden from Lelek (1958) and Askaner (1959). The first figure under 'Total eggs' differs from that in table 1 because incomplete clutches have been discounted

	CLUTCH SIZE									
	3	4	5	6	7	8	9	10	11	12
Hertfordshire	2	8	11	19	7	5	—	1	1	—
Czechoslovakia	—	—	5	3	10	9	8	6	1	1
Sweden	—	—	2	2	5	5	2	—	—	—

	Total eggs	Total clutches	Mean clutch
Hertfordshire	317	54	5.9
Czechoslovakia	340	43	7.9
Sweden	115	16	7.2

It may be that this low clutch size of only 5.9, compared with 7.2 and 7.9 in the other two studies, can be attributed to my population having been in the process of colonising a new habitat. This seems unlikely to be the cause, however, as the mean for the years 1966-68, in which the population appeared to have attained a degree of stability, was even lower at 5.8. Observations in future years may throw further light on this aspect.

The Coot is often stated (e.g. Witherby *et al.* 1938-41) to rear two and sometimes three broods, but in my population over eleven years no pair ever attempted more than one. This agrees with the findings of Alley

and Boyd in Somerset and of Lelek in Czechoslovakia who considered that the Coot was normally single-brooded there, although lost clutches might be replaced as many as three times.

Up to 1965 no pair at Hilfield Park Reservoir made any attempt to replace a lost clutch. In 1966 one pair had their first four eggs taken by Carrion Crows and laid a replacement of seven in the same nest; all other pairs laid once only. In 1967 eleven of the 18 pairs had their first nests flooded before laying or, in two cases, when there were one and two eggs; seven of these pairs, including those with eggs, made no further attempts to breed, but the other four subsequently rebuilt and laid again. In 1968 there were several replacement attempts by four of the 15 pairs, as follows. Pair A lost an incomplete clutch of two and a complete one of seven, but successfully bred on the third attempt with no less than eleven. The first and second nests of pair B were flooded before laying, but the birds rebuilt on the second site and completed a clutch of seven. Pair H lost a first clutch of eight early in May, but had a second clutch of six in the same nest a month later. Pair L, nesting later, lost a first clutch of six by 8th June (and the nest itself had gone by the 23rd), but they had built another nest by 13th July, though no eggs were laid in this.

Table 4. Hatching and breeding success of Coots *Fulica atra* at Hilfield Park Reservoir, Hertfordshire, during 1957-68, according to date of clutch completion

The dates are grouped in five-day periods from 26th April to 15th July (apart from one six-day period at the end of May) and percentage success is then given for each half-month. The total of eggs laid and hatching and breeding success differ from those in table 1 because incomplete clutches have been discounted

Date	Clutches completed	Total eggs	Young hatched	Hatching success	Young fledged	Breeding success
April 26-30	2	16	12	(75%)	12	(75%)
May 1-5	2	15	0		0	
6-10	4	24	12	34.0%	3	16.0%
11-15	2	11	5		5	
16-20	1	6	0		0	
21-25	1	6	0	33.9%	0	7.1%
26-31	7	44	19		4	
June 1-5	7	44	20		11	
6-10	8	41	9	46.2%	7	34.2%
11-15	6	32	25		22	
16-20	2	10	0		0	
21-25	2	9	0	25.0%	0	12.5%
26-30	7	27	14		7	
July 1-5	1	8	0		0	
6-10	1	6	0	0%	0	0%
11-15	1	8	0		0	
TOTALS	54	317	116	36.6%	71	22.4%

Worth mention is the variation in size between first and subsequent clutches. The data for my population are too few for conclusions, but in Czechoslovakia Lelek found that it was 'not a rare phenomenon in the Coot to lay more eggs in a compensation than in the original (first) clutch'. But analysis of Lelek's data gives the mean sizes of first to fourth clutches as 8.8, 6.9, 7.2 and 7.5 (the last based on a sample of only two) and from these figures I conclude that most replacement clutches are smaller than the original.

LAYING PERIOD

The nesting season of the Coot in Britain lasts, according to local conditions, from about the second week of March well into July. My earliest date for a full clutch was 30th April and my latest 13th July but more than half of the clutches (28, or 51.2%) were completed between 26th May and 15th June. This can be seen in table 4 which also shows that both hatching and breeding success were greatest for clutches completed in the first half of June. July clutches invariably failed to hatch.

Various factors influence the date on which egg-laying begins and these obviously vary from one locality to another and from year to year. Among the most important are (a) the emergence of aquatic growth suitable for nesting materials and cover, and (b) the presence or absence of high winds and rising water levels which often destroy nests before laying has started. It so happened that in May 1961 there was a period of very settled weather which undoubtedly contributed to the high success of the two pairs that completed clutches at the end of April that year.

HATCHING AND FLEDGING

Table 1 showed that only 116, or 33.8% of the 343 eggs actually hatched and that in the three consecutive years 1962-64 none at all did. Table 5 compares this hatching rate with those found in Somerset, Czechoslovakia and Sweden, although it should be remembered that each of these other studies was based on one year only. In my series of

Table 5. Hatching success of Coots *Fulica atra* in four different areas of Europe
The data for Hertfordshire are from this study, and those for Somerset, Czechoslovakia and Sweden from Alley and Boyd (1947), Lelek (1958) and Askaner (1959)

	Eggs laid	Young hatched	Hatching success
Hertfordshire	343	116	33.8%
Somerset	121	42	34.7%
Czechoslovakia	352	154	43.6%
Sweden	115	56	50.7%

eleven years the annual hatching rate varied from as low as 24.6% to as high as 80%, but there seems little doubt that it is generally under 50% for this species and sometimes very much less.

Fledging success has been calculated on the number of young surviving to assume juvenile plumage. The total was 71 of the 116 that hatched, or 61.2%, which agrees closely with the 66.7% of Alley and Boyd. As shown in table 1, fledging success varied greatly from year to year, being 100% in 1959 and 1961 and ranging from 27.3% to 88.2. during 1965-68. In Sweden Askaner calculated fledging success on the number of young surviving to the age of eight weeks, at which point they become independent. Taking the data from but two of his three localities, the fledging rate on this basis was only 17.2%. Mortality was much lower at his third site, however, as the birds were artificially fed, and there the fledging rate was as high as 90%.

CAUSES OF EGG FAILURE

As has been shown, only 116 of the 343 eggs laid during the eleven years actually hatched. Conversely, therefore, no less than 227, or 66.2%, were lost or failed in some other way. This high rate of egg failure agrees closely with the 65.3% recorded by Alley and Boyd in Somerset and also with the 56.4% found by Lelek in Czechoslovakia. Table 6 sets out the various causes of egg failure at Hilfield Park Reservoir and table 7 summarises these as percentages in comparison with the corresponding figures from those other areas. Incidentally, I must point out that table III in Lelek's paper is incorrect: the total number of eggs laid was 353, of which 154 hatched, leaving a balance of 199, but his analysis of the causes of egg failure accounts for only 191 of these.

It can be seen that flooding was responsible for the failure of more

Table 6. Causes of egg-failure among Coots *Fulica atra* at Hilfield Park Reservoir, Hertfordshire, during 1957-68

Obviously more eggs were lost as the population grew: the number laid in each year can be seen in table 1. The 'Unknown' total of 66 includes eight lost in 1957 and not itemised in the table

	YEARS										
	'59	'60	'61	'62	'63	'64	'65	'66	'67	'68	TOTALS
Carrion Crow	—	3	1	8	—	10	—	4	5	—	31
Water Vole	—	—	—	—	—	—	—	—	5	—	5
Flooding	—	—	—	6	6	—	—	24	20	18	74
Knocked out	—	—	3	2	—	2	—	2	2	6	17
Buried	—	—	—	—	—	3	2	—	6	2	13
Deserted	—	—	2	3	—	—	—	—	2	1	8
Infertile	1	—	—	—	—	—	—	2	5	5	13
Unknown	—	—	3	—	—	6	2	12	7	28	66
TOTALS	1	3	9	19	6	21	4	44	52	60	227

Table 7. Causes of egg-failure among Coots *Fulica atra* in three different areas of Europe

The percentages for Hertfordshire are calculated from table 6, and those for Somerset and Czechoslovakia from Alley and Boyd (1947) and Lelek (1958)

	Hertfordshire	Somerset	Czechoslovakia
Carrion Crow	13.7%	24.1%	23.0%
Water Vole	2.2%	—	—
Man	—	20.2%	5.8%
Other predators	—	—	4.2%
Unknown predators	—	13.9%	3.7%
Damaged in research	—	—	2.6%
Flooding	32.6%	5.1%	28.8%
Knocked out	7.5%	6.3%	3.1%
Buried in nest	5.7%	12.6%	2.6%
Deserted	3.5%	3.8%	6.3%
Infertile	5.7%	5.1%	3.1%
Unknown	29.1%	8.9%	16.8%

eggs at Hilfield Park Reservoir than any other factor. High winds across 115 acres of open water can cause sizeable waves to be driven with considerable force on to one or another of the edges and in these conditions the nests in that part simply disintegrate. During the eleven years several periods of torrential rain also produced rapid rises in water level, which resulted in eggs being washed from the nests.

Carrion Crows and Water Voles *Arvicola amphibius* were the only two predators to be detected, and the importance of the former declined as the increasing thickness of the *Typha* beds provided better cover. The 'Unknown' total of 29.1% may, however, have included some further eggs taken by Water Voles: the 2.2% attributed to these mammals represents eggs actually seen to be removed by them and, as they apparently carry the eggs right away from the nest, there would otherwise be little chance of their activities being detected. Foxes *Vulpes vulpes* also probably contributed to this 'Unknown' total as I often flushed them from the marginal vegetation, but I was never able to catch one in the act. Man is not a predator at this reservoir, which is kept strictly private, and I am certain that no eggs were lost through human agency.

BROODING PLATFORMS

The provision of brooding platforms for the young after hatching is referred to in the literature (e.g. Witherby *et al.* 1938-41), but was by no means standard practice at Hilfield Park Reservoir. From 1957 to 1966, indeed, no pairs had brooding platforms and the young were all cared for in the nests in which they had hatched. Nor were approach ramps always built at these nests, even when they were substantial structures with the cup some height above the water.

In 1967, on the other hand, all but three of the eleven nests in which clutches were completed had brooding platforms built near-by at some stage in the breeding cycle, in several cases before the eggs had hatched. In 1968, too, five of the nests had associated brooding platforms, though at least eight of the other ten did not. Three of these five had brooding platforms built before the clutches in the real nests had been completed and I termed them 'false nests' at the time; all had approach ramps and were used as roosting-sites by the off-duty birds (incidentally, none of these three pairs produced any young). At the fourth nest an unusually substantial brooding platform was constructed twelve days before the eggs hatched (plate 25c), but at the last one the brooding platform was not built until the young were two or three days old.

Brooding platforms were generally within a few feet of the nest. In 1967, however, one nest had a platform some twelve feet distant and this was soon abandoned for another no less than 16 feet from the nest. As this second platform in *Typha,* was 3½ feet above the water, there could be no question of the young climbing up to it and they must have been carried there by the parents; I was never able to observe this happening, but on two occasions I surprised the small young on the platform and they escaped by jumping off into the water. In 1968 the brooding platform for one nest was sited in a clump of *Juncus* some 20 feet away and two feet above the water (plate 25d); in two other cases that year, the platforms were seven and 18 feet from the nests.

Coots are extraordinarily clumsy and this is reflected in the fairly high proportion of eggs knocked out of the nest; only one was subsequently retrieved, so far as I could ascertain. Burying of eggs is caused by nesting material being added to the structure after laying has begun. This may be done in response to a sudden rise in water level, but at other times there is no very obvious reason for it. Incubation becomes ineffective, of course, once the eggs are covered by a layer or so of nesting material. Incidentally I never saw a Coot make any attempt to cover the eggs when leaving its nest unattended.

BEHAVIOUR

I have little comment to make on the subject of territory. At Hilfield Park Reservoir the nests were always well spaced and there were few instances of a breeding pair trespassing on another territory. Non-breeding Coots occasionally strayed into a nesting territory and were immediately chased off in typical fashion.

A curious sequence of behaviour concerning young Coots was seen on 15th June 1968. Pair A were close to their nest with ten chicks when four of these suddenly swam off and attached themselves to a non-breeding adult which happened to be in the vicinity (although not actually within the defended territory of the pair). Hardly had they

done that before one of the four left its companions and joined a non-breeding pair not far away; one of the latter adults fed the youngster two or three times, then seized it by the neck and held it under the water until it was dead. Meanwhile, one of the other six chicks that had originally remained with pair A had swum off and joined pair F which had a nest some 20 yards away, but had lost their own young; it stayed there for about ten minutes before returning to its own parents. The remaining three of the four chicks that had joined the solitary non-breeding adult made no attempt to return to pair A and were not seen on any subsequent visit. The six youngsters that stayed with pair A were reduced in number to two by 23rd June; they were still present on 29th June, but only one of them survived to fledge.

SUMMARY

This paper presents the results of an eleven-year study of the breeding biology of a population of Coots *Fulica atra* at Hilfield Park Reservoir, Hertfordshire. After a description of the habitat, the colonisation of the reservoir by Coots from the time of its construction is outlined and related to the development of the marginal flora; from 1957 to 1965 numbers varied between one and six pairs, but during 1966-68 a degree of stability was reached with 11-18 pairs. Fluctuations in the size of the non-breeding population are also discussed. The construction and siting of nests was strongly influenced by the spread of rushes *Juncus* and reedmace *Typha latifolia*.

The mean clutch size was 5.9 and only 31, or 57.7%, of a total of 54 completed clutches were within the range of six to nine which is generally regarded as the most frequent for this species. No attempts at more than one brood in a season were recorded and only in a few cases was a replacement clutch laid after a loss. More than half of the clutches (51.2%) were completed between 26th May and 15th June. Hatching success was only 33.8%, but 61.2% of those that hatched duly fledged (taken as assuming juvenile plumage) to give a total breeding success of 20.7%; eggs laid in the first half of June had the highest breeding success with 34.3%.

The causes of egg failure are analysed: flooding was the most serious factor, but a number of eggs were knocked out of the nests or buried under fresh material and some were lost to Carrion Crows *Corvus corone* and Water Voles *Arvicola amphibius*. Brooding platforms were built at only a proportion of the nests and the uses and siting of these are described. A few comments are given on general aspects of behaviour and comparison is made throughout with previous studies in Somerset, Czechoslovakia and Sweden.

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Pennant, 13 Dugdale Hill Lane, Potters Bar, Hertfordshire

Cretzschmar's Bunting on Fair Isle: new to Britain and Ireland

Roy H. Dennis

Plate 26

Late on the evening of 10th June 1967, on Fair Isle, Shetland, W. N. Landells, M. Kristersson and I flushed a roosting bunting from a field of rye-grass and, as it flew to land on a stone dyke, I gained the impression that the 'jizz' was wrong for an Ortolan Bunting *Emberiza hortulana*. It was very like that species, but the wings seemed rather uniform and the head bluish, and there was no trace of yellow or green in the plumage. We failed to get close to it before it disappeared into a field of oats and my companions were unable to confirm my tentative suspicions that it might be a Cretzschmar's Bunting *E. caesia*.

Despite a thorough search, this bird was not seen again until the afternoon of 14th June, when I flushed it from a ditch about 20 yards from where we had found it on the 10th. It landed further along the ditch and from there flew back to a stone dyke about 100 yards away. In flight, it appeared slightly smaller than an Ortolan and the call-note, which I wrote down as *styip*, was different. I was able to approach it fairly closely because it was less shy than most Ortolans and from a distance of 20 yards I wrote a field description and firmly identified it as a Cretzschmar's Bunting. I watched it for about 15 minutes and then left, but returned in the evening with G. J. Barnes and W. N. L. to catch it. We found it in the same field, where we noted that it preferred to settle on patches of bare earth or the stone walls rather than on fences or telephone wires, and about 20 minutes later trapped it in a mist-net. We took it to the observatory, made a detailed description and weighed, measured and ringed it. Darkness had fallen by this time and so we roosted the bird overnight. Early next morning, after photographs had been taken (plate 26a), we released it and it flew to the cliffs near-by.

We did not see the Cretzschmar's Bunting for the next three days, but early on 18th June I flushed it from beside the observatory; it flew to land on a patch of bare earth about 30 yards away, calling *styip* . . . . *styip*. We saw it several times that day and on the 19th and 20th, by which time it had been on the island for eleven days and had been watched by many people. It appeared to be feeding on seed heads.

FIELD AND LABORATORY DESCRIPTIONS

In the field, the Cretzschmar's Bunting was rather like an Ortolan, but slightly smaller and more dumpy. Its habits were similar, except that it was tamer and certainly easier to catch; Meinertzhagen (1954) and

Etchécopar and Hüe (1967) both referred to the tameness of this species. The most obvious differences from an Ortolan in spring plumage were the blue-grey head and breast, orange throat, more uniform brown wings and faint eye-ring. The upper-parts were generally browner, the mantle was streaked with darker brown, and the rump and upper tail-coverts were more rufous. The blue-grey breast was finely streaked with black and there was a finely streaked moustache; the lower breast and belly were rufous-orange, the flanks and under tail-coverts more buff and the tail brown with noticeable white outer feathers. The eye was dark, the bill pink and the legs flesh-pink.

The following detailed description was taken in hand:

Upper-parts: forehead, crown and nape blue-grey sparsely marked with fine black mesial streaks; mantle, back, rump and upper tail-coverts brown with long dark brown mesial streaks (greyish wash on mantle, paler and more rufous on rump and upper tail-coverts); ear-coverts greyer than crown; above eye orange-buff; thin orbital ring light buff, not very noticeable. *Under-parts:* lores, chin and throat orange with thin moustache of fine blue and black streaks; upper breast blue-grey sparsely marked with fine black streaks; rest of under-parts rufous-orange, deepest in colour on lower breast and marked with some brown shaft-streaks on under tail-coverts and finer streaks on flanks; axillaries and under wing-coverts dirty-white flecked with grey. *Tail:* rectrices mainly dark brown; central pair paler and pointed; outermost pair with central half of outer web and most of distal half of inner web white, and tip of outer web pale brown; penultimate pair with large white patch on distal end of inner web. *Wings:* flight-feathers mainly dark brown; primaries paler than secondaries with slight buff fringes to outer and inner webs; secondaries with wider buff fringes on outer webs; tertials with wide buff fringes on distal half of outer webs and pale buff fringes on inner webs; greater coverts brown thinly fringed and tipped buff; median coverts dark brown with broader whitish-buff tips; lesser coverts brown with greyish tips; bastard-wing brown. *Soft parts:* bill similar to Ortolan's, but smaller, more pointed and pinkish-brown with culmen brownish-horn; iris brown; legs and feet flesh-pink. *Measurements:* wing (flattened) 81.5 mm, wing (straightened) 83, tail 64, bill (from skull) 12.5, bill (from feathers) 10, bill depth 6, tarsus 18, hind claw 5.5; weight (at 19.15 GMT) 23.0 grams. *Wing formula:* 1st, minute and hidden, 9.5 mm shorter than primary coverts; 2nd and 3rd longest, 4th −1 mm, 5th −5, 6th −10.5, 7th −14, 8th −16.5, 9th −18.5, 10th −21; 3rd to 5th emarginated on outer webs (less so on 5th); longest tertial 10.5 mm shorter than longest primary; distance from tip of wing to tip of (square-ended) tail 38 mm.

DISTRIBUTION

Vaurie (1959-65) gave the breeding range of this species as 'Dalmatia south to Macedonia and Greece, Asia Minor, Cyprus, and Near East south to northern Palestine. Migrates through the Near East, Egypt, and Arabia (a few wintering in Egypt and western Arabia in the region of Mecca) to winter in the Sudan south to Sennar; straggles to Spain(?), southern France, Italy, the Crimea, southern Caucasus, and south-western Iran, has occurred in Heligoland.' There are no subspecies. The one on Fair Isle was the first recorded in north-western Europe since a surprising spate on Heligoland in the 19th century when a dozen, mainly fine males, were obtained in May-June between 1848 and 1867; and then only one more in the next 20 years (Gätke 1895).

WEATHER AND ASSOCIATED MIGRANTS

The wind was south-west with clear skies on 9th June, but changed to east, force 2-3, with overcast by the following morning; then the wind decreased and the skies cleared during the day, and the Cretzschmar's Bunting was first observed that evening. A Woodchat Shrike *Lanius senator* also arrived on the 9th and a Rustic Bunting *E. rustica* and seven Collared Doves *Streptopelia decaocto* were new on the 11th.

Although the Cretzschmar's Bunting did not coincide with a large fall of Continental migrants, it did form part of an unusually strong and varied influx of southern and south-eastern vagrants in the Northern Isles throughout May and June. At Fair Isle these included unprecedented numbers of Icterine Warblers *Hippolais icterina* (maximum of eight on 27th May), two Subalpine Warblers *Sylvia cantillans*, the first Scottish record of a Sardinian Warbler *S. melanocephala* (*Brit. Birds*, 60: 483-485), and a Golden Oriole *Oriolus oriolus*.

ESCAPED CAGE-BIRD OR NOT?

The publication of this record has been delayed while investigations were carried out by M. D. England, on behalf of the Rarities Committee, into the possibility that the Cretzschmar's Bunting might have been an escaped cage-bird. These enquiries revealed that a few of this species are imported into Britain. The occurrences of Red-headed Buntings *E. bruniceps* and other escapes at Fair Isle and elsewhere invalidate the argument that cage-birds are most likely to be seen near urban areas and not on islands (see *Brit. Birds*, 61: 41-43). In view of my previous experience with escaped cage-birds, however, I examined the Cretzschmar's Bunting carefully in the hand for evidence of captivity and I had no hesitation in regarding it as a wild vagrant. The escaped Red-headed Buntings, Black-headed Bunting *E. melanocephala*, rosefinch *Carpodacus sp.* and Rose-coloured Starling *Sturnus roseus* on Fair Isle have all had broken remiges and rectrices, soiled feathers on the side of the neck, bruised bills and unhealthy-looking feet, or at least some of these symptoms, which must indicate a period of captivity. None of the feathers of the Cretzschmar's Bunting was broken although the plumage was old and worn, the primaries showed a natural sun-bleached pattern where they overlapped at the tips, and the sides of the neck, the bill and the feet were clean and not soiled.

NOTES ON IDENTIFICATION

Cretzschmar's Bunting is rather similar to an Ortolan and, especially in autumn, extra-limital vagrants are likely to be identified only in the hand or when carefully examined in the field. The sole description readily available to British ornithologists is that in Peterson *et al.* (1954, 1966) and I have been unable to find any published details of measurements and wing formula up to the standard of those for other species

in Witherby *et al.* (1938-41). I am therefore very grateful to I. H. J. Lyster for lending me three specimens of Cretzschmar's Bunting from the Royal Scottish Museum (adult male and female from Smyrna and immature male from Skynos) and to Mrs George Waterston for searching the library of the Scottish Ornithologists' Club for references. (Adult male and immature Ortolans are in the skin collection on Fair Isle and we have details of eight ringed on the island; I also know that species well on spring and autumn migration.)

After examining this material, I noted several characters which appear to be of value in the identification of a vagrant Cretzschmar's Bunting. The adult male and female are rather similar and should present no difficulty in the hand or if seen well in the field, but the immature in summer or autumn is difficult to separate from an Ortolan in similar plumage. Even so, the whole plumage of the immature I examined was more buffish-chestnut than an Ortolan, which has a decidedly olive cast to the mantle and head, contrasting whitish tips to the greater and median coverts and an obvious yellow eye-ring; the chin and throat of this Cretzschmar's Bunting was orange-buff and striated, whereas the Ortolan has a yellow chin. The colour of the axillaries and under wing-coverts also appears to be a useful distinguishing feature at all ages: in the Fair Isle Cretzschmar's Bunting and the three skins these areas were dirty white, with traces of chestnut in the adult male, whereas the axillaries and under wing-coverts of the Ortolan are pale yellow. This was also noted by Svensson (1964).

Turning to structure, the data in table 1 seem to show that Cretzschmar's Bunting is the smaller of the two species, that its longest tertial is nearer in length to its longest primary and that its wing to tail measurement is greater. The last two differences were noted in a very small series of specimens, but, if correct, would be useful in the identification of immatures in the hand. The differences in wing length and wing to tail indicate that Cretzschmar's Bunting is relatively shorter-winged and

Table 1. Measurements (in millimetres) of Cretzschmar's Bunting *Emberiza caesia* **and Ortolan Bunting** *E. hortulana*

The 'Tertial to primary' shows the amount by which the longest tertial was shorter than the longest primary, while the 'Wing to tail' is the distance between the tip of the folded wing and the tip of the tail

	Cretzschmar's	Ortolan
Wing length (live)	81.5	81.5-88.5 (eight, average 84.5)
Wing length (skins)	79, 81, 84 (three)	86.5, 88 (two)
Bill from skull	12.5 (four)	13-14 (ten)
Tail length	62-65 (four)	62-70 (ten)
Tertial to primary	9-10.5 (four)	14, 19 (two)
Wing to tail	37-39 (four)	31, 32 (two)

more dumpy, and this was noticed in the field on Fair Isle before the bird was caught. The wing formulae of the two species are rather similar, although Cretzschmar's Bunting appears to show less emargination on the 5th primary and relatively longer 6th to 10th primaries. The combined wing formulae of the four Cretzschmar's Buntings which I examined (Fair Isle and three specimens) were: 1st minute and hidden, 8-10 mm shorter than primary coverts; 2nd and 3rd equal and longest (with 4th also equal in one case), 4th up to 1 mm shorter, 5th 3-5 shorter, 6th 9-10.5 shorter, 7th 13-14.5 shorter, 8th 16-16.5 shorter, 9th 18.5-20 shorter, 10th 20.5-23 shorter.

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Obituary

Richard Kinahan Cornwallis (1915-1969)

R. K. Cornwallis, who died on 11th January 1969 after an illness of some months, was outstanding both as an amateur ornithologist and as a practical conservationist. He was educated at Winchester and Trinity College, Oxford, where he read politics, philosophy and economics. He trained in London as a chartered accountant and then in 1939 moved to Lincolnshire to take up farming. After some difficult early years, he became a successful practical hard-working farmer, so respected among his fellows that he held many offices in the National Farmers' Union, including the chairmanship of the county branch in 1964 and 1965. Nevertheless, he always made time in this busy life for his enthusiasm for birds, from the start combining practical field-work with a keen scientific insight and a passion for conservation.

He was actively associated with the vigorous and far-sighted Lincolnshire Trust for Nature Conservation almost from its inception in 1948, being elected President in 1963-64 and its indefatigable Chairman from 1965. He was also President of the Lincolnshire Naturalists' Union in 1952 and 1953, afterwards continuing as its Ornithological Secretary

A (*right*). Exposed nest with five eggs against tree stump

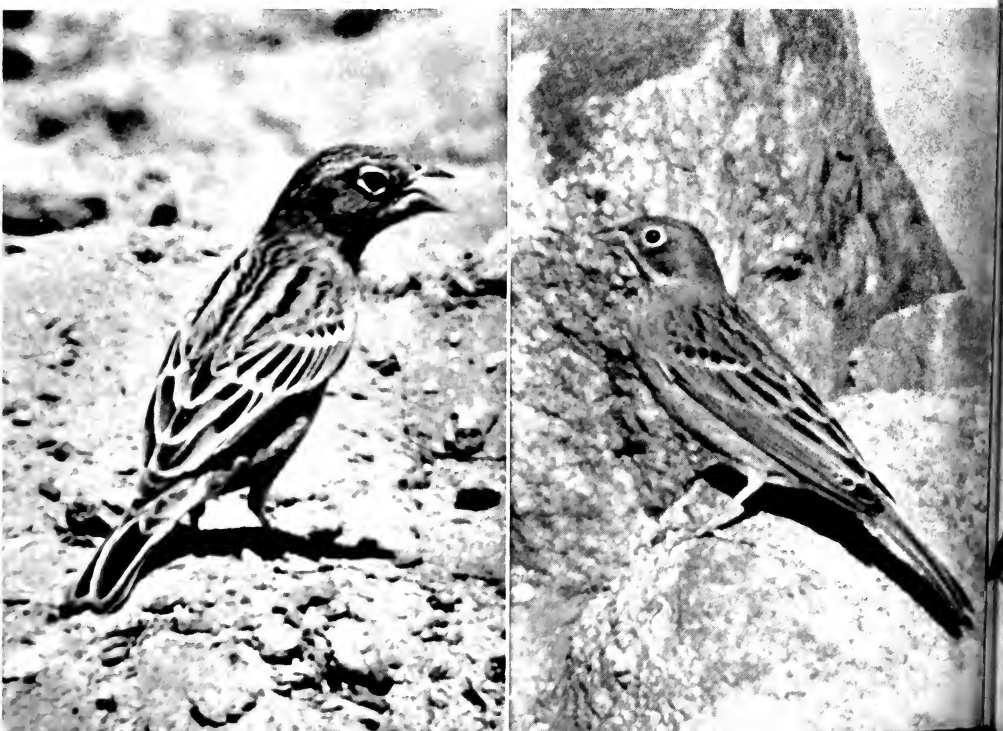
PLATE 25. Some nests and platforms of Coots *Fulica atra*, Hertfordshire, to illustrate various points upon pages 136-137 and 141-142 (*photos: B. L. Sage*)

B (*left*). Poorly concealed nest in clump of rushes *Juncus* and built mainly of *Juncus* and a little reedmace *Typha* (the five eggs were later taken by Carrion Crows *Corvus corone*)

C (*right*). Sizeable brooding platform with approach ramp

D (*left*). Brooding platform two feet up in *Juncus* clump

PLATE 26. Above, Cretzschmar's Bunting *Emberiza caesia*, Shetland, June 1967 (*pages:* 144-148) (*photo: R. H. Dennis*); below, immature and male, Jordan, May 1963 (*photos Eric Hosking*). This species is separated from the Ortolan *E. hortulana* by its blue-grey (not olive) head and breast-band and its rusty-orange (not yellow) throat



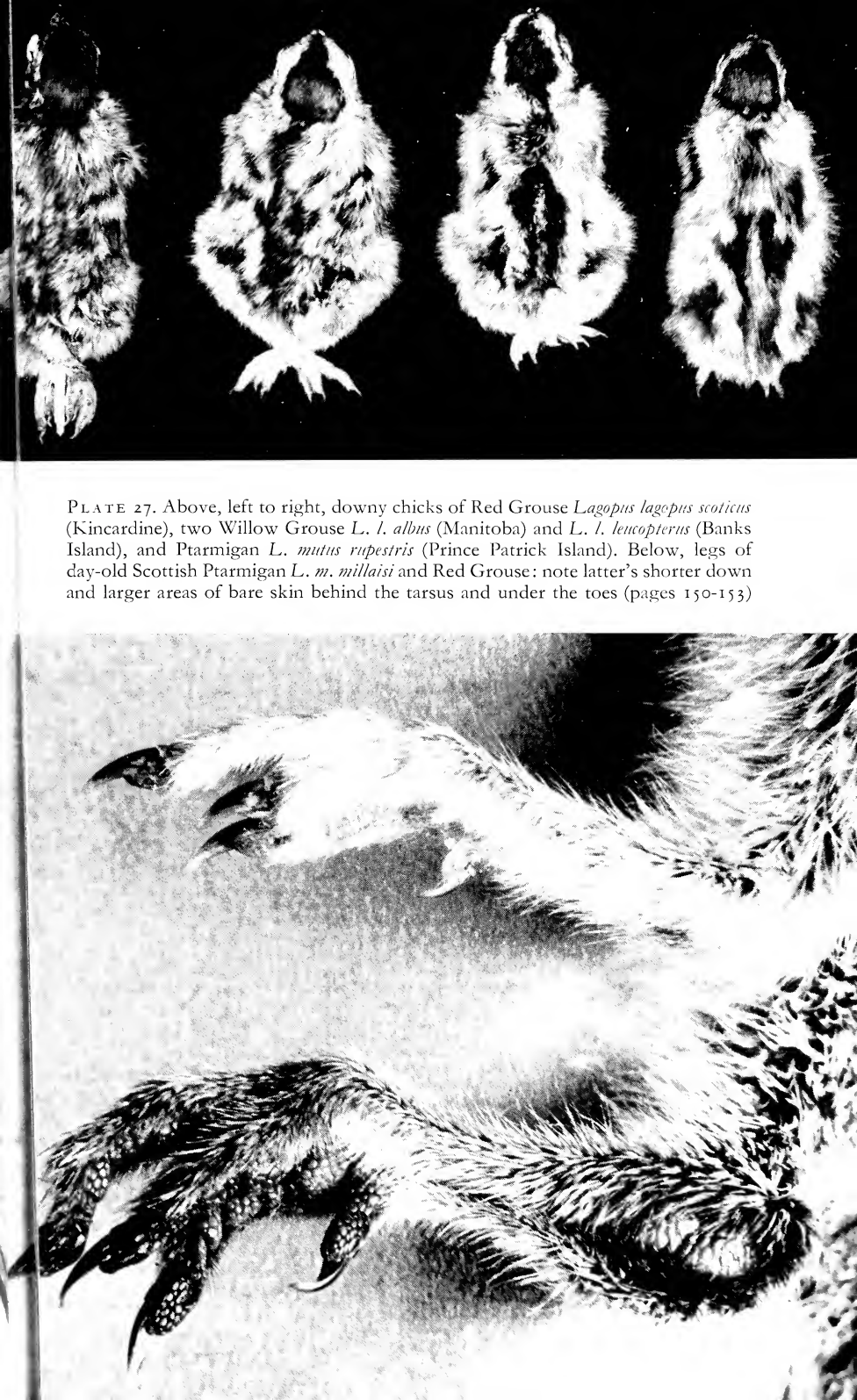


PLATE 27. Above, left to right, downy chicks of Red Grouse *Lagopus lagopus scoticus* (Kincardine), two Willow Grouse *L. l. albus* (Manitoba) and *L. l. leucopterus* (Banks Island), and Ptarmigan *L. mutus rupestris* (Prince Patrick Island). Below, legs of day-old Scottish Ptarmigan *L. m. millaisi* and Red Grouse: note latter's shorter down and larger areas of bare skin behind the tarsus and under the toes (pages 150-153)

PLATE 28. Guillemots *Uria aalge* with abnormal bills, Northumberland: above left and below left (same bird), summer plumage, crossed mandibles, May 1968; above right, arrested winter plumage, crossed mandibles, July 1968, compared with a normal bird; below right, broken upper mandible, February 1969 (pages 156-157)(*photos: G. Howson*)

for a number of years. In this capacity he became one of the editors of the *Lincolnshire Bird Report* in 1955 and continued until 1967. The baseline for that was the book on *The Birds of Lincolnshire* which he published in 1955 in collaboration with A. E. Smith. He also took a lively interest in the work of the Gibraltar Point Bird Observatory and Field Station. This led, from 1954 on, to his important series of papers in *British Birds* and *Ardea* on the pattern of migration along the east coast, with special reference to weather conditions; and in 1960, again with A. E. Smith, he produced that valuable guide for ringers *The Bird in the Hand,* which was the fore-runner of the current *Ringer's Manual.* He turned to bird movements over a wider area in 1961 with his major study of Waxwing invasions (*Brit. Birds,* 54: 1-30); and in 1968 (having by then, as he commented with some amusement, contrived to see his first Waxwing) he and A. D. Townsend followed this with an analysis of the exceptional numbers of this species throughout Europe in 1965/66 (*Brit. Birds,* 61: 97-118). He also contributed the article on 'Irruptions' to *The New Dictionary of Birds* in 1964.

Dick Cornwallis retained throughout a deep affection for the Lincolnshire he served so well. But inevitably his lucidity of thought, his practical commonsense, his wisdom and good humour led to many demands for his services in the national sphere. He was elected to the Council of the British Trust for Ornithology in 1956 and served on it, with one short gap, until his death. During this time he was variously Honorary Secretary, twice Vice-President, and Chairman of the Scientific Advisory Committee. In 1965 he was awarded the Tucker Medal for outstanding service to the B.T.O. and its migration studies. His experience and knowledge of conservation problems, founded on his continuous service for the Lincolnshire Trust, resulted in his becoming a leading member of the Executive Committee of the Society for the Promotion of Nature Reserves, a member of the Nature Conservancy Committee for England, and from 1961 to 1966 a member of the Council of the Royal Society for the Protection of Birds.

Despite all these honours and offices, Dick Cornwallis remained modest and kindly, a well-loved and respected figure at conferences of many kinds. He was in constant demand as a speaker on a wide variety of topics and, in recent years especially, was uniquely able to combine his knowledge of modern farming with his love and understanding of wild life, so bringing a deeper understanding to the narrow-minded in both camps. Equally, he was sought as a chairman, gentle in control and masterly in his summing-up of the most complex proceedings. Later, smiling and at ease over his pint, he would be seen encircled by the many who valued his ideas, his wisdom and his humour. A leader in modern ornithology and conservation, unique in the secure place he held in the affections of so many, his death leaves an irreplaceable gap.

STANLEY CRAMP

Differences in the downy young of Red and Willow Grouse and Ptarmigan

Adam Watson, Raymond Parr and Harry G. Lumsden

Plate 27

INTRODUCTION

The most obvious difference between day-old chicks of Red Grouse *Lagopus lagopus scoticus* and Ptarmigan *L. mutus* in north-east Scotland is the amount of down on their legs and feet. We have not found this difference mentioned in the literature.

DESCRIPTIONS

The downy chick of the Scottish Ptarmigan *L. mutus millaisi* was described by Witherby *et al.* (1938-41) as: 'Ground-colour of upper-parts paler buff not so dark or yellowish as is usual in Red Grouse nor so yellowish as in Black Grouse, especially noticeable on neck and sides of crown; chestnut of crown intermediate; black markings of upper-parts much as in Red Grouse but usually clearer and more contrasted; under-parts paler than in Red Grouse especially on sides of head, chin and throat; toes covered with down.' The same authors' description of the Red Grouse chick corresponds with this; and they state that the toes are 'covered with down', as in the above description of the Ptarmigan chick.

We agree with these descriptions, except for the statement that Scottish Ptarmigan chicks are not so yellowish as Red Grouse chicks; in fact, the opposite is the case. The clearest differences on the body are (i) the generally darker colouring on both dark and light patches in Red Grouse, and (ii) the less clear-cut margins between dark and light patches in Red Grouse. Individuals vary considerably in some Red Grouse broods, but usually we have found only slight variation within the brood. On the other hand, there is a lot of variation between individuals from different broods, in both species. Occasionally a darker-than-usual Scottish Ptarmigan chick looks superficially like a light-coloured Red Grouse chick, but they can easily be differentiated when compared alongside each other. The crown of a Scottish Ptarmigan chick is usually a lighter and more chestnut-coloured brown than the blackish-brown crown of a Red Grouse chick, and is outlined by darker brown. Diagnostic white feathers later grow on the wings of Ptarmigan chicks, but not till they are about a week old. In addition, the down on the legs and feet of Red Grouse chicks is marked with diffuse darker bars, whereas in Scottish Ptarmigan chicks it is yellowish-white with no barring.

Examination of specimens of downy Ptarmigan *L. mutus rupestris* and Willow Grouse *L. lagopus albus* (as well as the high-arctic *L. lagopus leucopterus*) from northern Canada has failed to reveal any consistent diagnostic character for these two species there, unlike Scotland. In both there is variation in the dorsal pattern and in the markings on the sides of the head. In contrast, however, to the darker and less well-marked Red Grouse chick, the two are obviously very alike (plate 27a) and are, in fact, very similar to Scottish Ptarmigan chicks in all the details mentioned earlier.

Plate 27b shows that the most striking difference between the chicks of the two species in Scotland is the longer down on the legs and feet of the Ptarmigan. When one looks from underneath the toes, less down can be seen in the Red Grouse, and the Ptarmigan shows longer and thicker down projecting on either side of the toes, giving the impression of a snow shoe. In day-old Red Grouse much of the skin on the underside of the legs and feet and on the tips of the toes can be clearly seen through the short down and some areas are completely bare, but the skin is mostly invisible in day-old Scottish Ptarmigan. This is because the longer down in the Ptarmigan tends to cover these toe segments and the back of the leg; it is not because down grows on these areas in the Ptarmigan but not in the Red Grouse. In fact, no species of *Lagopus* at any age has feathers growing from either the soles of the feet or from a narrow strip down the back of the tarsus, or from the subterminal joint of the toes.

This difference in the down is particularly interesting because H. G. L. has found that it does not occur in the downy chicks of Willow Grouse and Ptarmigan in Canada. Hence the barer legs and feet of the Red Grouse are probably a distinct racial character associated with milder climates, like its dark primaries and failure to turn white in winter. No specimens of downy Ptarmigan have been examined from the Aleutian Islands, which have a mild climate like Scotland, and we do not know if these differ from chicks of mainland Canadian races in cold areas.

MEASUREMENTS OF SCOTTISH SPECIMENS

Measurements were made of twelve specimens of Red Grouse and 13 of Ptarmigan, all chicks about one day old. Both sexes were included. The length of down was measured at three points on each specimen: half way along the central dorsal line of the mid toe (position 1 in table 1), immediately behind the hind toe on the ventral side (position 2), and on the ventral side of the tarsus just below its joint with the tibia (position 3). The down was longer, moving from the toes upwards, in both species. Taking the average of measurements at all three points and for all specimens, the down was about 4.2 mm long in the Red Grouse and 4.6 mm in the Ptarmigan. The difference was in fact greater, however, allowing for the larger legs, feet and toes of the Red

Table 1. Measurements of down length, leg and toe length, and number of bare toe-segments in Red Grouse *Lagopus lagopus scoticus* and Ptarmigan *L. mutus millaisi*

The three positions referred to on the left are described in the first paragraph under MEASUREMENTS OF SCOTTISH SPECIMENS. Measurements are given in millimetres together with the standard error in each case

	Red Grouse	Ptarmigan
Mean length of down at position 1	3.17±0.33	3.58±0.28
Mean length of down at position 2	4.29±0.66	4.81±0.38
Mean length of down at position 3	5.04±0.58	5.39±0.36
Mean length of mid toe	12.79±0.72	11.89±0.47
Mean length of leg	17.79±0.74	16.46±0.48
Mean of $\frac{\text{down length at position 1}}{\text{length of mid toe}}$	0.247±0.026	0.301±0.024
Mean number of segments entirely visible per individual foot	6.50±1.31	3.77±1.36

Grouse. An index was calculated, using the length of down on the mid toe divided by the total length of the mid toe (i.e. from the posterior end of the toe nail to the prominent joint at the anterior end of the tarsus). There was a clear difference, and a t-test showed this was highly significant statistically ($t=4.878$, $P<0.001$).

The skin in both species is segmented on the dorsal side of the toes. Considering a visible segment as any one that was visible either in whole or in part, there was little difference between the two species; if anything, the Ptarmigan had slightly more segments visible (a mean of 8.81 per three main toes, compared with 7.98 in the Red Grouse). It was obvious, however, that this was mainly due to the greater length of the Ptarmigan's down, which tended to hang down further on either side of the toe. This partially exposed more segments along the central line of the toe than in the Red Grouse even though only a narrow strip along the centre was all that was visible with most segments. A measure that more truly reflected the amount of bare segmented skin was to consider visible segments only as those where the *entire* segment was visible and uncovered by down. The Red Grouse had almost twice as many bare as the Ptarmigan (6.5 compared with 3.8, $t=5.093$, $P<0.001$).

The amount of bare skin visible on the back of the tarsus was estimated visually in four grades: 3, a wide patch of bare skin visible as in the Red Grouse in plate 27b; 2, a narrow patch visible; 1, a thin line barely visible through down; and 0, no bare skin visible. In birds graded 3, the patch was 5.5-8.0 mm long and 2.0-3.0 mm wide; in 2, 4.0-7.5 long and 1.5-2.0 wide; in 1, 2.0-5.0 long and 1.0-1.5 wide. The lengths overlapped but not the widths. All the Ptarmigan showed grade 0, except one with grade 1. No Red Grouse had grade 0, four had

grade 1, another four had grade 2 and the last four had grade 3.

The last measurement was to find if the Ptarmigan had a greater number of downy feathers, as distinct from simply having longer down. This was done with three specimens of each species, by plucking part of the mid toe, starting where it projects separately from the other toes, and continuing forward for a length of 4 mm along the dorsal side. Down on this 4 mm stretch was removed all round, on the top as well as the sides of the toe. The individual downy feathers were then counted under a microscope. The three Ptarmigan had 251, 252 and 260, about 50% more than the three Red Grouse with 163, 164 and 181. The area of the plucked section was calculated roughly, based on measuring the chosen length (4 mm), and also the width and depth of the toe at the same place on the toe in each specimen. The three Red Grouse had approximate areas ranging from 20-24 sq mm (mean 21), and the three Ptarmigan from 18-20 sq mm (mean 19). There is too much error in these measurements of area to justify calculating the precise number of individual feathers per square millimetre of skin. The important point, however, is that the larger number of feathers on the 4 mm length of toe in the Ptarmigan cannot be explained on the grounds that the toes of the Ptarmigan might be thicker and have a larger surface area than those of the Red Grouse. In fact both species have toes of similar size, those of the Ptarmigan being, if anything, smaller. Therefore it is clear that Ptarmigan chicks do have a greater number of downy feathers per unit area than Red Grouse chicks.

ACKNOWLEDGEMENTS

We thank W. E. Godfrey, of the National Museum of Canada, and Dr J. Barlow, of the Royal Ontario Museum of Zoology and Palaeontology, for the loan of specimens.

SUMMARY

The most striking difference between the day-old chicks of Red Grouse *Lagopus lagopus scoticus* and Ptarmigan *L. mutus millaisi* in Scotland is that the down on the legs and feet of the Ptarmigan is longer, conceals the skin more completely and sticks out further on either side of the toes. Scottish Ptarmigan also have a larger number of individual downy feathers per given area of skin on the toe. Chicks of Willow Grouse *L. lagopus albus* and *L. lagopus leucopterus* and of Ptarmigan *L. mutus rupestris* from northern Canada both have heavy down on the legs and feet and cannot be distinguished in this way. The barer legs and feet in the Red Grouse are probably a distinct racial character, like its failure to turn white in winter. Differences in the colour patterns of the down in these species are also described.

REFERENCE

WITHERBY, H. F., JOURDAIN, F. C. R., TICEHURST, N. F., and TUCKER, B. W. 1938-41. *The Handbook of British Birds.* London. vol. 5: 222-233.

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Notes

Concerted and prolonged up-ending by Redshanks On 27th September 1968, on the estuary of the Croag River, Co. Cork, Alfred Eastwood and I watched four Redshanks *Tringa totanus* feeding in a way which I cannot find recorded in the literature. We had been looking at a party of Teal *Anas crecca* when A.E. drew my attention to 'some even smaller ducks' which were feeding in one of the channels and I picked out four small brownish tails sticking up from the water. The attitude and movement was typical of surface-feeding ducks and it was nearly a minute before four Redshanks emerged almost simultaneously. They up-ended again very quickly and while they were down a Greenshank *T. nebularia* called and flew over to join them. It pitched on the water a yard or two away and followed suit, surfacing two or three seconds after they did. After two further intervals of more or less simultaneous up-ending, the four Redshanks flew off together when the falling tide made the channel too shallow for this method of feeding. Half an hour later we found them again some 300 yards downstream and once more busy up-ending in unison. We had no stopwatch, but the duration of each period underwater was always about one minute. About 80 Redshanks were feeding normally on the estuary that week, but none of these others was at any time seen to enter water which was too deep for wading.

D. Nethersole-Thompson (1951, *The Greenshank*: 58) referred to feeding behaviour of this kind by Greenshanks, although he had not apparently seen it himself, but up-ending by Redshanks seems to have been little recorded and I have heard only of single individuals doing so briefly on rare occasions. For instance, during a year of regular observation on Redshanks, G. Bundy and G. Kinsey saw but one bird feed by up-ending six times in ten minutes and each time was for as little as two seconds or less. Concerted up-ending by parties of up to 22 Spotted Redshanks *T. erythropus* has been noted by J. H. Taverner and Dr R. J. Raines (*Brit. Birds*, 54: 403-404; 55: 87), but these were also evidently underwater only for short periods, it being stated in one case that the position was generally 'held for less than a second'. L. Grimes has recently recorded that feeding in deep water 'in the manner of surface feeding ducks' (which presumably refers to up-ending) is normal behaviour for close-packed rafts of Spotted Redshanks in winter on an area of salt pans near Accra, Ghana, though there is no indication of the length of time these birds stay under water (*Ibis*, 111: 246-251). Our Redshanks persistently up-ended in unison and for quite long spells, although there was none of the deliberate action of, for example, pelicans feeding together.

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Feeding association between Purple Sandpipers and Turnstones On 18th February 1968, near Cemlyn, Anglesey, I saw three small parties of six to eight Turnstones *Arenaria interpres*, each accompanied by a single Purple Sandpiper *Calidris maritima*. They were actively searching for food on the small gravel and shingle beaches that lie on the upper stretches of this predominantly rocky shore, and the Purple Sandpipers seemed to be picking food almost entirely from holes and overturned pebbles which had been left a few seconds earlier by the Turnstones. Only when a Purple Sandpiper tried to take food from a hole which a Turnstone was still working was there any sign of animosity between the two species. The shingle beaches were subsequently found to hold dense populations of Oligochaete worms of the family Enchytraeidae. These worms occur in great abundance where there are rotting masses of seaweed.

E. I. S. Rees
Carreg-y-gad, Llanfairpwll, Anglesey

Gulls with white wing-patches We read with interest the recent note by Dr Agnar Ingolfsson on the incidence of white patches on the upper surfaces of the wings, chiefly the primary coverts, of adult Lesser Black-backed Gulls *Larus fuscus* (*Brit. Birds*, 62: 31-32). It seems relevant to record that in Lancashire a significant proportion of adult Lesser Black-backed Gulls shows this character. Such aberrant individuals are seen regularly in small numbers in the large colonies on Walney Island and the Pennine moors, and others have often been observed on passage at Formby Point and along the Fylde coast. Some recent records of ours give an indication of the proportions involved: five out of 171 (2.9%) at Scorton gravel pits on 18th March 1969, a minimum of two out of 97 (at least 2.1%) at the same place on the 22nd, and three out of 54 (5.5%) at Harris End Fell on the latter date. These percentages are much higher than that recorded by Dr Ingolfsson in Iceland but we are confident that they do not exaggerate the occurrence of adult Lesser Black-backed Gulls with white wing-patches in Lancashire. We have a few records of adult Herring Gulls *L. argentatus* with a similar plumage aberration, but it is evidently much scarcer in that species and we have not noted it at all among adult Great Black-backed Gulls *L. marinus*.

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This account is interesting as it includes some data on frequency. We have received only two other records as a result of Dr Ingolfsson's note—one off the west coast of Scotland in 1966 (F. G. H. Allen) and the other in Cornwall in 1968 (P. J. Dwyer)—and we have passed these to B. L. Sage who asks that further observations be sent to him at Pennant, 13 Dugdale Hill Lane, Potters Bar, Hertfordshire. Eds

Black Terns taking flies disturbed from dung Black Terns *Chlidonias niger* feed mostly over water, but in the Netherlands I have twice seen another feeding habit which seems worth recording. On 23rd June 1944, in a meadow near Wolvega, Friesland, I watched a single adult Black Tern hover for a few seconds a foot or two above some cow dung, then swoop and snap up one of a small cloud of flies which it had disturbed; it repeated this about a dozen times. Twenty-one years later, on 3rd August 1965, Dr G. A. Brouwer and I observed nine Black Terns, four of them juveniles, flying low over a meadow at the edge of the Naardermeer; these moved systematically from one heap of cow dung to another, hovering over each one and seizing the flies which they disturbed.

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Arctic Tern hatching six eggs On 22nd June 1968, while studying Arctic Terns *Sterna paradisaea* near Vik i Myrdal, Iceland, I found a nest with six eggs. This was six feet from any other nest and only one tern was seen brooding the eggs at any time. On 29th June one egg had hatched and on 1st July there were six chicks. I could not say whether the six eggs had been laid by one female or two, or whether one pair had taken over another's clutch, but it seemed interesting that the incubating tern was able to cover the eggs sufficiently well to hatch them all.

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Guillemots with crossed or broken mandibles A collection of corpses of oiled and 'rehabilitated' seabirds is being amassed at the Department of Zoology, University of Newcastle upon Tyne, for pathological investigation. Among 40 Guillemots *Uria aalge* received, all from Tynemouth, Northumberland, have been three with crossed mandibles. Apart from the fact that there appear to be no previous records of Guillemots with this deformity and the species was not mentioned by D. E. Pomeroy in his paper on 'Birds with abnormal bills' (*Brit. Birds*, 55 : 49-72), the associated conditions throw light on the effects of crossed mandibles and therefore on the functions of a normal beak. Data on these three Guillemots are set out below, together with a fourth record of one with a broken mandible:

(1) Unoiled, summer plumage, died May 1968 within a few hours of being found waterlogged on the shore (plates 28a left and 28b). Apparently died from effects of failure to renew breast and belly feathers along keel of sternum, where down was exposed. Legs and feet normal, without lesions characteristic of rehabilitated auks, showing that the condition had not resulted from previous captivity.

(2) Oiled, winter plumage, died July 1968 after six months in captivity, during which period no change was observed in crossing of mandibles (plate 28a upper right). Again there was apparent arrested moult with marked absence of contour feathers along keel of sternum.

(3) Lightly oiled, winter plumage, died December 1968 after one month in captivity. Heavy infestation of Mallophaga, although mandibles only slightly more crossed than in previous two cases which had no significant numbers of these feather lice. About 50 specimens were sent to Dr Theresa Clay who identified them as *Austromenopon nigropleurum* (Denny 1842), family Menoponidae, and *Quadraceps obliquus* (Mjoberg 1910), family Philopteridae. Both of these had previously been identified by Dr Clay from other Guillemots at Newcastle and so the species, if not the numbers, were normal for the host. Also present in the sample sent to Dr Clay was a single specimen of *Saemundssonia sp.*, 'probably originating from a gull or wader', which had presumably straggled from other birds kept in the same pen.

(4) Oiled, winter plumage, died March 1969 after being kept for one month by Mrs B. F. E. McConnell. Distal half of upper mandible missing and a little more broke off in captivity, but could still feed well (plate 28c). No preening recorded, but plumage in good condition and examination revealed no ectoparasites.

The upper mandible was crossed to the right in two cases and to the left in the third. That three Guillemots out of 40 (7·5%) from one locality had crossed mandibles indicates that this condition is not rare. It is possible, however, that such individuals are able to deal less effectively with oil on the plumage and so are more likely than those with normal bills to have to come ashore. It is interesting that in two cases the deformity was associated with arrested moult and this leads to speculation that some diet deficiency might be responsible for both conditions. The third Guillemot's heavy infestation with Mallophaga indicates that crossed mandibles reduce preening ability. Other records of ectoparasite infestations of birds with crossed or broken beaks were discussed by D. E. Pomeroy (*op. cit.*: 68-69). In this connection, it is of interest that live Mallophaga which I collected from freshly dead House Sparrows *Passer domesticus* were killed almost immediately if a small drop of preen oil from the host was put on them; this was presumably a purely physical result of blocking the spiracles and may well not be the normal means used by birds to destroy ectoparasites in their plumage.

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Over 60 Wrens roosting together in one nest box Mr and Mrs T. J. Dove, my neighbours at High Kelling, Norfolk, have a nest box on the wall by the back door of their bungalow. The space inside it is $4\frac{1}{2}$ inches wide, $5\frac{1}{2}$ inches deep and $5\frac{3}{4}$ inches high, and it has a hole of two inches diameter. Just before dusk on 7th February 1969, at the start of a period of very cold weather, numbers of Wrens *Troglodytes troglodytes* were seen creeping along a holly hedge towards the box. After that Mr and Mrs Dove and I, accompanied once by Dr and Mrs N. W. Cusa, kept watch on several evenings from a workshop with a glass-topped door only a few feet away. Through the windows on two sides we could also see the Wrens gathering in the garden from all directions. They began to arrive from about 5.50 p.m., getting a little later each evening as the daylight lengthened, until 21st February when

a thaw came and they dispersed. On one evening all seemed to have entered in 15 minutes and yet on another occasion late-comers were arriving after half an hour.

Sometimes it was impossible to get an accurate count as a few were still creeping in when it grew too dark to see. We counted 46, 49 and 60 Wrens entering the box on different nights and saw that the last arrivals had great difficulty in getting inside. So Mr Dove put up a second box close by and on the following night there was much flying in and out of both, though most of the Wrens settled in the original box. The highest minimal count was 61 in the main box (which meant only 2.33 cubic inches per bird) and seven in the overflow, besides three which were last seen outside. Sometimes the latest arrivals made about six individual attempts to enter before three or four together got in with an apparently concerted effort. Mrs Dove watched on several mornings and found that the Wrens took about 20 minutes to emerge. One or two would perch at the entrance, peering round for a while before flying off, and then another one or two would take their place. They came in and went out in silence. One Wren was found dead in the box.

WINIFRED U. FLOWER
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The Reverend Edward A. Armstrong, author of the monograph on *The Wren* (1955), comments: 'These must surely be record numbers. The highest total known to me otherwise is 46 in one box (P. Leybourne, quoted in *The Handbook*, 1944 edition, 5: 293). There is also an instance of 31 in a box in America (C. E. Ehinger, 1925, *Murrelet*, 6: 37-39). When Wrens roost communally, individuals are occasionally found dead, but this is probably due to the effects of cramped quarters on already debilitated birds rather than to suffocation alone.' EDS

Carrion Crow persistently stooping at Swallows On 24th July 1968, at Swansea, Glamorgan, I saw a Carrion Crow *Corvus corone* flying above six Swallows *Hirundo rustica* which were circling over a field. To my surprise, it stooped at one of the Swallows. The latter easily eluded it, but the Carrion Crow persisted for another six attempts, dropping below the Swallows each time and then rising above them with laboured flight before stooping with half-closed wings from a height of 10-20 feet. After about ten minutes it flew off. The weather was sunny with a light south-west wind.

D. M. HANFORD
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Carrion Crows frequently stoop at larger birds in flight, such as Lapwings *Vanellus vanellus* and pigeons *Columba spp.*, perhaps thus discovering injured or sick individuals, but this is less usual with small birds and we suspect that it must be rare with hirundines. EDS

Reviews

The Biological Effects of Oil Pollution on Littoral Communities. Edited by J. D. Carthy and D. R. Arthur. Field Studies Council (9 Devereux Court, Strand, London WC2), 1968. 198 pages; two colour and four black-and-white plates. 45s.

It is in the presence of such an ecological disaster as the wreck of the *Torrey Canyon* that the well-nigh crippling fragmentation which inevitably follows the expansion of knowledge becomes grimly apparent. The gentlemen of the 'Invisible College' would have lacked the technical information to tackle such an emergency; but, with every member claiming all science as his province, they might have produced a more coherent programme of action. But the days of the 'Invisible College' are long past, and it is by such symposia as that organised by the Field Studies Council at Orielton that the wide ignorances of each specialist must be made good. The contributions to this symposium are arranged under four headings—technical background, and botanical, zoological and micro-biological aspects of the disaster.

The first paper of all, on the chemistry of crude oils, is of especial value in enabling naturalists to know their enemy, and to realise that the enemy's name is, if not legion, at least many; the composition of oil from different areas is diverse, and the problems arising from spills of oil of different provenance will vary greatly. Another paper, on methods of absorbing oil spills at sea, provides alternatives to the much criticised use of detergents in vast quantities; it is suggested that a 'sinkage' method may be the best means of dealing with future disasters, provided that there is good hope of the bacteriological degradation of the oil upon the sea floor. A paper by the Harbour Master to the Milford Haven Conservancy Board makes it clear that 'big business' must not always be cast for the role of villain.

The botanical section begins with a very clear exposition by Dr D. H. Dalby of the variety of factors influencing the distribution of stranded oil. It is concluded by Drs D. J. Bellamy and A. Whittick, of the Botany Department, University of Durham, 'that pollution by oil and detergent from the *Torrey Canyon* disaster had no drastic effect on the floristic composition of the inshore marine ecosystems even at the worst hit sites'. On the other hand, the cessation of grazing where populations of littoral invertebrates had been wiped out permitted an astonishing development of algal 'lawns' between tide-marks.

To the readers of *British Birds,* the most interesting parts of this publication will be those dealing with the effects of the disaster on seabirds. The mortality effects are well covered in the longest paper in the symposium, in which Dr W. R. P. Bourne surveys the effects of the *Torrey Canyon* wreck, compares them with the effects of other pollutions

and provides a full and illuminating discussion of the causes of variation in the different 'kills'. The more migratory Razorbill is the species to suffer most in pollutions off the French coasts, while the Guillemot, wintering farther to the north, provides the largest part of the auk casualties on the British coast. It is depressing to read that the Puffin may have received a 'near mortal blow' as a breeding species in France. In connection with this paper, two contributions to the Thirty-seventh Annual Report of the Cornwall Bird-watching & Preservation Society provide evidence that in the immediate scenes of the worst oil strandings on the British side Guillemots and Shags showed the most serious reduction in numbers and breeding success. Razorbills probably suffered less, and the remnants of the Cornish Puffin population (which has decreased enormously in the last half-century for reasons which are difficult to ascertain) seem not to have been seriously affected. In one of these papers in the Cornish report N. R. Phillips laments the lack of data on 'normal' populations of some Cornish seabirds.

Dr J. V. Beer, in a paper on 'Post-mortem findings in oiled auks', makes clear the melancholy fact, which has long been suspected and has now been proved by the devoted efforts at 'rehabilitation centres' run by the R.S.P.B. and R.S.P.C.A., that the attempts to rescue oiled auks are almost entirely in vain. It is to be hoped that in future pollutions—and there will be further pollutions in spite of the best efforts of civilised governments—it will be officially recognised that a well-choked magnum 12-bore is an instrument of mercy. If the lingering deaths of oiled birds in the hands of the truly humane can be avoided in future years, perhaps the birds of the *Torrey Canyon* disaster will not have died wholly in vain. And for many birds—the number no man can tell—there is no attempt nor opportunity for rescue. In fighting against the devastation of populations, it is important that we should not lose a blazing indignation at the sheer misery of so many lonely little deaths.

It is told that, at a critical moment in the First World War, a member of the Government was asked what he thought of the situation and replied, 'This is no time for thought—we must act'. It is difficult to avoid the conclusion that in the *Torrey Canyon* disaster much official action was based upon the same principle, and was persisted in, often by appallingly wasteful methods (such as pitching 40-gallon drums of detergent over the cliffs in the hope that they might burst on the rocks below) when it was strongly suspected by many people on the spot that more harm was being done than good. Ornithologically the mass use of detergents probably had little direct effect, though in some Shags inflammation of the skin was thought to be due to 'detergent burns'. But Dr Bourne has pointed out that in the Medway pollution of 1966 the damage to the habitat resulted in a great reduction in the bird population in the following winter. On the Cornish coast it is probable that the devastation of the invertebrate fauna of the shores was at-

tributable more to detergents than to oil. Can we claim to live in a scientific age when popular clamour to 'do something' takes precedence over observation and control, and when we can only learn from our own mistakes? P. H. T. HARTLEY

British Names of Birds. By Christine E. Jackson. Witherby, London, 1968. 125 pages. 30s.

This morning I saw a 'sadcock' threaten a 'jack nicker', but both were routed by a 'stone hawk'; according to Miss Jackson, the Cheshire man should recognise these as Mistle Thrush, Goldfinch and Kestrel. Perhaps one might guess that a 'clodhopper' is a Skylark; but who could expect an 'Isle of Wight parson' to be a Cormorant, or 'God Almighty's hen' to be a Wren?

British Names of Birds is a straightforward collection, grouped together under species, of about 4,840 dialect and other vernacular names in the English language (i.e. excluding Manx, Welsh and Gaelic) for birds mainly on the British List, plus short lists of special falconers', wildfowlers', bird-fanciers' and swan-keepers' terms, names applied to immature birds, and collective nouns. The book includes names given to birds from the earliest times, and may therefore be of help in identifying species mentioned by early writers; names that have (or had) rather local usage are given their areas of origin. One would have welcomed some indication of which are in current use: Miss Jackson has leaned heavily on her noteworthy predecessor, H. Kirke Swann, whose *A Dictionary of English and Folk Names of British Birds* was published in 1912; and, bearing in mind subsequent social upheavals, one suspects that many of Swann's names are now obsolete. It would be interesting to know whether the 'mowing machine bird' is still spoken of in Somerset, whether any Shropshire men know the 'fiery redtail' as such, or whether Yorkshire rustics still remember the 'butter bump'; and readers who cannot recognise these must themselves consult the excellent index to Miss Jackson's unusual work. The book is unillustrated, which has enabled the cost to be kept down to a modest 30 shillings; this arrangement has much to commend it in these days of soaring prices. ROBERT HUDSON

News and comment *Robert Hudson*

London's third airport Everyone now knows about the Roskill Commission's short-list of four possible sites for the third London airport at Thurleigh (near Bedford), Cublington (near Wing, Buckinghamshire), Nuthampstead (Hertfordshire, ten miles from Stansted) and Foulness Island (Essex). Public opinion, as expressed in press and radio reports, appears to be decidedly in favour of the last, much to the consternation of naturalists. As an Essex exile, and as a Brent Goose addict, I have previously spoken out against any development of Foulness ('News and comment',

March 1968); but now I am placed in an invidious position, for what appears to be the most suitable of the short-listed inland sites (Cublington) is only six miles from my present home. This, however, does not alter the fact that Foulness Island is *the* most important wintering ground in Britain for the Dark-breasted Brent Goose; and that the costs of reclamation there, and the time it would take, are worrying to aeronautical interests who had hoped to see the airport operational by 1975. The February issue of *B.T.O. News* contains an article by Dr W. R. P. Bourne on gull roosts in the Thames valley in relation to bird/aircraft collisions, in which he concludes: 'It seems clear that while so far the distribution of the [London] reservoirs and the flight-paths of the birds using them have tended to minimise bird-strike hazards to aircraft at Heathrow, if an airport were to be built on any central Thames estuary site such as Foulness it can be predicted with complete certainty that it will regularly be crossed at the very least tens of times and more probably hundreds of times by as many large shore and water birds as would be found at even the worst inland sites such as Heathrow, whereas virtually any other inland site should be better than Heathrow.'

If not Foulness, then where should this new airport be sited? Currently the loudest voices are merely saying, 'Not near me'. Peter Masefield, Chairman of the British Airports Authority, has expressed disappointment that Stansted was not short-listed by the Roskill Commission. The apparently successful defence of Stansted was based principally on conservation of agricultural land and noise nuisance to residents of towns near-by. Yet these objections apply just as strongly to all the short-listed inland sites. If land conservation is to be an important factor in site selection, then surely it would be better to enlarge an existing airport than to start from scratch in a farming district? I find myself sympathising with Peter Masefield.

R.S.P.B. Reserves Appeal The Midas touch is revealed in the announcement of the Royal Society for the Protection of Birds that its Reserves Appeal, launched in May 1967, has reached its £100,000 target. The R.S.P.B. must be congratulated on this, and also for keeping administrative costs down to a mere 5% of the total received. This Reserves Appeal has permitted the acquisition of four new bird reserves: Vane Farm on Loch Leven, the largest concentration of breeding ducks in Britain and an important wintering ground for grey geese; Gwenffrwd in Carmarthenshire, 1,500 acres of high sheep walk and oakwood, and a stronghold of one of Britain's rarest raptors, the Kite; Ynyshir, a useful reserve of mixed habitats on the south bank of the Dovey estuary; and sections of the Ouse Washes, now named as the English locality in which Black-tailed Godwits have thrived since the 1950's and which Ruffs have also recently colonised. The R.S.P.B. thank all those who have contributed to the Appeal. No doubt posterity will thank the R.S.P.B.

A new Soviet ornithological centre Information on ornithological activities in the U.S.S.R. is less readily available than for western European countries. Thus a February release from the Novosti Information Service deserves mention here. An ornithological research centre is being set up on a nature reserve in the steppes of north Kazakhstan, on the presumed migration route from western Asia to Africa; this reserve is also the world's northernmost nesting place of the Flamingo. Ornithologists will work, in particular, on problems of preventing disease among birds, mammals and fish. The Kazakh government has allocated funds to maintain optimum water levels of local lakes. Other conservation measures taken in Kazakhstan include prohibition of spring shooting; and extension of government protection to the estuary of the River Ili into Lake Balkhash, and to the lake itself, these being breeding haunts of pelicans and several of the heron family.

The final 'Bents' Though a *Handbook of North American Birds* is currently being prepared (and one volume was published as far back as 1961), there is no doubt that

the standard work on Nearctic birds is still A. C. Bent's *Life Histories of North American Birds*. The first volume of this series appeared in 1919, and 18 subsequent volumes at irregular intervals up to 1953. Bent died in 1954, aged 89; his volume dealing with blackbirds and tanagers was published posthumously in 1958. Now, 50 years after the appearance of the first volume, the final three parts have been issued under the editorship of Dr O. L. Austin Jr; these deal with North American cardinals, grosbeaks, buntings, towhees, finches, sparrows and their allies, and are available from the Smithsonian Institution as Bulletin 237, parts 1-3. The long gestation period does not detract from the magnitude of the undertaking, for the 23 volumes are a mine of information, much of it culled from Bent's voluminous correspondence with his contemporaries; thus his peroration, 'If the reader fails to find mentioned in these pages some things which he knows about the birds, he can blame himself for not having sent them to [me].'

Results of tape-recording competition 3M, manufacturers of Scotch magnetic recording tape, in conjunction with the Wildlife Sound Recording Society, sponsored a British wildlife sound recording competition last autumn, the results of which were announced in March. The competition was divided into three classes: 1, individual species of birds; 2, individual species of mammals, reptiles and amphibians; and 3, rare species or species otherwise seldom recorded. Class 1 proved to be the most popular and was won by Magnus Sinclair, of Unst, Shetland, with an early morning recording of a family of Curlews; the top award in class 2 went to N. Wylie-Moore, of Heathfield, Sussex, for a vixen barking her way through a copse. The prize-winning subject in class 3, submitted by K. Briggs of Barnoldswick, Yorkshire, was a pair of Choughs feeding their young; other entries in this class included recordings of Crane, Snowy Owl, a wasp preening, an earthworm moving through soil, and the cheeping of an unhatched Curlew egg. Competition winners received their awards in London on 20th March.

Irish conservation conference Dr J. J. M. Flegg has kindly contributed this account of the Third All-Ireland Conference on Bird Conservation held at Newcastle, Co. Down, from 28th February to 2nd March, in the Slieve Donard Hotel magnificently situated at the foot of the regrettably mist-shrouded Mountains of Mourne. On arrival the participants were eased gently into conference mood by a series of films from the Royal Society for the Protection of Birds, including an up-to-the-minute account of the White-tailed Eagles on Fair Isle and a superb sequence on Ospreys. Following the formal opening by the Hon. Mrs Terence O'Neill—a bird-watcher since childhood—business became more serious with accounts by J. S. Furphy and F. O'Gorman of the governmental outlook on conservation on both sides of the border. These reports provoked lively and frequently critical comment from the floor—points not overlooked, one hopes, by the commendably large official contingents from the Ministry of Development in the North and the Department of Lands in the Republic. The afternoon was spent actively and instructively in visits to conservation areas, including the co-operative scheme on Strangford Lough, although a few sought out such local specialities as Long-tailed and Ring-necked Ducks. In the evening, recent developments in conservation were discussed by J. Temple Lang and F. D. Hamilton, perhaps the most exciting areas being the Wexford Slobs and Castle Caldwell on Lough Erne. The last day saw an obviously eye-opening discussion by Dr I. Newton on aspects of control of bird populations, followed by a talk from Dr J. G. Harrison on the practical problems of the hard labour involved when small groups of people seek to create highly efficient wildfowl habitats. The conference closed with outlines of progress and plans for the Atlas Project, Operation Seafarer and the Irish Peregrine Survey.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

I. J. Ferguson-Lees and J. T. R. Sharrock

These are largely unchecked reports, not authenticated records

This summary is concerned mainly with February 1969 and, unless otherwise stated, all dates refer to that month. The pattern was very similar to that in January (*Brit. Birds,* 62: 125-126).

WILDFOWL AND RAPTORS

America was represented by two more **Ring-necked Ducks** *Aythya collaris*, at Dorchester gravel pits (Oxfordshire) on 2nd and 15th and on the Don estuary (Aberdeenshire) on 16th—as well as the two in Co. Armagh (*Brit. Birds,* 62: 125), which were still present—and by yet another **Green-winged Teal** *Anas crecca carolinensis*, at Ballycotton (Co. Cork) on 16th. There were two **Lesser White-fronted Geese** *Anser erythropus* at Slimbridge (Gloucestershire) from 2nd and a third appeared on 28th; we have also heard of at least one in East Anglia. It continued to be a good winter for **Ferruginous Ducks** *Aythya nyroca* (cf. *Brit. Birds,* 62: 47, 88, 125), with single ones at Orchardleigh (Somerset) on 4th and 13th, on the South Slob (Co. Wexford) on 12th and at Barn Elms (Surrey) on 14th, and two at Henley Road gravel pit (Oxfordshire) on 13th-14th; perhaps the coincidence of mid-February dates suggests an influx. The only notable raptor was a **Rough-legged Buzzard** *Buteo lagopus* at Weymouth (Dorset) early in the month.

GULLS

Apart from the usual records on the coasts, an **Iceland Gull** *Larus glaucoides* was seen at Ogston (Derbyshire) during 1st-15th and a **Glaucous Gull** *L. hyperboreus* at the same place during 1st-8th (a different individual from that on 6th January mentioned last month), as well as more Glaucous Gulls at Chew Valley Lake (Somerset) on 16th and at Tonbridge (Kent) on 21st (two); in addition, there were indeterminate reports of one or the other of these two northern species at Calvert brick pits (Buckinghamshire) on 10th and at Graveney Marshes (Kent) on 22nd. The only **Mediterranean Gulls** *L. melanocephalus* reported were at Foreness (Kent) on 18th and at Hove (Sussex) on 28th (and again on 1st March). An immature **Laughing Gull** *L. atricilla* at Radipole Lake (Dorset) on 17th February was still there some weeks later.

WINTERING SUMMER VISITORS

A female **Ring Ouzel** *Turdus torquatus* at Staines Reservoir (Middlesex) during 15th-22nd was the fourth report of this species during the winter (cf. *Brit. Birds,* 62: 126) and yet another **Turtle Dove** *Streptopelia turtur* was found with Collared Doves *S. decaocto*, this time at Patcham (Sussex) during 5th-8th. **Blackcaps** *Sylvia atricapilla* and **Chiffchaffs** *Phylloscopus collybita* continued to be more numerous than usual, while other warblers included a **Willow Warbler** *P. trochilus* on St Mary's (Isles of Scilly) on 2nd and, even more surprising, a **Lesser Whitethroat** *Sylvia curruca* at Lydd (Kent) on 15th. A male **Serin** *Serinus serinus* was also seen on St Mary's on 15th. Single **Nutcrackers** *Nucifraga caryocatactes* were still present at Maidstone and Bearsted (Kent) throughout the month and one was reported at Woking (Surrey) on 6th. Although **Avocets** *Recurvirostra avosetta* regularly winter in numbers up to 50 or more in Devon and Cornwall, notably on the Tamar estuary, such records of even one or two elsewhere are very few; it is of interest, therefore, that this winter produced at least two in Norfolk, three in Suffolk, three in Kent, three in Dorset, two in Co. Cork and three in Co. Dublin.

ESCAPES

A rather thin month, and consequently shorter than usual summary, allows us space to touch briefly on the subject of escapes during the winter. **Ruddy Shelducks** *Tadorna ferruginea* on the Ouse Washes and in Wiltshire in October and November have already been mentioned (*Brit. Birds*, 62: 47) and there were others at Queen Mary Reservoir (Middlesex) on 1st December and at Pitsford Reservoir (Northamptonshire) on 14th December (two). These were almost certainly escapes and we suspect that only a proportion of the Ruddy Shelducks seen are ever reported for this reason. The same applies to **Snow Geese** *Anser caerulescens* (which is hardly surprising when this species has on occasion even been noted flying overhead in the Midlands in summer), but nevertheless the Snow Geese which were present in several localities in Britain and Ireland this winter may have included one or two wild immigrants. Not a single **Red-crested Pochard** *Netta rufina* was reported in January or February, though some must surely have been seen, and there were probably more **Flamingos** *Phoenicopterus ruber* during the winter than those at Sand Bay (Somerset) on 12th November, at The Fleet (Dorset) from 27th December into January, and at Clay Mills (Derbyshire) on 24th January. A **Sarus Crane** *Grus antigone* which also wintered in Derbyshire up to 10th February was obviously an escape, but a **Rose-coloured Starling** *Sturnus roseus* at Cranbrook (Kent) on 12th January may just possibly have been a wild bird.

So many species are imported now that the possibility of escapes must be borne in mind with most records of rarities, except such groups as shearwaters and swifts and probably waders. For instance, the Ferruginous Ducks mentioned above may have been of captive origin. We tend to avoid referring to obvious escapes in 'Recent reports' and only marginal cases appear, with suitable caveats, in the 'Report on rare birds in Great Britain'. Nevertheless, we like to receive such records and encourage qualified publication of them in county reports, so that it is possible to keep track of this increasing problem.

List of county and regional recorders in Britain and Ireland

As in the last two years, we are now publishing an up-to-date list of the names and addresses of county and regional bird recorders and editors. The main aims are to ensure that observers on holiday away from their home areas send records to the correct places, to encourage co-operation at the inter-county and intra-county levels, and to provide a source of reference for those collating records on a national basis. Several counties are divided into areas for recording purposes, but to save space, and because we believe it is less confusing, the list generally includes one name only against each county or region. For the same reasons we are largely discontinuing our previous practice of mentioning observatory and other local reports which overlap with the county or regional ones, though some of these contain much important information. Titles of publications are added only when they do not include the name of the county or counties concerned. We shall be glad

to know of any errors or omissions and we hope that recorders will keep us informed of changed addresses.

ENGLAND

All counties or regions are now publishing or intending to publish annual reports:

Bedfordshire A. J. Livett, 12 Broughton Avenue, Luton, Bedfordshire
Berkshire C. M. Reynolds, c/o Edward Grey Institute, Botanic Garden, High Street, Oxford OX1 4AZ
Buckinghamshire Miss R. F. Levy, Bramblings, Frieth, Henley-on-Thames, Oxfordshire (Bird Report in *The Middle-Thames Naturalist*)
Cambridgeshire G. M. S. Easy, Braemar, 11 Landbeach Road, Milton, Cambridgeshire
Cheshire Dr R. J. Raines, 34 Beryl Road, Noctorum, Birkenhead, Cheshire
Cornwall Reverend J. E. Beckerlegge, St Crowan Vicarage, Praze, Camborne, Cornwall
Cumberland Ralph Stokoe, 4 Fern Bank, Cockermouth, Cumberland
Derbyshire C. N. Whipple, 3 Oaklands Road, Etwall, Derby DE6 6JJ
Devon F. R. Smith, Telford, Hill Barton Road, Exeter, Devon
Dorset T. Hooker, Pine Springs, 40 Lonnen Road, Colehill, Wimborne, Dorset BH21 7AX
Durham D. G. Bell, 18 Rosedale Crescent, Guisborough, North Yorkshire
Essex Mr and Mrs J. K. Weston, 63 Woodberry Way, Walton-on-the-Naze, Essex
Gloucestershire C. M. Swaine, Mill House, Rendcomb, Cirencester, Gloucestershire
Hampshire J. H. Taverner, 13 Stockers Avenue, Winchester, Hampshire
Herefordshire T. R. H. Owen, Lulham House, Madley, Herefordshire
Hertfordshire B. L. Sage, 13 Dugdale Hill Lane, Potters Bar, Hertfordshire
Huntingdonshire B. S. Milne, 76 Ramsey Road, St. Ives, Huntingdonshire
Isle of Wight J. Stafford, Westering, Moor Lane, Brighstone, Isle of Wight
Kent W. F. A. Buck, The Hill Farm, Stockbury, Sittingbourne, Kent
Lancashire K. G. Spencer, 3 Landseer Close, off Carr Road, Burnley, Lancashire
Leicestershire K. Allsopp, 81 Uplands Road, Oadby, Leicester LE2 4NT
Lincolnshire K. Atkin, 34 Bassingham Crescent, Lincoln
London F. H. Jones, 28 Jordan Road, Greenford, Middlesex
Monmouthshire see WALES
Norfolk M. J. Seago, 33 Acacia Road, Thorpe, Norwich, Norfolk NOR 71T
Northamptonshire C. J. Coe, 3 The Orchard, Flore, Northamptonshire
Northumberland Dr J. D. Parrack, 1 Woodburn Drive, Whitley Bay, Northumberland
Nottinghamshire A. Dobbs, Cloverleigh, Old Main Road, Bulcote, Nottingham NG14 5GU
Oxfordshire as Berkshire
Rutland as Leicestershire
Shropshire Lieutenant-Colonel H. R. Perkins, The Batch, Bridgnorth, Shropshire
Somerset Miss E. M. Palmer, Highfield, Sandford Hill, Bridgwater, Somerset
Staffordshire J. Lord, Orduna, 155 Tamworth Road, Sutton Coldfield, Warwickshire (*West Midland Bird Report*)
Suffolk W. H. Payn, Hartest Place, Bury St Edmunds, Suffolk
Surrey D. D. B. Summers, Gallinula, Longmoor Road, Greatham, Liss, Hampshire
Sussex M. Shrubb, Fairfields, Sidlesham, Chichester, Sussex
Warwickshire as Staffordshire
Westmorland as Cumberland
Wiltshire G. L. Webber, 66 Southbrook Extension, Swindon, Wiltshire
Worcestershire as Staffordshire
Yorkshire A. J. Wallis, 13 Raincliffe Avenue, Scarborough, Yorkshire

The *London Bird Report* also includes the sections of Buckinghamshire, Essex, Hertfordshire, Kent and Surrey within 20 miles of St Paul's Cathedral. A number of other reports overlap with adjacent ones to a greater or lesser extent and cover parts of one or more counties: among the most important is the *Merseyside Naturalists' Association Report* (Eric Hardy, 47 Woodsorrel Road, Liverpool 15) which ranges widely over north-west England and north Wales. There is now generally a good exchange of information between overlapping reports and between local and county publications, but in a few instances co-operation is still only partial or even lacking and we again urge those concerned to resolve such situations which greatly add to the work of any national collator and confuse the casual visitor.

ISLE OF MAN

Records are collected by the Manx Museum and National Trust, and edited by E. D. Kerruish, 3 High View Road, Douglas, Isle of Man, for publication in *The Peregrine,* which is produced by the Isle of Man Natural History and Antiquarian Society.

WALES

As foreseen last year, the first 'Welsh Bird Report', edited by P. E. Davis and P. Hope Jones and covering 1967, was published in *Nature in Wales* (11: 86-100) in September 1968. This presents a summary of the more important records in Wales as a whole. County reports are continuing and recording is still on a county basis:

Anglesey A. J. Mercer, Llywenan, Merddyn Gwyn, Brynsiencyn, Anglesey (*Annual Report of Cambrian Ornithological Society*)
Breconshire M. V. Preece, Beaufort House, Upper Llangynidr, near Crickhowell, Breconshire
Caernarvonshire as Anglesey
Cardiganshire P. E. Davis, Ty Coed, Tregaron, Cardiganshire
Carmarthenshire D. H. V. Roberts, 38 Heol Hathren, Cwmann, Lampeter, Cardiganshire
Denbighshire as Anglesey
Flintshire R. R. Birch, 12 Rakeway, Saughall, Chester
Glamorgan H. E. Grenfell, The Woods, 14 Bryn Terrace, Mumbles, Swansea, Glamorgan
Merioneth as Anglesey
Monmouthshire W. G. Lewis, 11 Ruth Road, New Inn, Pontypool, Monmouthshire
Montgomeryshire Miss V. J. Macnair, Lower Garth, Welshpool, Montgomeryshire
Pembrokeshire J. W. Donovan, The Burren, Dingle Lane, Crundale, Haverfordwest, Pembrokeshire
Radnorshire as ENGLAND, Herefordshire

Bird records for Cardiganshire, Carmarthenshire and Pembrokeshire are published together as a report of the West Wales Naturalists' Trust. The territory of the *Merseyside Naturalists' Association Bird Report* (see ENGLAND) extends into north Wales.

SCOTLAND

This year the first 'Scottish Bird Report', covering 1968, will be published in the quarterly journal *Scottish Birds* (Andrew T. Macmillan, 12 Abinger Gardens, Edinburgh EH12 6DE), but recording is still on a regional basis, partly by counties and partly by the 'faunal areas' shown on the map at the end of volume 2 of E. V. Baxter and L. J. Rintoul's *The Birds of Scotland* (1953). With the county system modified in this manner, alphabetical listing is unsatisfactory and the area recorders are therefore taken from north to south:

Shetland (*except Fair Isle*) R. J. Tulloch, Reafirth, Mid Yell, Shetland
Fair Isle R. H. Dennis, Bird Observatory, Fair Isle, Shetland
Orkney E. Balfour, Isbister House, Rendall, Orkney
Outer Hebrides (*except St Kilda*) W. A. J. Cunningham, 10 Barony Square, Stornoway, Isle of Lewis
St Kilda Dr I. D. Pennie, Bonhard Place, Bo'ness, West Lothian
Caithness D. M. Stark, 2 Harland Road, Castletown, Thurso, Caithness
Sutherland, Ross-shire (*except Black Isle*) D. Macdonald, Elmbank, Dornoch, Sutherland
Inverness-shire (*within* 18 *miles of Inverness*), *Ross-shire* (*Black Isle only*), *Nairnshire* Dr Maeve Rusk, Arniston, 51 Old Edinburgh Road, Inverness
Inverness-shire (*mainland more than* 18 *miles from Inverness*), *Morayshire* The Honourable Douglas N. Weir, English Charlie's, Rothiemurchus, Aviemore, Inverness-shire
Banffshire, Aberdeenshire, north Kincardineshire N. Picozzi, Unit of Grouse and Moorland Ecology, Blackhall, Banchory, Kincardineshire AB3 3PS; and W. Murray, Culterty Field Station, Newburgh, Aberdeenshire AB4 0AA
South Kincardineshire, Angus G. M. Crighton, 23 Church Street, Brechin, Angus
Perthshire Miss V. M. Thom, 19 Braeside Gardens, Perth
Kinross-shire J. H. Swan, Vane Farm Reserve, Kinross
Isle of May Miss N. J. Gordon, Nature Conservancy, 12 Hope Terrace, Edinburgh 9
Fife (*east of A*90) D. W. Oliver, 4 Lawview Cottages, Abercrombie, St Monance, Fife
Fife (*west of A*90), *Clackmannanshire, east Stirlingshire* T. D. H. Merrie, West Faerwood, Stirling Road, Dollar, Clackmannanshire
West Lothian Dr T. C. Smout, 19 South Gillsland Road, Edinburgh 10
Midlothian, Forth islands (*except May*) R. W. J. Smith, 33 Hunter Terrace, Loanhead, Midlothian
East Lothian, Berwickshire K. S. Macgregor, 16 Merchiston Avenue, Edinburgh 10
Peeblesshire, Roxburghshire, Selkirkshire A. J. Smith, Glenview, Selkirk
Clyde faunal area (*Ayrshire, Renfrewshire, Lanarkshire, Dunbartonshire, west Stirlingshire, Bute, south Argyll*), *north Argyll, Skye, Inner Hebrides* Professor M. F. M. Meiklejohn, 16 Athole Gardens, Glasgow W2
Dumfriesshire J. G. Young, Benvannoch, Glencaple, Dumfriesshire
Kirkcudbrightshire, Wigtownshire A. D. Watson, Barone, Dalry, Castle Douglas, Kirkcudbrightshire

IRELAND

There is no system of county reports, but the whole country is covered by the annual *Irish Bird Report* edited by Major R. F. Ruttledge. Records should be submitted as follows:

Northern Ireland T. Ennis, 45 Park Drive, Holywood, Co. Down
Eire Major R. F. Ruttledge, Doon, Newcastle, Co. Wicklow

SMALL ADVERTISEMENTS

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 in whole or in part 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 are sent free to authors of papers (two authors of one paper receive 15 each and three authors ten 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 wide margins, 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 author's address clearly given in one line at the foot. 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 generally those used in *A Field Guide to the Birds of Britain and Europe* (revised edition, 1966). The scientific name of each species should be underlined (but not put in brackets) immediately after the first mention of the English name. Sub-specific 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 1969' 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:

Bannerman, D. A. 1954. *The Birds of the British Isles*. London. vol. 3: 223-228.
Lack, D. 1960. 'Autumn "drift-migration" on the English east coast'. *Brit. Birds*, 53: 325-352, 379-397.

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. Before submitting his paper, the author must neatly insert any lettering or numbering that is an integral part of the figures and, as this is perhaps the most difficult aspect of indian ink drawing, he is advised to use stencils or seek the aid of a skilled draughtsman.

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Part 1 Introduction, Hoopoe, Golden Oriole and Tawny Pipit

INTRODUCTION

In 1963 the Rarities Committee announced that it could no longer consider certain species of which more than ten individuals were being recorded annually, these being Red-crested Pochard *Netta rufina*, Snow Goose *Anser caerulescens*, Pectoral Sandpiper *Calidris melanotos*, Mediterranean Gull *Larus melanocephalus*, Sabine's Gull *L. sabini*, Melodious Warbler *Hippolais polyglotta*, Icterine Warbler *H. icterina* and Yellow-browed Warbler *Phylloscopus inornatus* (*Brit. Birds*, 56: 394). This move was greatly regretted by the Bird Observatories Conference in January 1964 and led to the publication of letters from R. A. O. Hickling (then Chairman of the Bird Observatories Committee) and the late S. Boddy, T. W. Gladwin, C. J. Mead and Robert Spencer (*Brit. Birds*, 57: 303-305). They proposed not only the reinstatement of these eight species, but also the addition of Temminck's Stint *Calidris temminckii*, Golden Oriole *Oriolus oriolus*, Bluethroat *Luscinia svecica*, Barred Warbler *Sylvia nisoria*, Red-breasted Flycatcher *Ficedula parva* and Ortolan Bunting *Emberiza hortulana*. P. A. D. Hollom, as Chairman of the Rarities Committee, explained the impracticability of this (*Brit. Birds*, 57: 305-307). The main concern, however, was not that these records needed vetting by a specialist panel, but that they should somehow be brought together in one place rather than remain scattered in the many regional reports. As a consequence, I was invited in 1964 to undertake the production of periodic reports on a selection of species not quite rare enough to justify checking by the Rarities Committee.

Some 42 species were considered for possible inclusion, but, for a variety of reasons, these were reduced to a final selection of 15. They

are Rough-legged Buzzard *Buteo lagopus*, Temminck's Stint, Pectoral Sandpiper, Long-tailed Skua *Stercorarius longicaudus*, Mediterranean Gull, Sabine's Gull, Hoopoe *Upupa epops*, Golden Oriole, Bluethroat, Melodious Warbler, Icterine Warbler, Barred Warbler, Yellow-browed Warbler, Red-breasted Flycatcher and Ortolan Bunting. The only practicable method was to collate the records as published in regional reports without attempting to assess their validity, on the assumption that they had already been adequately vetted by the county recorders. In many cases, local reports only summarised records, but the editors concerned were extremely helpful in supplying fuller details. Also, in an attempt to fill in gaps, an appeal was made (*Brit. Birds*, 61: 470-471) for unpublished observations. This resulted in the receipt of over 100 further records which, as well as being included in these analyses, were passed on to the relevant county recorders.

It was estimated that there would be approximately 700 records of the 15 species annually and it would clearly not be practicable to publish individual details, as is done by the Rarities Committee for the rarer species; the space would be better employed by more thorough analyses of the patterns. Nevertheless, in order to make comparison possible with the work of the Rarities Committee, which began in 1958, records from that year onwards were collected and this first series of analyses covers 1958-67. This period will be referred to throughout as 'the ten years'.

Some other species still considered by the Rarities Committee have also been included, since there are now sufficient records of these to warrant analysis. They are White-winged Black Tern *Chlidonias leucopterus*, Gull-billed Tern *Gelochelidon nilotica*, Aquatic Warbler *Acrocephalus paludicola*, Greenish Warbler *Phylloscopus trochiloides*, Richard's Pipit *Anthus novaeseelandiae*, Tawny Pipit *A. campestris*, Woodchat Shrike *Lanius senator*, Scarlet Rosefinch *Carpodacus erythrinus* and, as blocks of records for comparison with Pectoral Sandpiper and Sabine's Gull, all American waders and passerines. These records were extracted from the reports of the Rarities Committee and the *Irish Bird Report*, and not from county reports. To facilitate analysis, the data for each record were coded and the analyses carried out by means of Hollerith punched cards. It is intended that this first series of analyses covering 1958-67 shall be followed at intervals by further ones. The collection of punched cards will therefore be added to each year as the county reports are published. The data coded for every record are as follows:

Columns 1-2	Species code number	Column 13	Number of immatures
Columns 3-4	Year	Column 14	Number of males
Columns 5-7	County code number	Column 15	Number of females
Columns 8-9	Regional code number	Columns 16-17	Coded date
Columns 10-11	Number of individuals	Column 18	Additional data (e.g. seen from boat, breeding, subspecies)
Column 12	Number of adults		

In these analyses the basic unit used for displaying distribution within Britain and Ireland is the county. It was not practicable to pinpoint each record: even though a majority were at bird observatories, the large number of obscure gravel pits and other local names (often not even shown on one-inch Ordnance Survey maps) made precise location of some 7,000 records impossible. Thus the use of a grid system (e.g. 100 km squares) was impracticable. In preparing the distribution maps, I have used a wide range of symbol sizes (usually 14) to give a truer impression of the relative abundance in different areas, but this may sometimes make it difficult for a reader to decide exactly in which category an individual county falls. I will therefore supply details to anyone who requires fuller information (please write to the address at the end of this paper and enclose a stamped and addressed envelope). Arbitrary decisions had sometimes to be made when localities were on county boundaries. These were few, the only ones occurring more than once being Wisbech sewage farm (Norfolk/Lincolnshire) and Rye Meads (Hertfordshire/Essex), both of which were always treated as in the first-named county. Rutland was incorporated with Leicestershire and the Isle of Wight with Hampshire, but the Isles of Scilly were treated as a county in their own right and separate from Cornwall. While the county was the geographical unit generally employed, it was sometimes convenient to use larger areas and, for this purpose, Britain and Ireland were divided into twelve regions (shown by heavy lines in fig. 1) as follows:

1. **South-east England:** Kent, London, Surrey, Sussex, Hampshire
2. **South-west England:** Dorset, Wiltshire, Somerset, Devon, Cornwall, Scilly
3. **East Anglia:** Essex, Suffolk, Norfolk, Cambridgeshire
4. **Eastern England:** Lincolnshire, Yorkshire
5. **North-east England:** Durham, Northumberland
6. **North-west England:** Cheshire, Lancashire, Westmorland, Cumberland, Man
7. **Midlands:** other English counties
8. **Wales**
9. **South of Ireland:** Munster and Leinster } Not corresponding to Eire and Nor-
10. **North of Ireland:** Ulster and Connacht } thern Ireland in the political sense
11. **Northern Scotland:** Scotland north from Angus, Perthshire and Argyll
12. **Southern Scotland:** Scotland south of Angus, Perthshire and Argyll

Where a species is relatively common, records are sometimes best dealt with as 'bird-days', but this information was often not available. In any event, it was considered more interesting to know the actual number of individuals occurring. Often the only information recorded was the arrival date of each bird. It was therefore easier, as well as preferable, to assess the number of individuals from 'bird-day' data than to try to compose 'bird-day' data from records of individuals. Where the records were summarised in a county report, the local editor was asked for his assessment of the number of individuals concerned. For instance, ringing or plumage variation might show that a series of records such as 5, 3, 2, 6 and 1 on successive days referred to any

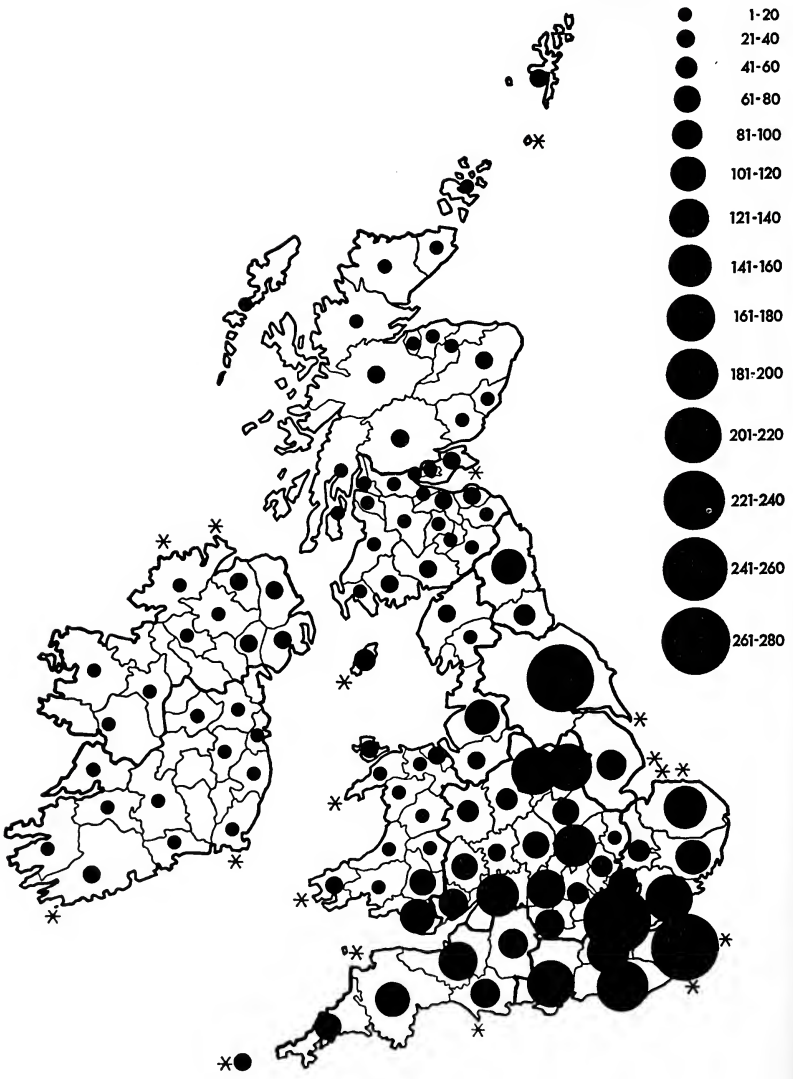

Fig. 1. Distribution by counties of observers in Britain and Ireland. The dots show the actual or estimated number of contributors to the latest county bird report (usually 1967) except in Scotland, Ireland and a few other areas where estimates were made by the regional editors (see text). The stars show bird observatories which were in operation for a significant part of the ten years and which had abnormally good coverage either through a resident warden or through drawing largely on observers from outside the county. The twelve regional divisions used are outlined more heavily than the county boundaries

number from six to 17 individuals. Such decisions were always left to the county editor or observatory warden who had access to all the relevant data and knew the local conditions.

The published details were always extracted with no added assumptions. For example, a male Golden Oriole was not assumed to be an adult unless this was specifically stated. Where two or more reports overlapped and covered the same area, a record published in only one report was included in the analysis unless the other(s) specifically rejected it; this occurred mainly in the earlier years, when liaison between neighbouring editors was less good than it is now.

It should be pointed out that the totals may not always correspond in the various analyses of a species. In a number of cases the date of an occurrence is not known beyond, for example, 'mid-summer'; even the exact year may not be determined, for example in belated records from reliable non-ornithologists of such species as Hoopoe or Golden Oriole; and in some instances the county is not known, where a report covers two or more counties and the present editor has not heard of a locality published in an earlier report. Records of these kinds are very few, but in such cases a record which can be included in a histogram showing seasonal or yearly distribution cannot be shown in a map of geographical distribution, or vice versa.

The distribution throughout the year is always displayed in seven-day periods to eliminate the effect of weekend-bias (Sharrock 1966). The data for the ninth period (26th February-4th March) are always adjusted to compensate for leap-years ($\times\frac{70}{72}$) and those for the 52nd period (24th-31st December) to compensate for this being an eight-day period ($\times\frac{7}{8}$).

Readers should bear in mind two factors which greatly affect these analyses. First, a great increase in interest in ornithology in recent years is shown by, for instance, the growth in membership of the British Trust for Ornithology from 2,667 in 1958 to 4,456 in 1967. The yearly totals of a species should, therefore, be judged with this in mind. Secondly, the distribution of observers is far from even, so that there are, for example, more active recorders in an average south-east English county than in the whole of Ireland. The geographical distribution of migrant records must partly reflect this uneven cover. At the same time, observatories and ringing stations contribute a high proportion of the passerine records and so the establishment or closure of one of these centres can alter the whole pattern within a county. To give some idea of this uneven observer distribution, fig. 1 plots the number of people in each county who contributed to the 1967 (sometimes 1966) county report. (In the cases of Scotland, Northern Ireland, Eire, parts of Wales and a few English counties, where recording is not on a county basis, these figures were estimated for me by the regional editors.) These data must not be regarded as

completely accurate, since each editor undoubtedly has differing standards when defining a 'contributor', but the aim is only to show the bias due to uneven observer distribution. Bird observatories which had abnormally good coverage, either through a resident warden or because they drew largely on observers from outside the county in which they are situated, are shown by stars. I am grateful to J. N. Dymond for advice regarding the selection of such observatories to be included for this ten-year period.

It should be pointed out that detailed analysis of an exceptional movement in any one year is not one of the aims of these analyses. Items of such immediate interest usually warrant papers in their own right (e.g. Scott 1968, Dennis 1969) and, while these analyses will refer to such papers, they are not intended to take their place.

Lastly, having examined every county and regional report for each of the ten years (a total of about 750 publications) in extracting these records, I hope that county editors will not take amiss some suggestions which would greatly help future compilers of data:

1. Where a report covers more than one county, it is very helpful if the county (as well as the locality) is clearly indicated for every record. Local readers of the report may know in which county every gravel-pit or village is situated, but an outside analyser has to search maps to try to find out or, if unsuccessful, has to bother the editor.
2. Overlap between neighbouring reports also adds to an analyser's work, for he sometimes has to refer to several reports simultaneously to eliminate duplication. Rigid boundaries, adhered to by all parties, would be very welcome.
3. When there is a series of records, brief comments can be helpful and save correspondence: for example, '14th, 18th and 19th September: the same bird' or '14th, 18th and 19th September: three different'.
4. A lot of useful sex/age information is clearly being lost. Some reports often omit the age or sex of individuals where it must clearly be known (e.g. age of Long-tailed Skuas) or where it is almost certainly known more often than the published information suggests (e.g. sex of Golden Orioles).

Since this report is to be published in several (probably nine) parts, I should like to acknowledge here the enormous help given to me by the county and regional editors and others. These analyses could not have been carried out without the quite exceptional willingness and forebearance of the many editors whom I pestered for additional details. I am particularly grateful to those who supplied me with 1967 records before publication. Full acknowledgement will be made at the end of the series, where the references will also be listed.

This first part deals with three of the main 23 species being considered. They are Hoopoe, Golden Oriole and Tawny Pipit, all of which have a widespread breeding distribution in Europe.

Hoopoe *Upupa epops*

A total of 1,245 Hoopoes was recorded in Britain and Ireland during 1958-67, an average of 125 per year. The vast increase in watching (and recording) which has taken place in the last 20 years makes it difficult to compare numbers with those recorded earlier, but it is remarkable that 31 Hoopoes in 1948 and 30-34 in 1950 were in both cases sufficient to stimulate special summaries in this journal (Editors 1949, 1951).

Whilst there were records in every month of the year, occurrences were very markedly concentrated in the periods from the end of March to mid-May and from August to September, with the peaks in mid-April and early September (fig. 2). The spring passage was very much stronger than the autumn one. Arbitrarily separating the spring and autumn passages between the 26th and 27th seven-day periods (up to 1st July and from 2nd July onwards), 77% of the occurrences fell within the first half of the year and 23% within the second half. This is a greater difference between the seasons than there was in the hundred years 1839-1938, when 67% were recorded in spring and 33% in autumn (derived from Glegg 1942).

The volume of spring passage has varied widely in the ten years, from 34 individuals in 1961 to 154 in 1965 (fig. 3). The spring records are somewhat suggestive of a cyclical pattern, a peak in 1958 declining to a trough in 1961, steadily rising to a peak in 1965 and then falling again. This may be fortuitous, however, for arrivals have been linked with those of other vagrants appearing either with southerly winds and overcast associated with fronts moving into the English Channel or in clear anticyclonic conditions (Williamson 1961, Davis 1964), the occurrence of these weather patterns perhaps largely determining the number of records of Hoopoes.

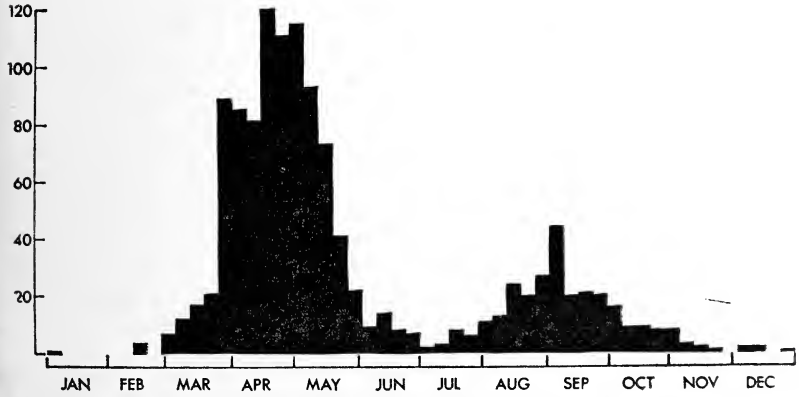

Fig. 2. Seasonal pattern of Hoopoes *Upupa epops* in Britain and Ireland during 1958-67

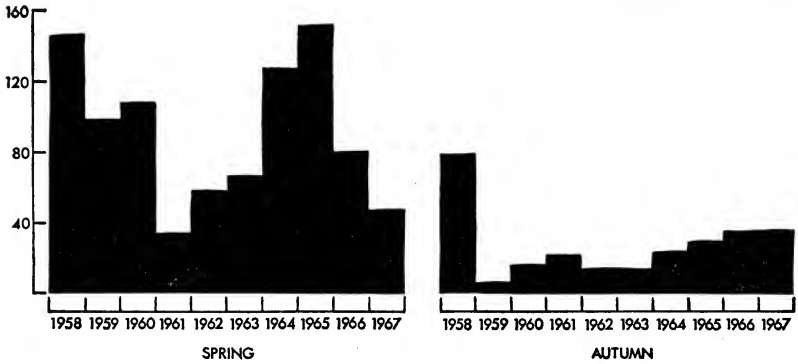

Fig. 3. Annual pattern of Hoopoes *Upupa epops* in Britain and Ireland during 1958-67 with the spring and autumn records shown separately

Except in 1958, autumn numbers have varied less (fig. 3), showing a small but steady annual increase in records. This may merely reflect the increase in observers over the ten years, but the observer-increase probably affects Hoopoe numbers less than almost any other species because of the larger proportion recognised and reported by the general public. The numbers in autumn 1958 were so aberrant that it is worth looking at them in more detail. In fact, they were almost entirely the result of an influx which reached a peak during 3rd-9th September (a third of the records falling within this seven-day period) and which was largely restricted to the coastal counties from the Isles of Scilly to Sussex (60% of that autumn's records being in these six counties). The exceptional nature of this autumn influx of Hoopoes appears not to have been fully appreciated at the time (no doubt partly because relatively few were seen at the bird observatories). The period brought large numbers of migrants and many vagrants to both the east coast and the Irish Sea area (Williamson 1958, 1959), but it is significant that only 14% of the Hoopoes were on the English and Scottish east coasts.

In spring, over the ten years, Hoopoes occurred mainly in the seven counties of the English south coast and in Pembrokeshire and Co. Cork (fig. 4). Their frequency in Pembrokeshire was somewhat surprising, as one might have expected that county, shielded from southerly arrivals by the south-west peninsula, to receive relatively few. Whilst these nine counties provided the majority of the spring Hoopoes, reports were very widespread, including every Midland county. Indeed, only two English counties (Cumberland and Westmorland) and no Welsh counties were without a record. The paucity of reports in Ireland (apart from the four southern counties from Cos. Kerry to Wexford) and Scotland was no doubt due in part to the relative lack of observers, though most of the coastal Irish counties

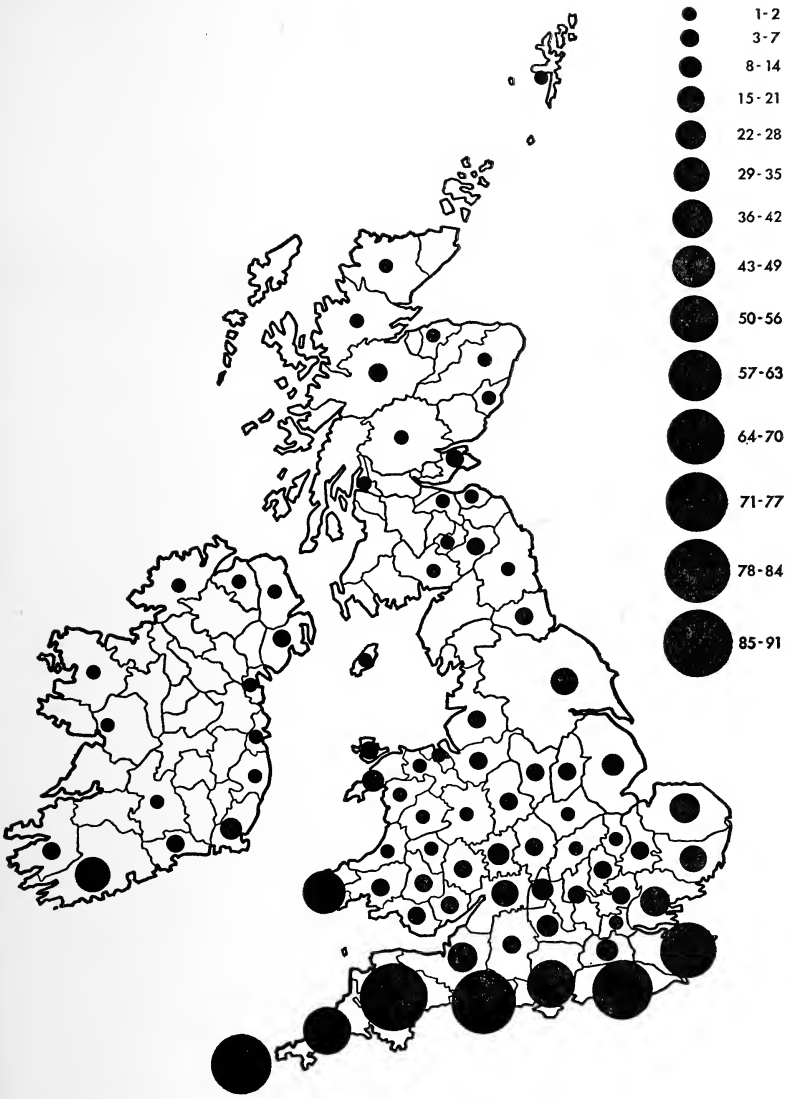

Fig. 4. Distribution by counties of spring Hoopoes *Upupa epops* in Britain and Ireland during 1958-67

and the eastern Scottish counties did have at least one record.

The preponderence of south coast records is not surprising, in view of the breeding distribution of this species which is mainly a summer visitor to Europe (fig. 5). It should be added, however, that the Hoopoe has decreased markedly in Europe in the last hundred years; this was attributed by Fjerdingstad (1939) to competition for nest sites

with the increasing numbers of Starlings *Sturnus vulgaris*, but is more generally considered to be due to the climatic changes which have resulted in cooler, wetter summers in western Europe. In any event, the species is now largely absent as a breeding bird from the Low Countries and Scandinavia.

Fig. 5. European distribution of Hoopoes *Upupa epops* with the breeding range shown in black and the northern limit of the wintering area marked by a dotted line (reproduced, by permission, from the 1966 edition of the *Field Guide*)

In Britain and Ireland, taking the ten years as a whole, the earliest arrivals were in the south-west in late February and early March (fig. 6). By mid-March a few reached south-east England and East Anglia, but the majority was still found in the south-west. From the end of March to early May, Hoopoes became increasingly widespread in England and the south of Ireland and by the end of this six-week period even reached southern Scotland. There were very few in the Midlands until the second fortnight of this six-week period, even though they were widespread in the coastal counties bordering on the Midlands in the first fortnight. This suggests that those seen in the Midlands from the second week of April onwards were largely ones which had arrived previously in the coastal counties and had wandered within Britain. (The alternative, that Hoopoes arriving later in the season penetrated Britain more deeply on arrival than those occurring earlier, is a less logical explanation.) By the second and third weeks of May, numbers had begun to decline, but some reached northern Scotland at this time. At the end of May and in early June, records were virtually confined to southern England, especially the south coast counties and the Midlands. It is likely that these were not new arrivals, but consisted largely of non-breeders summering in Britain.

The spring influxes of Hoopoes in Britain may therefore be broken down into three phases: (1) initial arrivals in the south-west; (2) arrivals further along the English south coast and in the south-east,

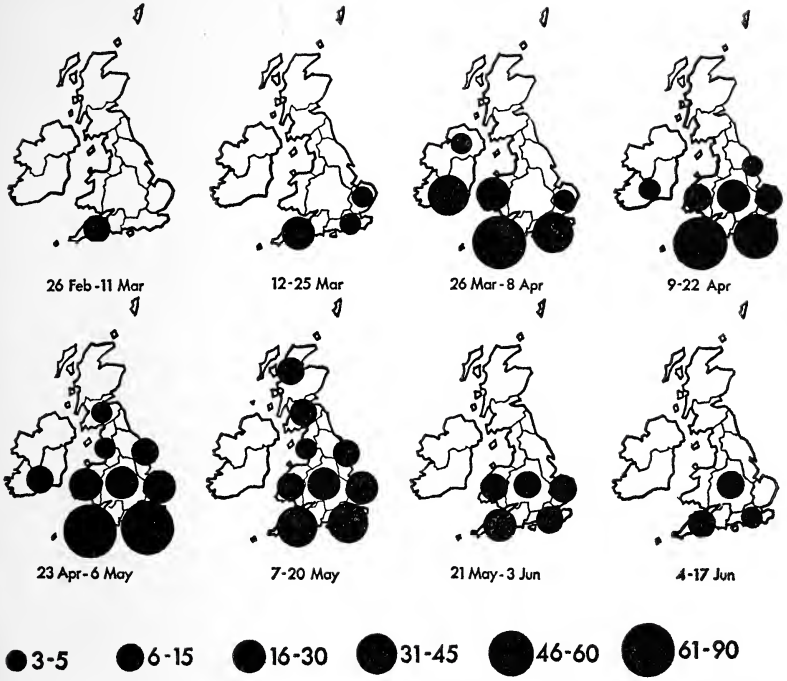

Fig. 6. Regional distribution by eight 14-day periods of spring Hoopoes *Upupa epops* in Britain and Ireland during 1958-67

and continuing arrivals in the south-west; and (3) arrivals along the whole of the east coast, increasingly more northerly as time progresses. It seems probable that those in March are mainly Iberian birds reaching south-west England, the south of Ireland and south Wales by displacement on a northerly (or sometimes even NNE) track and that the later arrivals in April and early May originate from progressively more northerly and easterly populations, until those in Scotland in May are arriving on an almost north-westerly track.

Relatively few Hoopoes ever remain in Britain to breed. According to Parslow (1967) there has been little change in the average frequency of about one record per decade since the 1830's, with seven in 1895-1904 and four in the 1950's. *The Handbook* notes that the species has nested in every south coast English county, perhaps most often in Hampshire. In the ten years there was only one authenticated breeding record, in Kent in 1959, but a pair summered and breeding was suspected in Bedfordshire in 1964.

It has already been noted that more than three times as many Hoopoes were recorded in spring as in autumn in the ten years, and that over a quarter of the autumn total was seen in a single year (1958). The geographical distribution of these records within Britain and

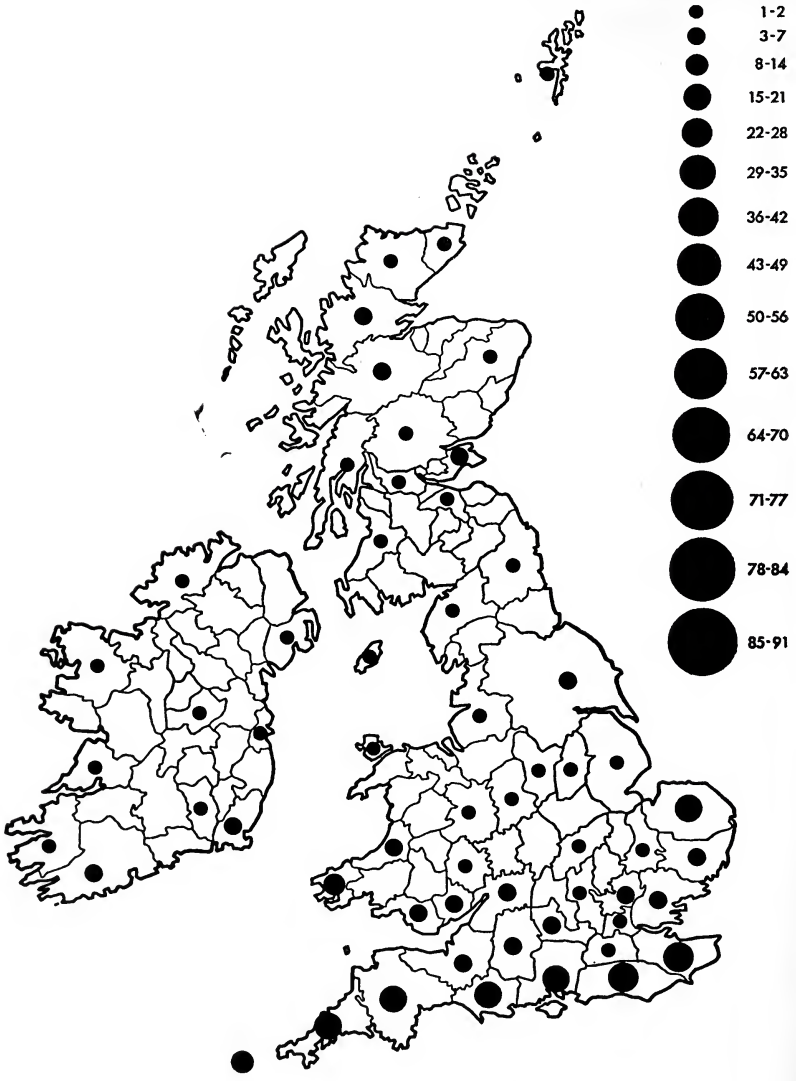

Fig. 7. Distribution by counties of autumn Hoopoes *Upupa epops* in Britain and Ireland during 1958-67

Ireland (fig. 7) is not dissimilar to the spring pattern (fig. 4), with most on the English south coast. Relatively more were seen in south-east England, East Anglia and Scotland, however, and relatively fewer in the Midlands, Wales and south-west England (table 1).

The first autumn arrivals in late July were in south-east England (fig. 8) and in early August this was still the focal point, though

Table 1. Comparison by regions of spring and autumn numbers of Hoopoes *Upupa epops* in Britain and Ireland during 1958-67

	Percentage distribution of spring records	Percentage distribution of autumn records	Proportion of spring to autumn
South-east England	22%	26%	2.7
South-west England	35%	28%	4.2
Midlands	11%	8%	4.3
Wales	9%	7%	4.5
East Anglia	9%	12%	2.4
Eastern England	3%	2%	3.7
North-west England	1%	2%	2.6
North-east England	1%	1%	2.5
North of Ireland	1%	1%	2.5
South of Ireland	6%	5%	4.9
Southern Scotland	1%	3%	1.9
Northern Scotland	1%	5%	0.8
Britain and Ireland	100%	100%	3.3
Hampshire to Northumberland	35%	41%	2.7
Dorset to Co. Kerry	51%	42%	4.2

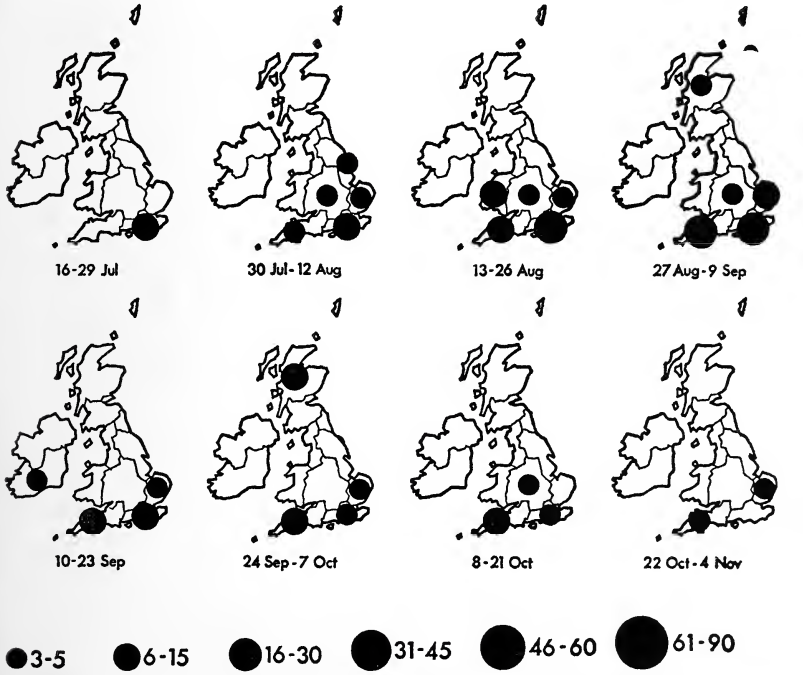

Fig. 8. Regional distribution by eight 14-day periods of autumn Hoopoes *Upupa epops* in Britain and Ireland during 1958-67

occurrences were more widespread and also covered eastern England, East Anglia, the Midlands and south-west England. By mid-August the west, including Wales, began to figure more prominently. There were increasing numbers in south-west England by early September, but also further arrivals in East Anglia and south-east England and, completely separated from those in the south, in northern Scotland as well. Records declined after mid-September, but this was the time when autumn Hoopoes occurred in Ireland and the peak in north Scotland was at the end of September, much later than the peaks elsewhere.

Even though the English south coast accounted for over half of the records in autumn (as in spring), a greater proportion was on the east coast in autumn than in spring (table 1). The pattern suggests a simple westerly displacement of birds moving south in autumn, the numbers involved being far fewer than those in spring when Britain and Ireland lie directly in the path of birds overshooting on northward migration. The late autumn peak in north Scotland involved 14 individuals in the ten years and, although a similar concentration was found for 1839-1938 by Glegg (1942), this has not been satisfactorily explained.

Golden Oriole *Oriolus oriolus*

A total of 257 Golden Orioles was recorded in Britain and Ireland during 1958-67, an average of 26 per year. The majority were between mid-April and mid-July, with 62% falling within the four weeks from 7th May to 3rd June (fig. 9). At other seasons Golden Orioles were very rare vagrants at an average of little more than one per year. The sex was recorded for only 71%, of which 73% were males and 27% females. The adult male is, of course, very much more conspicuous than the female, and so these figures may not be entirely representative of the proportions of the sexes occurring. (On the other hand, it is at least possible that some of the 'females' recorded were in fact first-year males.) Even though the proportion of males to females may have been exaggerated, the records clearly show that the majority of females arrived in Britain and Ireland ahead of the majority of males (fig. 9). This is the reverse of what might have been expected, for on spring migration in north Africa and Continental Europe the males precede the females by about ten days (Bannerman 1953). The sex of six out of the ten autumn (August-November) individuals was recorded, and all were males. The two March records both referred to males in 1966, in Huntingdonshire and Northamptonshire; in view of the unusually early dates, it seems quite probable that these were escaped cage-birds or even the same escaped individual.

More than two-thirds of the Golden Orioles seen in Britain and Ireland during 1958-67 were in the last four years of the period (fig.

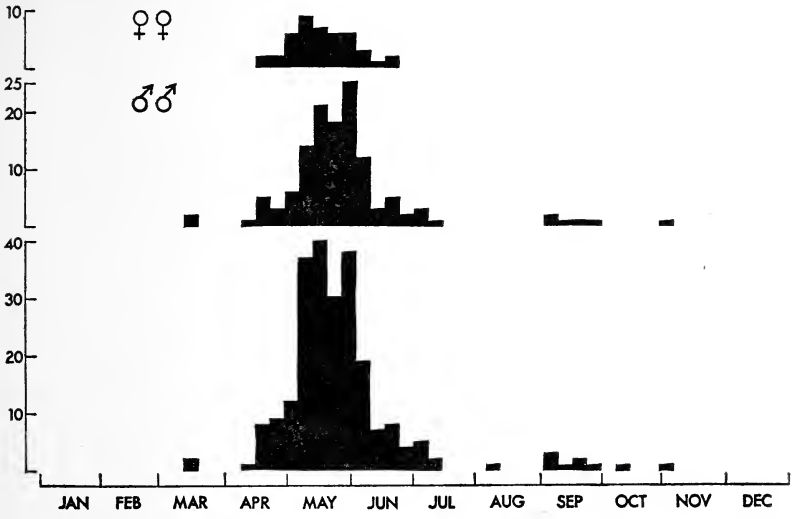

Fig. 9. Seasonal pattern of Golden Orioles *Oriolus oriolus* in Britain and Ireland during 1958-67 with the females, males and total records shown separately

10), with peaks in 1964 and 1967, and the pattern is quite different from that of the Hoopoes (compare figs. 10 and 3). This is rather surprising, since the occurrences of both species are usually attributed to the same weather conditions (e.g. Davis 1964) and a 'good' year for one might be expected to be a 'good' year for the other. The periods of passage are rather different, of course—Hoopoes being mainly from the end of March to mid or late May and Golden Orioles from early May to early June—but there is still little correlation between the occurrences of the two species during the four weeks 7th May-3rd June which cover the main Golden Oriole passage and still significant numbers of Hoopoes (table 2).

The European breeding distribution of the Golden Oriole (fig. 11) is very similar to that of the Hoopoe (fig. 5), though the former has recently increased in Denmark and since 1944 extended its breeding

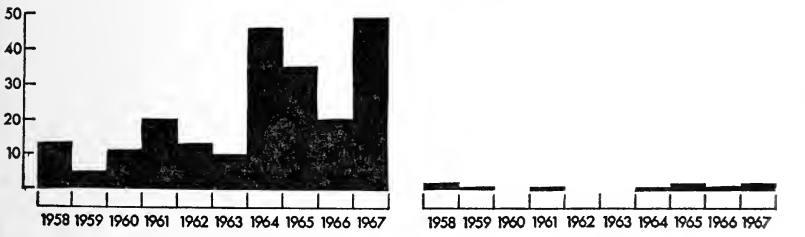

Fig. 10. Annual pattern of Golden Orioles *Oriolus oriolus* in Britain and Ireland during 1958-67 with the spring and autumn records shown separately

Table 2. Annual totals of Hoopoes *Upupa epops* and Golden Orioles *Oriolus oriolus* in Britain and Ireland during 7th May-3rd June 1958-67

Year	Hoopoe	Oriole	Year	Hoopoe	Oriole
1958	28	6	1963	22	2
1959	21	5	1964	22	29
1960	40	9	1965	28	27
1961	8	11	1966	19	14
1962	21	6	1967	19	36

range into southern Sweden, this being linked with the rise in mean spring temperatures in northern Europe (Voous 1960). The geographical distribution of the Golden Orioles within Britain and Ireland (fig. 12) was also somewhat similar to that of the Hoopoes (fig. 4), but by far the most were recorded on the Isles of Scilly. Significant numbers also occurred in Co. Cork, the English south coast counties from Devon to Kent, Essex, Suffolk, Huntingdonshire, Lancashire, and Orkney and Shetland. Although the majority were in coastal counties, it is noteworthy that this species, like the Hoopoe, is by no means solely a coastal vagrant and only two Midland counties (Derbyshire and Leicestershire) were without a record in the ten years. The autumn records were so few (only ten) that they may be listed rather than mapped: Devon, Dorset, Essex, Kent (two), Norfolk (two), Caernarvonshire, Argyll and Co. Cork.

Fig. 11. European distribution of Golden Orioles *Oriolus oriolus* with the breeding range of this summer visitor shown in black (reproduced, by permission, from the 1966 edition of the *Field Guide*)

The early spring arrivals from mid-April to early May were mainly in the south coast counties, East Anglia, the Midlands and, in the latter part of this period, Wales (fig. 13). By the second week of May, the start of the four-week peak for this species, the largest numbers were in south-west England, but many were also recorded in East Anglia and

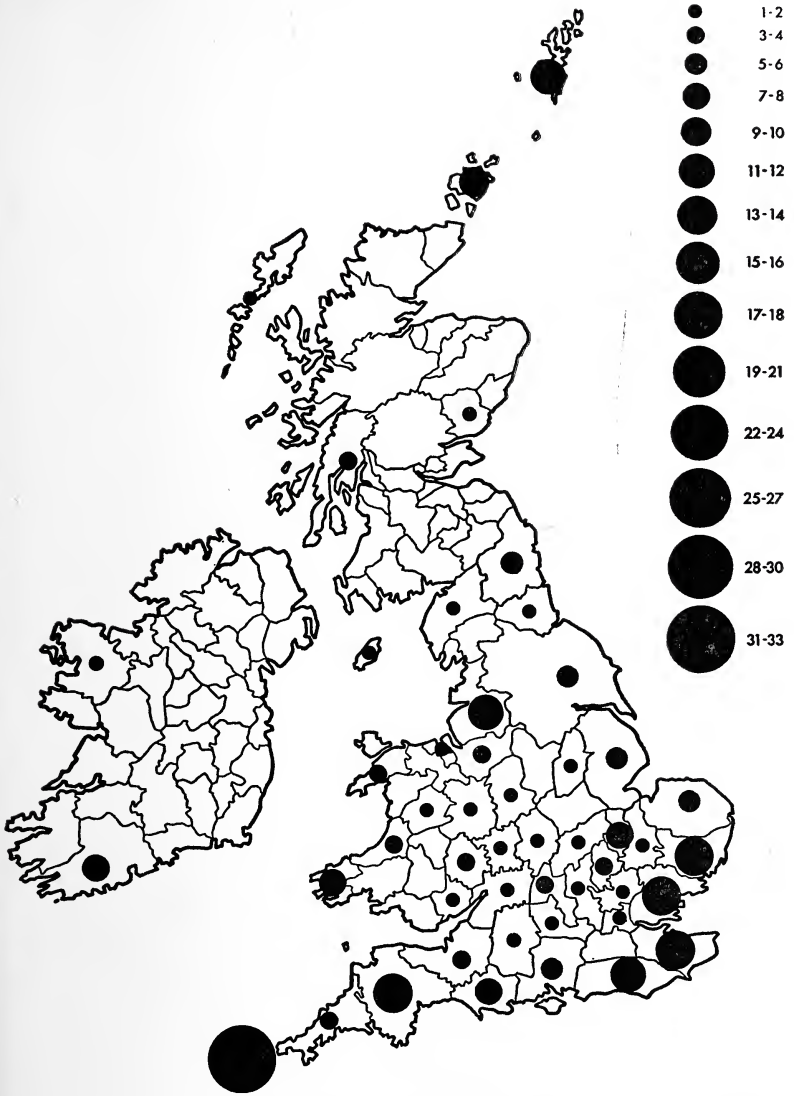

Fig. 12. Distribution by counties of spring Golden Orioles *Oriolus oriolus* in Britain and Ireland during 1958-67

some reached south Ireland and north Scotland at this time. The pattern was similar in mid-May, but by the end of May there was a more easterly bias, with a smaller proportion in south-west England. By 28th May-3rd June, the end of this four-week peak, Golden Orioles were more widely distributed than at any other time, with records in every region of England, Wales and northern Scotland. In early June

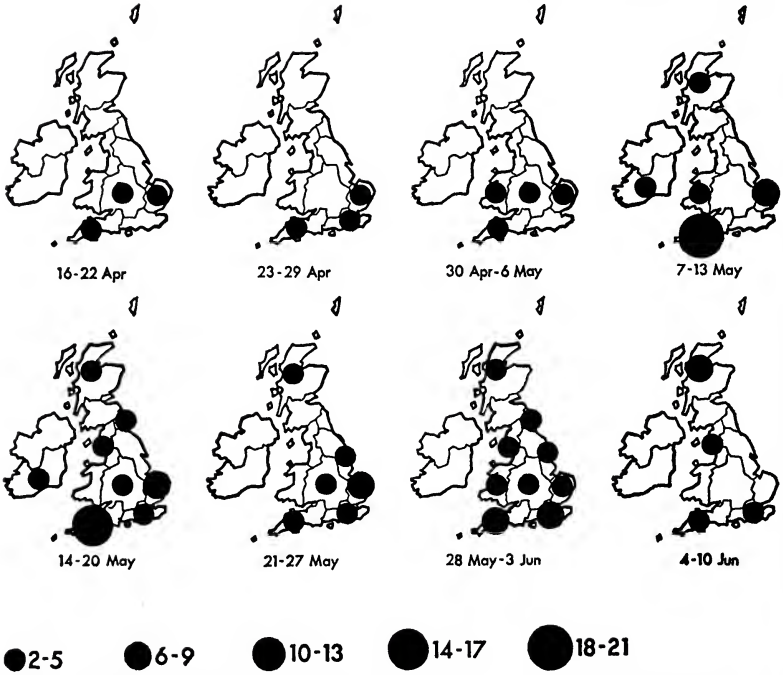

Fig. 13. Regional distribution by eight seven-day periods of spring Golden Orioles *Oriolus oriolus* in Britain and Ireland during 1958-67

they occurred most commonly in northern Scotland. This general pattern is similar to that of the Hoopoes.

It is interesting that the proportion of females to males in western areas (Dorset to Co. Cork) is double that in eastern England (Hampshire to Northumberland), the respective percentages being 36% and 18%. This is, of course, linked with two facts which have already been demonstrated: (1) the earlier arrival of females compared with males, and (2) the earlier peak in the south and west compared with the north and east.

Breeding records in Britain have been fewer this century than last, but there has been a slight increase in the last 20 years (Parslow 1968). In the ten years 1958-67 breeding was proved in two counties (Lancashire 1958 and probably 1959-61, Shropshire 1964) and probably occurred in another six (Essex 1958, Bedfordshire about 1959, Huntingdonshire 1961, Cardiganshire 1964, Sussex 1965 and 1966, Suffolk 1967). Males, and sometimes pairs, in suitable habitats in other counties in summer suggest that breeding may be less infrequent than appears from these twelve records.

It is surprising that, while both have similar breeding distributions on the Continent, 23% of the Hoopoes and yet less than 4% of the

Golden Orioles occurred in autumn. This may be partly due to the differing wintering quarters of the two species. Hoopoes winter mainly north of the Equator in both east and west Africa, while Golden Orioles largely winter in tropical east Africa from Kenya and Uganda southwards (Vaurie 1959-65). The more easterly winter distribution of Golden Orioles presumably results in a more easterly standard direction on autumn migration and a consequent reduction in western vagrancy to Britain and Ireland.

Tawny Pipit *Anthus campestris*

A total of 111 Tawny Pipits was recorded in Britain and Ireland during 1958-67, an average of eleven per year. Ages were reported for only eight adults and six immatures. The occurrences fell mainly into two periods—mid-April to mid-June and late August to early November—with most in September (fig. 14). In contrast to the Hoopoes and Golden Orioles, there were more in autumn (88%) than in spring (12%). The European breeding distribution of the Tawny Pipit (fig. 15) is very similar to that of the other two species (figs. 5 and 11) and this radical difference in timing is therefore rather strange.

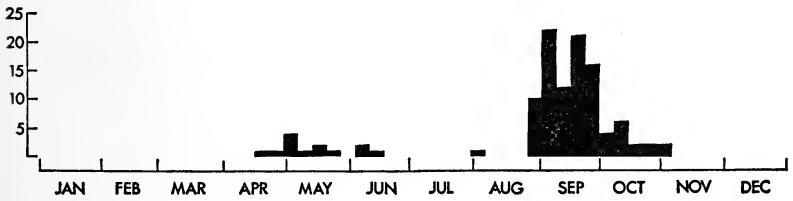

Fig. 14. Seasonal pattern of Tawny Pipits *Anthus campestris* in Britain and Ireland during 1958-67

Fig. 15. European distribution of Tawny Pipits *Anthus campestris* with the breeding range of this summer visitor shown in black (reproduced, by permission, from the 1966 edition of the *Field Guide*)

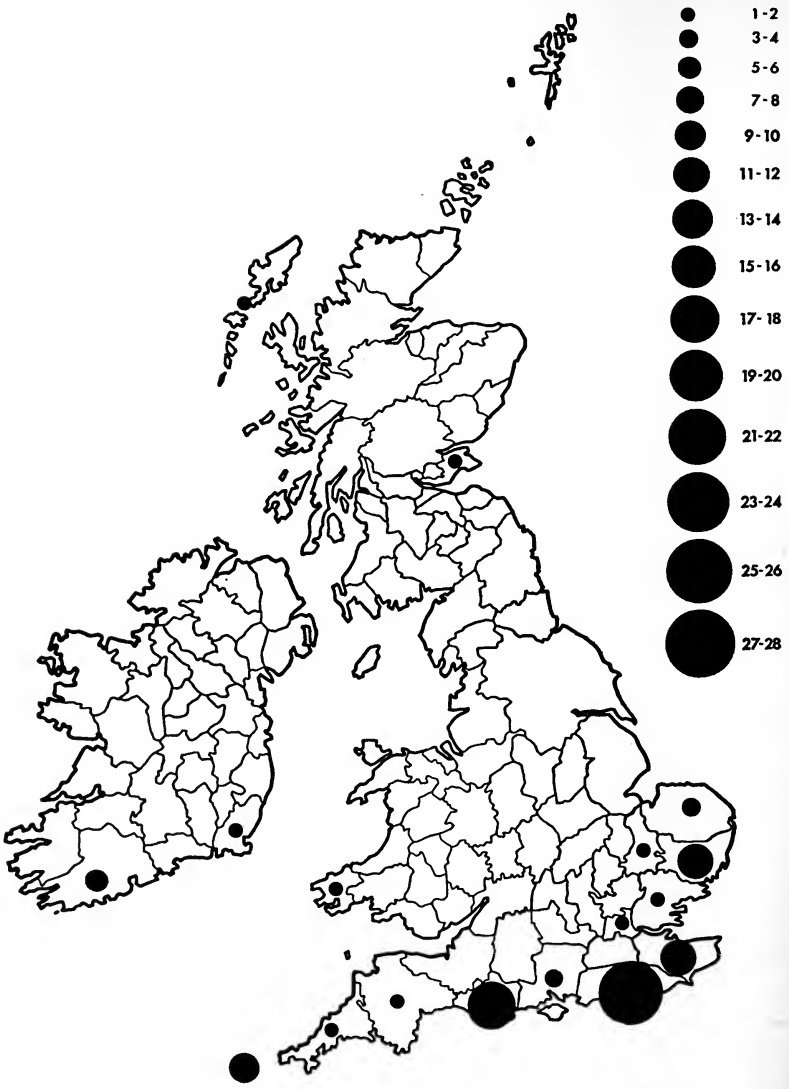

Fig. 16. Distribution by counties of autumn Tawny Pipits *Anthus campestris* in Britain and Ireland during 1958-67

The spring observations in the ten years were so few (13) that they may be listed: Cheshire, Cornwall, Isles of Scilly (two), Kent (three), Norfolk (two). Yorkshire (two), Fife and Shetland. Note that there was not a single spring record from Sussex which, back in 1905 and possibly again in 1906, produced the only British records of Tawny Pipits breeding, though these are no longer regarded as valid (Nichol-

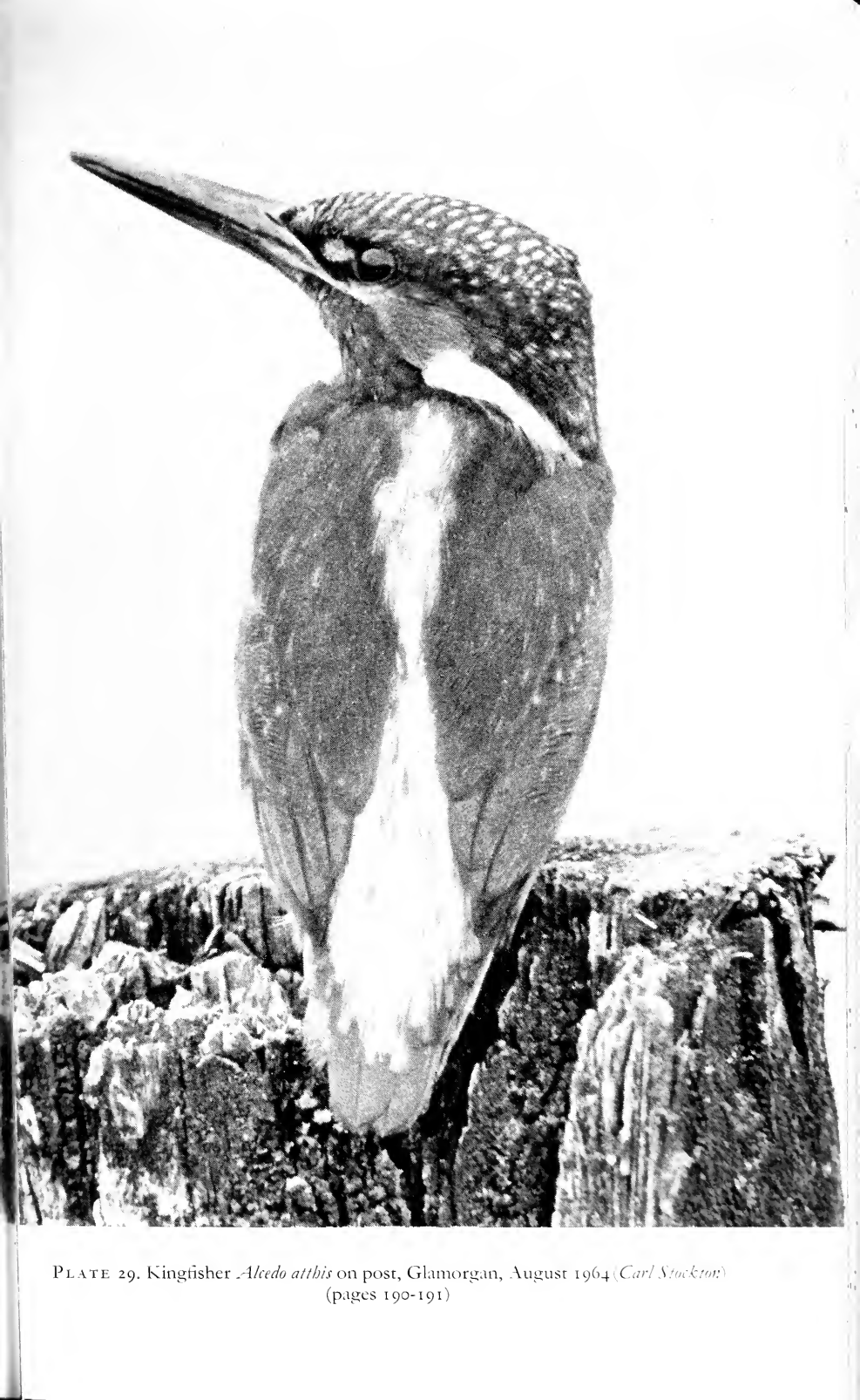

PLATE 29. Kingfisher *Alcedo atthis* on post, Glamorgan, August 1964 (*Carl Stockton*)
(pages 190-191)

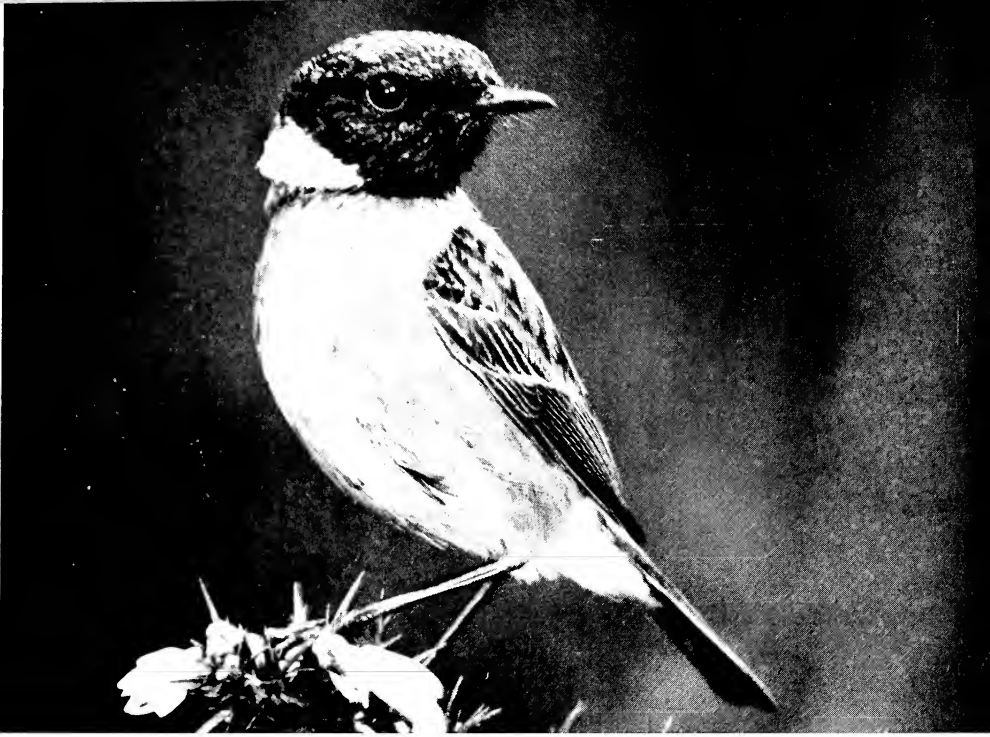

PLATE 30. Male Stonechat *Saxicola torquata*, Surrey, May 1968 (*Frank V. Blackburn*)
Below, Goldcrest *Regulus regulus* and young, Aberdeen, June 1966 (*David A. Gowans*)

PLATE 31. Young Starling *Sturnus vulgaris* and Blackbird *Turdus merula*, Norfolk, July 1968 (*H. A. Hems*). Below, Redwing *Turdus iliacus*, Norway, June 1966 (*A. N. H. Peach*)

PLATES 32 and 33. Facing, Tawny Owl *Strix aluco* with Wood Mouse *Apodemus sylvaticus*, Lincoln, May 1967 (*K. W. Padley*). Above, Barn Owl *Tyto alba*, Essex, August 1968 (*H. McSweeney*). Below, Stock Doves *Columba oenas*, Stafford, July 1968 (R. *J. C. Blewitt*)

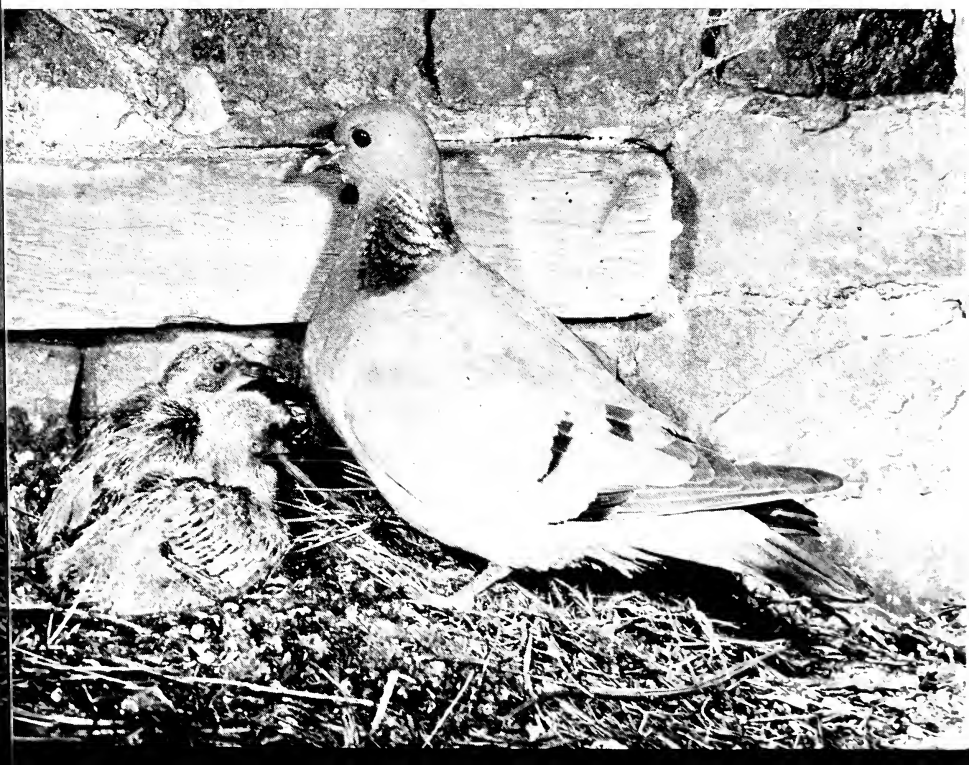

PLATE 34. Barnacle Geese *Branta leucopsis*, Islay, November 1968 (*Morley Hedley*)
Below, Red-throated Diver *Gavia stellata*, Shetland, June 1966 (*William S. Paton*)

PLATE 35. Greenshanks *Tringa nebularia*, Sutherland, June 1967 (*Andrew M. Anderson*)
Below, Little Ringed Plover *Charadrius dubius*, Middlesex, May 1968 (*J. A. W. Jones*)

PLATE 30. Pair of Common Terns *Sterna hirundo*, Banffshire, July 1966 (*J. Edelsten*)

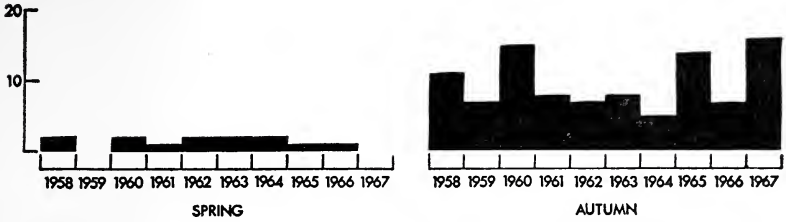

Fig. 17. Annual pattern of Tawny Pipits *Anthus campestris* in Britain and Ireland during 1958-67 with the spring and autumn records shown separately

son and Ferguson-Lees 1962). Turning to autumn, *The Handbook* was able to note over 40 records from Sussex, but otherwise only seven or eight in six or seven other counties from roughly 1868 to 1938. Although Sussex did not have quite such a monopoly in the ten years, over a quarter of the autumn records were in that county, and Dorset, Sussex, Kent and Suffolk together accounted for no less than 67% (fig. 16). It is interesting that the only two autumn records north of 53°N were in Fife and the Outer Hebrides, the well-watched English east coast counties north of Norfolk not producing a single one. None of the 60 records in south-east England and East Anglia was after the first week in October, but seven of the 29 in south-west England, three of the six in the south of Ireland and both the Scottish records were in this late autumn period.

There were just one or two spring records in eight of the ten years, while numbers fluctuated more widely in autumn (fig. 17). The autumn peaks from the largest downwards were in 1967, 1960 and 1965, that in the last-named year being largely due to Suffolk records in 'the great immigration' of early September 1965 (Davis 1966).

The great scarcity of spring Tawny Pipits, compared with Hoopoes and Golden Orioles (which have similar European breeding distributions), suggests that this species is far less prone to overshooting on spring passage and, therefore, that it may be better equipped in some way to determine distance during migration than are the other two. Similarly, the concentration of autumn records in the south-east corner of England (Norfolk to Dorset) and absence of east coast records north of Norfolk suggests that the Tawny Pipit is less liable to lateral displacement by adverse weather, either through better navigational ability or because movement is not undertaken in such conditions. One might expect to find these attributes in a largely diurnal migrant, and the twelve late October vagrants in south-west England, southern Ireland and Scotland, at times when none was recorded in the south-east, may have been aberrant individuals, lacking the navigational expertise of the majority of the population.

Dr J. T. R. Sharrock, 59 Curlew Crescent, Bedford

More examples of the best recent work by British bird-photographers

Plates 29-36

This is the tenth annual selection of the best contemporary work by British bird-photographers. Since the series was started in May 1960, it has included 126 photographs of 98 species by no less than 56 different people. This year a preliminary selection of 76 prints, all of a very high standard, had to be whittled down to a final choice of only 13. Quality obviously took most precedence in the process, but we do try to avoid repeating the same species too often. Otherwise, a photograph of a female Blackbird *Turdus merula* by a 14-year-old boy, M. Herbert, might well have been included: it was short-listed and almost earned a place in the final selection. At the same time, some fine prints of Heron *Ardea cinerea*, Sparrowhawk *Accipiter nisus*, Hen Harrier *Circus cyaneus* and Hobby *Falco subbuteo* were submitted and yet discarded because these are all birds which have already appeared twice or more in the series.

Raptors and certain other larger species are, of course, greatly favoured by photographers, perhaps because they present something of a challenge, while some of the smaller and commoner passerines receive little attention. In this selection, therefore, we particularly welcome the four photographs on plates 30 and 31. Frank V. Blackburn's male Stonechat *Saxicola torquata* on a spray of gorse (plate 30a) makes an excellent portrait, while action in the form of incipient threat is the theme of H. A. Hems's immature Starling *Sturnus vulgaris* and Blackbird *Turdus merula* (plate 31a). The other two passerines are more conventional studies at the nest, but each is outstanding in its way. Dr A. N. H. Peach's Norwegian Redwing *Turdus iliacus* (plate 31b) shows a nest at ground level in an attractive setting, while a count of heads in the family of Goldcrests *Regulus regulus* by David A. Gowans (plate 30b) reveals nine young, not an abnormal number for this species, but larger than the broods of most passerines which build open nests. The Goldcrest, incidentally, has not been featured in the series before and nor has the work of Mr Gowans.

Two other newcomers this year have provided the owls on plates 32 and 33. K. W. Padley's Tawny Owl *Strix aluco* with a Wood Mouse *Apodemus sylvaticus* gripped in its talons must be among the best ever of this species; the gentle moonlight effect is brought about by careful positioning of the flash lamps which, as this shows, can produce dramatic results when properly used. Although we have published Barn Owls *Tyto alba* twice before in the series, we could not resist H. McSweeney's unusual study of one about to enter an Essex barn (plate

33a). Another species which often breeds in buildings is the Stock Dove *Columba oenas*, but it is notoriously difficult to photograph at the nest and so R. J. C. Blewitt's picture (plate 33b) is a particularly fine achievement; note how clearly the iridescent neck patch stands out.

The rest of the photographs here are of waterbirds of one kind or another. It is not easy to show the beauty of a Kingfisher *Alcedo atthis* in monochrome, but Carl Stockton has succeeded to an extent where one can somehow imagine the colours (plate 29). In 1965 we published Morley Hedley's Grey Lag Geese *Anser anser* in flight (*Brit. Birds*, 58: plate 32) and now we have his equally evocative picture of Barnacle Geese *Branta leucopsis* (plate 34a). William S. Paton's work has regularly been selected for this series over the past seven years and his Red-throated Diver *Gavia stellata* at the edge of a lochan (plate 34b) is another example of his skill. There have been many fine photographs of Greenshanks *Tringa nebularia* at the nest, but we cannot recall a better of the pair together than that now provided by Andrew M. Anderson (plate 35a); note the mottling of summer plumage and how the early morning light has caught the backs of the two birds. More familiar to many as a breeding species is the Little Ringed Plover *Charadrius dubius*, even though it was a rare vagrant to Britain until it first nested here in 1938 and 1944, but again we cannot remember a finer picture than J. A. W. Jones's (plate 35b); the yellow eye-ring is very clear. Lastly, by selecting a nest against a spur of rock, J. Edelsten has produced a far from ordinary composition with his pair of Common Terns *Sterna hirundo* (plate 36).

This selection of photographs includes no less than four species—Red-throated Diver, Little Ringed Plover, Greenshank and Barn Owl—which are on Schedule 1 of the Protection of Birds Act 1967 (see list in *Brit. Birds*, 61: 215). We therefore take this opportunity of reminding photographers that, to avoid committing an offence, they must now obtain approval from the Nature Conservancy, 19 Belgrave Square, London SW1, before they disturb Schedule 1 birds at or near the nest; a form has to be completed before this approval can be considered.

Now that more and more bird-photographers are taking more and better pictures, it has become impossible to keep track of them all. So we are grateful to those who have submitted their work direct and to others who have drawn our attention to particular photographs. We are also especially indebted to the Zoological Photographic Club, the Nature Photographic Society and the Nature Photographers' Portfolio, the members of which form the backbone of the best natural history photography today. We shall be glad to receive prints for next year's selection by 14th February 1970. ERIC HOSKING

The impaling of prey by shrikes

Geoffrey Beven and M. D. England

There still appears to be some uncertainty concerning the function of 'larders' of shrikes (Laniidae). These collections of impaled prey can conveniently be considered under two largely separate headings: (1) the use of the spike; and (2) the use of the larder.

THE USE OF THE SPIKE

It is well established that, since the feet of shrikes are not always sufficiently powerful to hold down birds, small mammals and frogs while these are being eaten, such prey may be firmly impaled on thorns, dry stalks, barbed wire and other spiky projections—once repeatedly on the prongs of a garden fork lying on its back (D. I. Sales *in litt.*)—or wedged in the clefts of branches; pieces can then be torn off with ease (innumerable references from at least as far back as Morris 1851-57 through to the recent detailed study of Lorenz and Saint Paul 1968). For example, Montagna (1939) observed how a Northern (Great Grey) Shrike *Lanius excubitor borealis* impaled an 'English' Sparrow *Passer domesticus* on a jagged stump and then pulled its victim with forceful tugs as if to make sure that it was well anchored before beginning to tear off large pieces with its hooked bill by jerking backwards, each jerk being accompanied by a slight flip of the wings. This behaviour of shrikes is one of the few recorded examples of birds using feeding aids; the others mostly relate to the active mandibulation of tools in the form of sticks (Galápagos Woodpecker-finch *Cactospiza pallida* and Mangrove Finch *C. heliobates*) or stones (Egyptian Vulture *Neophron percnopterus*), or the dropping of stones held in the claws (Black-breasted Buzzard *Hamirostra melanosternon*) (see Millikan and Bowman 1967).

The habit of spiking food has been extended so that such small prey as insects, millipedes and portions of earthworms are frequently impaled, even when they could be held in the foot while being eaten, as indeed they often are. Large prey is usually killed before being impaled, but small animals, especially insects, are frequently left alive. Faecal sacs and pellets from the young, shells of hatched eggs and pieces of wool may also be spiked in this way (Owen 1948).

Impaling of ripe dates in north Africa

Some circumstantial but remarkable observations which E. D. H. Johnson (*in litt.*) made in 1968-69 in Algeria show that even fruits are occasionally impaled. In the oases between Reganne and Adrar, and also below Timmimoun, he found the pale north Saharan race of the Great Grey Shrike *L. excubitor elegans* common and breeding in early

February. Wherever these shrikes were present, the spikes at the bases of the fronds in the lower parts of the crowns of some palms *Phoenix dactylifera* had ripe dates impaled upon them. 'These varied from one or two to perhaps twelve in number in a single tree, and their position at the bottom of the crown of the palm tree corresponded to the positions of the two nests found and to the common perching positions of the adult shrikes. Once a shrike was seen carrying a date, but on no occasion was a bird actually seen in the act of impaling. Some of the dates were partially eaten at one end. At first it was put down to chance having impaled the dates when falling from the upper parts of the tree, but, since in almost every case the spikes on which they were impaled were very nearly horizontal, this was ruled out. The dates themselves were well spiked rather like a cocktail sausage, the point of the spine often projecting well beyond the fruit.'

Development of impaling techniques

To spear prey, a shrike carries it in its beak to a perch, seizes it by the head and takes aim at the top of a thorn or other suitable spike. With a downward movement the thorn is driven through the head or thorax of an insect or the throat of a bird or mouse. Lorenz and Saint Paul (1968) made an important study of the impaling habit among captive shrikes. They concluded that spiking was to a certain extent innate as they found that young and old shrikes alike would sometimes spear such inedible objects as leaves, flowers and India rubber. They doubted, however, whether the whole act was inborn and considered that perhaps only the co-ordinating movement of the final action was inherited, while the most suitable site for impaling possibly had to be learnt by experience. They quoted experimental evidence in favour of this and recorded the development of the habit among young shrikes.

These young shrikes first nibbled and investigated everything, lifting up stones or leaves and dropping them. After a few days they held objects for longer periods and soon made short and feeble dabbing movements with them against other things. This dabbing might be noted at any age between the second and sixteenth day after fledging in the case of Red-backed Shrikes *L. collurio*. Those individuals that made the first dabs were later on the most eager to impale prey, while the last to begin never came to do this very much. As the performance improved, the shrikes developed a tendency to dab at favourite spots, especially the free ends of perches, which they also investigated by nibbling. Soon the sight of a thorn would stimulate a shrike to fly down to pick up an insect, a leaf or even a small piece of paper. Working first with its beak, and then with its beak and one foot, it would bring the prey to the spike and dab about it. The downward pressure of the first spearing was usually too weak to bore through the prey and that of later spearings was sometimes too strong, with the result that an

insect would be torn to pieces; the accuracy of aim was also variable.

In the light of these aviary studies, a field observation by G.B. in South Africa is of some interest, as it seems to confirm that the impaling site has to be learnt by experience. In March 1943 a young Fiscal Shrike *L. collaris*, with an insect larva in its bill, flew up from the ground on to a thornless bush, although there were many thorny ones near-by. The shrike tried to impale the grub on several twigs, but they were all too short to hold it. Then it simply held the food down on to a branch with one foot, but this method was also clearly unsatisfactory. Finally, it was able to tear off small pieces by pulling the larva over a short and rather blunt twig, but this required much effort and persistence because the grub kept slipping off the twig. In arctic Alaska Cade (1967) observed that the Northern (Great Grey) Shrike worked its prey on to potentially suitable spikes after seemingly 'random' trials of various possible impaling devices.

Further observations in captivity

A captive shrike sometimes wedges a dead bird in between food cup and cage wire before tearing pieces off it. In the absence of any thorns or spikes in their aviary, two male Woodchat Shrikes *L. senator* kept in captivity by M.D.E. habitually wedged items of food in crevices or holes before eating them. This was often the cause of bickering, because one shrike would find a tasty meal, wedge it somewhere and leave it, whereupon the other, which had been watching, would immediately retrieve it. The two would then fight over the food and many a locust or mealworm was torn in halves in this way. Lorenz and Saint Paul (1968) found that, when a captive young Great Grey Shrike had difficulty in impaling a cricket on a nail, it stuck the insect through the netting of the cage; they thought that it was trying to find a hole in which to hide the prey. Other individuals stuffed food into an angle of the cage before spiking it.

The importance of the impaling habit to some shrikes is well demonstrated by the behaviour of a male Bay-backed Shrike *L. vittatus*, one of a pair which M.D.E. had kept for some years. This bird fell sick and was brought from its aviary into a cage indoors, where it refused all food. It was decided, therefore, to try the effect of providing a piece of twig with a thorn. Immediately the shrike seized some food, impaled it and then ate it. Thereafter it even impaled small pieces of cheese before swallowing them whole, spiking them just as carefully as, for example, a locust which needed tearing apart. Nevertheless, all the Woodchat and Bay-backed Shrikes kept by M.D.E. also habitually grasped food with one foot during feeding, either to grip it on the perch for tearing up or to lift it to the bill. This use by shrikes of one foot to hold food up to the bill seems to be a habit rarely recorded for passerines, though, according to Simmons (1963), only in

the drongos (Dicruridae) is there full emancipation of the hind limbs, enabling them to be used as hands for grasping and lifting food.

THE USE OF THE LARDER

The larder is most in evidence during the breeding season, when a store of food is often laid up in the vicinity of the nest. It may even be started before the nest-site is chosen (Owen 1948). In some cases almost all the female's food during incubation is brought by the male (Durango 1956), so that such a reserve at this period seems likely to be of value. Yet no larder was ever found at a nest of the Red-backed Shrike which M.D.E. watched in June 1935 for most of the day on which the eggs were hatching, although virtually all the food for the female and young was being provided by the male; and Donovan (1929) recorded that one male Red-backed Shrike ceased making a larder as soon as the nest contained the full clutch of eggs. Both Owen and Durango found that Red-backed Shrikes particularly returned to larders to feed in bad weather or in the early morning when insect activity was low.

Many writers have given the impression that the impaling habit is confined to the breeding season, but this is not the case. Miller (1937) considered it vital to the existence of shrikes at all times of the year. Great Grey Shrikes often keep territories in their winter quarters (Mester 1965) and we have found a freshly killed Chaffinch *Fringilla coelebs* and a still-living dung-beetle *Typhaeus typhoeus* impaled on thorns in such a territory in Suffolk in March. Medlicott (1945) located the warm body of a Blue Tit *Parus caeruleus* spiked on a thorn in Yorkshire in February or March soon after a Great Grey Shrike had been seen chasing one. Reinsch (1955) recorded a Great Grey Shrike impaling a Song Thrush *Turdus philomelos* on an iron spike on Heligoland in October. D. I. Sales (*in litt.*) tells us that he found that Great Grey Shrikes wintering in Kuwait regularly used larders and G.B. has seen grasshoppers, beetles and caterpillars freshly impaled by Fiscal Shrikes in Africa during the southern winter. Red-backed Shrikes will spike prey when on passage (Owen 1948) and an immature impaled bumblebees *Bombus smithianus* on barbed wire on Fair Isle in September (Williamson 1949); Ferguson-Lees (1967) found birds impaled on palm spikes by migrant Masked Shrikes *L. nubicus* in Jordan in April.

Owen (1929) recorded that young Red-backed Shrikes impaled food which they did not require at the time of catching. The Loggerhead Shrike *L. ludovicianus*, which feeds regularly on certain lizards in New Mexico in autumn and winter, was observed to return to impaled prey several weeks later when the weather turned unusually cold and no live lizards were evident; in the very dry climate the impaled lizards had not decayed, but had been perfectly 'cured' and were very hard and dry (Watson 1910). Usually, however, prey is eaten within 24 hours by Loggerhead, Red-backed and Woodchat Shrikes (Miller 1937).

Differences in use by males and females

According to Bannerman (1953), the female is believed to take little interest in the larder habit of the male, but we saw a female Red-backed Shrike return to feed on a partially eaten juvenile Chaffinch impaled on a blackthorn in Suffolk in August. D. I. Sales (*in litt.*) informs us that he observed two female Red-backed Shrikes impaling prey in Kuwait (where this species does not breed) in May and also a female Woodchat Shrike feeding on an impaled locust there in March. Simmons (1954) watched a female Masked Shrike impale a large larva upon a point of barbed wire in Egypt during April. Owen (1948) thought that, when settled down to nesting, all Red-backed Shrikes would have larders if they caught more food than they could eat. Though the male was much more given to the larder habit than the female, he found that in general the female fetched food from the larder more often than the male did, although the latter alone might have provisioned it. He had also seen a female keep a larder stocked after a hawk had taken her mate. The greater readiness of the male to impale was indicated, however, when this same author himself placed a dead bird in a larder. Almost immediately the female came and tried to tear it up, but the position was wrong and she gave up. The male then arrived, pulled the prey free and impaled it to his satisfaction. Both birds at once started to pull bits off and demolished the carcase quickly. Of the shrikes kept in captivity by M.D.E., only the males were ever seen to impale prey. All the fledglings studied by Lorenz and Saint Paul (1968) impaled prey, though to a varying extent; the sexes were not recorded.

Incidental observations

Owen (1929) described how shrikes utilised carrion, such as small Rabbits and birds that they could not lift, by tearing off portions and feeding these directly to the young; or, if too large, the portions might be transferred to a larder for future use. Owen (1948) also mentioned that breeding pairs of Red-backed Shrikes sometimes had several larders, once as many as six. These were usually near the nest, but one was 150 yards away. On the other hand, Cade (1967) found that larders of Northern (Great Grey) Shrikes in Alaska were not near the nest, but 50-200 yards away; if a carcase was moved and hung closer than 50 yards, the shrikes quickly removed it to a position further off, perhaps thus avoiding attracting foxes or other predators to the vicinity. In these arctic regions, where there are no thorny trees or shrubs and no barbed wire, Cade found that only 25% of the birds and mammals in larders were impaled and that the jagged tips of broken twigs and branchlets were used. Incidentally, some shrikes may attempt to defend their larders when a human being approaches (Miller 1937).

Some of the points mentioned are illustrated by the following observation which also suggests that the male may lead the female to an

item of food which he has impaled. On 6th June 1967, near Chessel, Lac Leman, Switzerland, we found a nest of the Red-backed Shrike eight feet up an ash sapling 30 yards inside a small wood of ash and pine. At 11.15 hours the male arrived carrying in his bill a dead fledgling Great Tit *Parus major* which he firmly impaled on a small sharp twig of a shrub willow at the edge of the wood. (The fact that he flew straight to this twig, which was within ten feet of where we were hiding, suggested that it had been used before, although there was no other prey impaled on the bush nor indeed any other likely spike to impale it on.) He immediately started to tear meat off the carcase and fed for a while before flying off. On returning with Dr I. F. Keymer at 14.00 hours, we found that the head of the Great Tit had been removed in the interval. Shortly afterwards the pair of shrikes arrived together: the male quickly disappeared, but the female remained and proceeded to tear off and swallow lumps of flesh from the breast of the prey, which was so firmly held by the twig that the whole branch visibly shook as she did so. Incidentally, subsequent close inspection showed that the Great Tit seemed young enough to have been taken from its nest by the shrike. In June 1968, while with us in Portugal, Jack Hulbert mist-netted a Woodchat carrying in its bill a headless nestling Blue Tit not more than seven or eight days old, which presumably had also been taken from its hole by the shrike.

Variations in use of larders

Much of the uncertainty surrounding larders may be due to the great variation in their use and to the frequency with which food is left uneaten. Coward (1923) wrote '. . . the term "larder" is misleading. The prey is spiked for convenience in preparing it for the young, not to preserve it for future use.' Meinertzhagen (1959) thought larders an unnecessary habit; despite having had many under observation, he had never seen the shrikes return to eat any of the impaled victims (apart from insects transfixed on blades of grass), though he had noted that they occasionally picked beetles and maggots off the bodies. In this connection, however, Owen (1948) believed that stale birds and mammals were generally discarded by Red-backed Shrikes from their larders. On the other hand, in the breeding season in Alaska, Cade (1967) found that the great majority of prey impaled was subsequently eaten, even after hanging as long as a week.

Not all species of shrikes use the larder habit equally: for example, Great Grey and Red-backed Shrikes, both of which take large prey, seem to make larders more frequently than Lesser Grey Shrikes *L. minor* which are almost exclusively insectivorous (Ferguson-Lees 1960), although these do occasionally impale larger insects such as Mole Crickets *Gryllotalpa gryllotalpa* (Stafford 1961). Ferguson-Lees (1957) published a photo by F. Göttschi of a Great Grey Shrike's larder.

There is clearly a great deal of individual variation in the extent of the impaling habit, even among fledglings of the same brood, as has been emphasised by Lorenz and Saint Paul (1968). This variation and the fact that shrikes often impale and then tear to pieces very small prey (which could easily be held in the feet) suggest that the main function of the impaling habit is that of the larder or store.

Prey left uneaten

Various suggestions have been put forward to account for the fact that impaled food is frequently left uneaten. Schreurs (1936) mentioned the breaking of routine by the destruction of the nest, the sudden departure of the young from the vicinity, and disturbances by other shrikes trespassing into the territory. Owen (1948) found that food was often deserted by shrikes on passage, and other obvious factors are any similar lack of fixity of territory and the subsequent death or injury of the shrike concerned. It may be that prey is left when it has become spoiled or dry, and some animals or parts of animals are perhaps less desirable, this poorer food being deserted if something preferable is obtained (for example, the skin and jaws of mice are often left on thorns). A shrike may also leave prey more often when there is plenty of food for itself and its young.

Other writers have commented on the strength of the instinct to pursue and capture prey being such that shrikes will impale insects when they are not hungry and they may then leave them uneaten (Miller 1937, Lorenz and Saint Paul 1968). Armstrong (1965) considered the habit of impaling prey which was never eaten to be a type of supererogatory activity, a procedure carried to excess for its own sake. M.D.E. has found that shrikes and many other species in captivity are unable to eat when the ejaculation of a pellet is imminent, the bird concerned looking distressed or even sickly: he has observed this in thrushes *Turdus spp.,* Rufous Bush Chat *Cercotrichas galactotes,* wheatears *Oenanthe spp.* and raptors, as well as in Woodchat, Red-backed and Bay-backed Shrikes. Miller (1937) also drew attention to the same behaviour; at such times shrikes presumably have to impale and leave uneaten any prey caught.

In conclusion, we are most grateful to Miss M. I. Collyer for translations from the German and also to K. E. L. Simmons for many helpful suggestions.

SUMMARY

The impaling habit of shrikes *Lanius spp.* is discussed under the separate functions of the use of the spike and the use of the larder, points being illustrated from field and aviary experience as well as from the literature. The spike undoubtedly assists the shrike to fix and break up its food and it may also stimulate hunting and appetite. Smaller and easily managed prey is frequently impaled as well, however, and the apparently regular spiking of dates on the palm *Phoenix dactylifera* by Great Grey

Shrikes *L. excubitor* in Algeria is recorded. The larder is used as a store when food is scarce or the demand for it is great. There is considerable variation in the extent of impaling, some species and many individuals doing so seldom or not at all. Larders are usually stocked by the male, but occasionally by the female. Attempts are made to explain why stored food may not always be eaten.

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Notes

Woodpigeons cooing at night J. N. Tomlinson's note and the accompanying editorial comment (*Brit. Birds*, 62: 76-77) give the impression that it is exceptional for Woodpigeons *Columba palumbus* to call at night. In the past 28 years, however, living in three different localities in Kent, each more or less surrounded by woodland, I have often heard nocturnal cooing from Woodpigeons. During 1941-45, indeed, when I was at Ulcombe, eight miles east of Maidstone, the bombing and gunfire frequently caused disturbed nights and I noted Woodpigeons calling on many occasions: the hostilities may, of course, have disturbed them too. Since that time I have heard Woodpigeons less regularly at night (one must be awake to do so!), but it seems that they usually indulge in this behaviour during bright moonlight in spring and summer. Then several individuals may even be heard answering each other. T. C. GREGORY

Three Wyches, Sandway Road, Harrietsham, Kent

Between 1928 and 1954, at my old home at Cloonee, Ballinrobe, Co. Mayo, I noted Woodpigeons cooing at night on seven occasions, in January, February, March (three records), August and December. The times varied from 20.15 GMT in February to 1 hour 20 minutes before dawn in March. Three of the nights were moonlit, but the others were dark to very dark and in December there was fog. This last occasion was the only time two birds were involved. R. F. RUTTLEDGE

Doon, Newcastle, Co. Wicklow, Eire

These are the only records received as a result of Mr Tomlinson's note, apart from a single report at second hand from Dorset and a further observation from Mr Tomlinson himself who heard two Woodpigeons calling at about 02.30 BST on 31st March 1969 in the same area of woodland in Westmorland. Indeed, many observers have never noted cooing at night and we have been unable to find any evidence of nocturnal calling by London Woodpigeons, which might be expected to be more disturbed by lighting and traffic. EDS

Birds taking honey For some years I have included honey among the foods put out for birds in my garden sanctuary at Harmer Green, Hertfordshire. At first this was in crystallised form in the top of a hollow post, where it was quickly found by a number of species, including Great Tit *Parus major*, Blue Tit *P. caeruleus*, Marsh Tit *P. palustris*, Coal Tit *P. ater*, Long-tailed Tit *Aegithalos caudatus*, Song Thrush *Turdus philomelos*, Blackbird *T. merula*, Robin *Erithacus rubecula*, Starling *Sturnus vulgaris* and House Sparrow *Passer domesticus*.

Since then I have supplied mixtures of honey and water or sugar and water in small plastic phials; these phials, sold by pet shops as drinking vessels for caged birds, work on the principle of replenishing a receptacle underneath as each drop is taken. Originally fixed to pergola posts, they were afterwards transferred to a suspended wire grid inaccessible to Grey Squirrels *Sciurus carolinensis*. At times the birds' demand for the syrup is so great that it is difficult to ensure a regular supply. Blue Tits and Blackbirds are the most avid feeders, but others include Nuthatches *Sitta europaea* and both adult and juvenile Great Spotted Woodpeckers *Dendrocopos major*, the last using their tongues to extract the syrup from the phials. The woodpeckers generally come in the summer, but a number of species are attracted to these sweet food sources throughout the year. EILEEN A. SOPER

Hooded Crows dropping and transferring objects from bill to foot in flight Just before dusk on 19th October 1965, on Cape Clear Island, Co. Cork, I saw a Hooded Crow *Corvus corone cornix* repeatedly dropping a round object and retrieving it in its bill before it could reach the ground. The Hooded Crow did this many dozens of times at heights of about 200 feet, letting the object fall for 40 feet or more before retrieving. Occasionally it interrupted the action by transferring the object to one foot and then flying around with that leg dangling. After a short while it would transfer the object back to its bill and once more start dropping and retrieving. Eventually it let go and flew off to join other Hooded Crows. A comparable observation by John Denny in December 1948 involved a Hooded Crow dropping what was probably a marble-sized stone, letting it fall for about two feet and catching it again, repeating this about six times (*Brit. Birds*, 43: 333).

Hooded Crows do, of course, frequently drop shellfish and other similar foods from a height on to hard ground in order to break them open. In this connection, R. J. Tulloch (*in litt.*) informs me that, when tarmac roads were first introduced to Shetland, the Hooded Crows quickly learnt to drop shellfish on to these instead of the seaweed-covered shores. He also tells me that in January 1967 he saw a Hooded Crow pecking at a dead sheep and, as it rose with a bone in its bill, it transferred this to its right foot and almost at once back to its bill. On another occasion he saw one carrying an object in its foot and the leg was dangling in the way I had seen on Cape Clear Island.

The dropping of objects, with or without retrieving them, for 'play' or food and the transference of them between bill and foot are probably quite normal behaviour for Hooded Crows. BERNARD KING

Mayfield, 9 Uplands Road, Saltford, Bristol

Another brown-and-white Magpie Dr C. Suffern has described a brown-and-white Magpie *Pica pica* shot in Hampshire in 1965 (*Brit.*

Birds, 58: 220). In October 1954, at Limpley Stoke, on the Wiltshire/Somerset boundary, a Magpie with similarly unusual plumage was found in poor condition after a period of heavy rain. It was cared for in Bath by the late Eustace Smith and I saw it in captivity many times during the next two months before it eventually died. The feathers which are black on a normal Magpie were cinnamon-brown and the white parts were dirty white. There was no gloss to the plumage and wings and tail were much abraded. The bill was dull yellow, legs drab, and irides a dull and pale brown. BERNARD KING

Mayfield, 9 Uplands Road, Saltford, Bristol

Blue Tit bathing in snow On 10th February 1969, at Leamington Spa, Warwickshire, I watched a Blue Tit *Parus caeruleus* bathing in snow on a shed roof. The snow was soft and powdery, and the bird's actions were a combination of those of dusting and water-bathing. It first wriggled its body into the snow, then pushed its head under and jerked it up to throw snow over its back and half-spread, fluttering wings. It did this two or three times, then flew to a bush and preened before finding a fresh patch and starting again. IDA SMITH

23 Sherbourne Place, Leamington Spa, Warwickshire

Several records of snow-bathing have appeared in this journal over the last 20 years. The birds concerned have twice included Blue Tits (*Brit. Birds*, 42: 23; 58: 155-156) and once a Great Tit *P. major* (*Brit. Birds*, 45: 409). Other species involved have been Stock Dove *Columba oenas*, Magpie *Pica pica* and Starling *Sturnus vulgaris*. EDS

Goldcrests feeding on ground in association with tits At about 3 p.m. on 19th January 1969, in oakwoods near Parkend, Gloucestershire, I saw eight to ten Goldcrests *Regulus regulus* feeding with a mixed party of Great Tits *Parus major*, Blue Tits *P. caeruleus* and Coal Tits *P. ater*. During the 30 minutes I was watching, the tits often flew to the ground to search for food by probing and turning the leaf litter. When this happened the Goldcrests followed; if disturbed, the Goldcrests remained feeding at a low level on dead bracken or in bramble while the tits flew higher to the trees. On the ground the Goldcrests scattered amongst the tits; although constantly moving they waited, apparently, for the tits to turn the leaves and would then dart to investigate. This suggested a ground-feeding association. The Goldcrests were not seen to feed on the ground apart from the tits and no conflict was noted between them. A. P. RADFORD

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Prolonged aggression of Pied Wagtail towards Ringed Plover On 23rd November 1968, at Sandwich Bay, Kent, K. A. Chapman and I

were watching a Ringed Plover *Charadrius hiaticula* on the shoreline; near-by a Pied Wagtail *Motacilla alba* was also feeding. When the plover flew off, the wagtail immediately went after it, calling loudly. The latter caught up the plover which then started to twist and turn without, however, succeeding in shaking off its pursuer. The wagtail continued to chase closely, still calling, until the two birds were lost to view after a distance of at least 120 yards. T. RUCK

10 Ethelbert Road, Canterbury, Kent

Some small birds not uncommonly chase larger ones—for example, House Sparrows *Passer domesticus* will often pursue Blackbirds *Turdus merula* or Feral Pigeons *Columba livia*—and Pied Wagtails are notoriously aggressive to other species around bird tables. Nevertheless, the persistence of the chase on this occasion seems to have been noteworthy and it is unlikely that any quarrel over food was involved. K. E. L. Simmons has commented that it was probably a 'neutral' flight-response to the plover flying close by. In this connection, the paper by Mr Simmons on 'The autumn flight-reactions of House-Sparrows, Swallows and other passerines', in which both Pied Wagtails and a Grey Wagtail *M. cinerea* were mentioned, and also his subsequent letter on 'Autumn chases' (*Brit. Birds*, 44: 369-372; 45: 431) give further examples of such behaviour. EDS

Feeding behaviour of Great Grey Shrike in North Africa The Great Grey Shrike *Lanius excubitor*, like other members of the family Laniidae, has the well known habit of hoarding surplus food—not by hiding it in the manner of certain other passerine groups (such as the Corvidae, Paridae, Sittidae and Timaliinae), but by impaling or hanging it on twigs, thorns or even barbed wire, depending on what is locally available in the territory. Such food-hoarding is correlated with strong territorialism in the shrikes throughout the year, even during halts on migration (see K. E. L. Simmons, 1951, *Ibis*, 93: 407-413; 1954, *Ardea*, 42: 140-151).

In North Africa, where Great Grey Shrikes are widely distributed, they commonly use the stiff, sharply pointed, terminal spikes of the lower fronds of date palms *Phoenix dactylifera*. I was shown my first larder situated in such a position in the Suez Canal Zone, Egypt, on 8th April 1950 when it contained a large beetle, the dried and plucked carcase of a small bird and what looked like one of the shrike's own pellets. Recently, in April 1969, my wife and I found several food items impaled on date fronds on the island of Djerba, Tunisia, where Great Grey Shrikes are common. We found no concentrated larders of animal food, but just the odd beetle here and there and, once, what again seemed to be one of the shrike's own pellets. Of particular interest, however, was one larder spread over several trees and

consisting almost entirely of scores of dried dates, each firmly spiked on the end of a frond; in addition, many other dates had also been placed in the ridges and crevices on the trunks of the trees where the scales of the bark overlapped. Presumably, this hoarding had taken place at the end of the previous year when the dates were ripe and soft enough to impale. The shrike seemed to have made little, if any, subsequent use of its cache and it remains an open question whether this species does in fact eat dates (there is no mention of non-animal food in *The Handbook* or in a recent paper by Dr Tom J. Cade in *Living Bird*, 6: 43-86) or whether this particular accumulation resulted from aberrant hoarding behaviour by the individual concerned. The partial hiding of some of the dates about the trunks of the trees was also unusual, this perhaps being due to a shortage of spikes because of the great size of the harvest.

During our stay on Djerba, we saw Great Grey Shrikes chase migrant passerines, but obtained no evidence of successful capture. At one spot the local shrike made repeated and persistent swoops from a telephone wire down on Tree Pipits *Anthus trivialis* feeding at a rubbish tip, once flying after one and striking it ineffectually in flight—but the pipits returned to feed immediately the shrike flew away again. On 9th April we made some observations which indicated that at least the individual Great Grey Shrike has a commensal feeding association with domestic animals and man. We came across a shrike on a high wire, standing erect and craning its neck this way and that, intently watching an approaching, scattered flock of grazing goats. It then turned its attention similarly to us, but when we remained still, just watching, it soon flew on further along the wire and caught up with the goats. Finally, it flew down to snatch a small, bee-like insect flushed by one of the animals and flew off to feed its young in the nest near-by.

K. E. L. Simmons

Department of Psychology, University of Bristol

This note was submitted quite independently when the paper by Dr Geoffrey Beven and M. D. England on 'The impaling of prey by shrikes' (pages 192-199) was in proof. We then showed the paper to Mr Simmons and he was able to make a number of useful suggestions which Dr Beven and Mr England incorporated, but we felt that it would be fairest to all concerned to publish Mr Simmons's note as it stood and in the same issue, particularly in view of its relevance to the observations by E. D. H. Johnson on the impaling of dates (pages 192-193). The most significant aspects of this note are its indication that little if any use may be made of the cached dates and its stressing of the link between overt food-storage and territorialism (most birds that *conceal* food, such as the Corvidae, do not appear to hold definite feeding territories). Eds

Letters

The Irish record of Bulwer's Petrel To avoid misinterpretation of the editorial note appended to the letter from Dr J. T. R. Sharrock on the subject of the Bulwer's Petrel *Bulweria bulwerii* seen by J. R. H. Clements off Cape Clear Island, Co. Cork, on 26th August 1965 (*Brit. Birds*, 61: 423-425), the following brief comments are necessary.

Firstly, the description has been considered by world experts on the species: the identification is still fully accepted by them and, consequently, it stands as the first Irish record. Secondly, the kind offer of the Rarities Committee to help over Irish records if requested was quite frequently taken up during 1960-66, when this offer was still open; their opinion was always followed. In many cases, however, where outside referees, by virtue of their special or recent field experience (as in this instance), were as well or better qualified to give an opinion, records were submitted to these independent authorities.

It is greatly appreciated that individual members of the Rarities Committee will continue to give their advice in special cases when asked to do so. R. F. RUTTLEDGE (Editor, *Irish Bird Report*)

Doon, Newcastle, Co. Wicklow

Standardisation of vernacular names May I refer L. J. Halle (*Brit. Birds*, 61: 573-574) to my comments following his previous letter on 'The need for distinctive bird names' (*Brit. Birds*, 54: 255-256, 405-408). There, among other suggestions which have had equally little effect, I proposed that our Storm Petrel *Hydrobates pelagicus* should be called the 'British Storm Petrel' in cases where confusion with other Hydrobatidae might arise, as in the late W. B. Alexander's *Birds of the Ocean*. (I also like a hyphen myself, but the editor cut it out.) I tend to regard 'Stormy Petrel' as obsolete in ornithology and doubt whether its use would eliminate confusion between specific and collective names. Many people doubtless agree with Mr Halle that *Birds of the Ocean* requires revision, although I would have thought that it is still the most accurate guide of its type available, as well as the only one covering all the seabirds; but he should address his suggestions elsewhere, since I am under the impression that the copyright is held in America. W. R. P. BOURNE

62 Vicarage Road, Watford, Hertfordshire

Owing to shortage of space, a number of letters to the editors, and also some reviews, have had to be held over, but we hope to find room for these in one of the next issues. EDS

News and comment *Robert Hudson*

Bird Room for Tring? In 1939 the Trustees of the British Museum (Natural History) considered moving the Bird Room to the former Rothschild Museum at Tring, the latter having been bequeathed to the nation in 1937, but the advent of the Second World War led to this idea being shelved. At present the Natural History Museum's Entomology Department is split in two, being part in Tring and part in South Kensington; while the Bird Room currently occupies Entomology Department accommodation. So it was perhaps inevitable that the Museum Trustees would reopen the question of whom to have at Tring: half a department or a smaller section complete. Some months ago they decided to transfer the Bird Room to Tring, probably in 1971, after erecting a new building there. This proposal was attacked by Dr W. R. P. Bourne in a letter in *Nature* for 22nd March, on the grounds that centralisation in London is preferable, and that since a new building is to be erected anyway this could as well be at South Kensington. Government restrictions on building in London apply, however, and the Museum authorities have pointed out that the ornithological collections are the assemblage most easily separated from South Kensington, and that Tring, which already has the headquarters of the British Trust for Ornithology, would become a notable ornithological centre. The Trustees say that their decision is a firm one; but no doubt there is much argument yet to come.

Aldabra blues The following is quoted from *The Guardian* of 26th March: 'Geoffrey Rippon, Ted Heath's rising shadow Defence Minister, was cantering through party policy and Labour failures for the Conservative students' conference at Hoddesdon in Hertfordshire yesterday, and came at length to Aldabra. Britain, he said, had finally found a staging post in the Indian Ocean, when presto, "with the aid of Soviet funds all the wildlife conservationists came out and said that the British would kill the turtles". A curious charge coming weirdly and late from an official spokesman.' Mr Rippon was challenged by *The Guardian*'s reporter to produce evidence in support of the allegation, to which the reply was, 'I withdraw it. I didn't know there were any press present.' In the normal course of events this *faux pas* by an ambitious politician might not be worth taking seriously; but with an odds-on chance of the Conservatives winning the next general election, and remembering their commitment to an 'east of Suez' defence policy, the future of Aldabra might again be in jeopardy.

International Veterinary Congress This congress was held in London during 27th-30th March, with invited delegates from various wildlife bodies. One of the major issues discussed was whether veterinary surgeons should confine their interests to the treatment of domestic animals, or whether they should concern themselves with the wider question of wildlife conservation. In practice, it was decided, these aspects cannot be separated, for many pets, especially exotic ones, are wild-caught specimens. Whims of the general public may create demands that lead to the capturing of wild animals in excessive numbers, sometimes involving wholesale deaths during transit. A particularly bad example of this is the annual culling of wild tortoises, most of which do not survive their first winter in captivity. The demand for pet monkeys was mentioned as another undesirable trend. Recently imported animals may carry disease, and the veterinary is necessarily involved here. It was against veterinary advice that the Minister of Agriculture lifted the parrot ban recently, for subsequently there have been massive importations of carriers of human psittacosis. Action was considered necessary on five fronts: better legislation in relation to the importation of exotic pets; prevention of the proliferation of small and badly managed zoos; complete prohibition of the importation and exhibition of certain

very rare species; more rigorous inspection of animal traders and exhibitors; and education of the public into the unsuitability of certain species as pets. The British Small Animal Veterinary Association formally offered to help achieve these ends. The next moves lie with the Ministry of Agriculture.

First British Stereo Recordings The first serious attempt to start a collection of stereophonically recorded bird sounds has been started in Somerset by Jeffery Boswall and Peter Copeland. Tests in February on Robins and Tawny Owls proved most encouraging. The effect is very pleasing aesthetically, and possible scientific uses are being investigated. The work was inspired by the Swedish recordist Sten Wahlström who, as long ago as 1963, with Sven Aberg as co-worker, published the very first gramophone record of stereophonically recorded bird voices. A portable stereo UHER tape recorder is already available for this, and it is hoped that the newly invented Wahlström Stereo Parabola will soon be manufactured here. Wildlife recordists interested in this work are invited to contact Jeffery Boswall at Birdswell, Wraxall, Bristol BS19 1JZ.

Audio-Visual Lecture Aids Victor Lewis, the well-known bird sound recordist, has teamed up with Frank V. Blackburn, the photographer, to produce Audio-Visual Lecture Aids, consisting of magnetic tape recordings linked to 35 mm colour transparencies. The tapes contain limited commentary in addition to bird vocalisations. Each lecture lasts well over one hour; the operation is very simple, for a sound signal on the tape indicates when a slide change is required. These lecture aids are not produced for direct sale, but can be hired for £3 10s per occasion. A leaflet describing the contents of lectures can be obtained from Victor Lewis, West End Farm, Thorpe, Egham, Surrey.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

J. T. R. Sharrock and I. J. Ferguson-Lees

These are largely unchecked reports, not authenticated records

This summary is concerned mainly with March 1969 and, unless otherwise stated, all dates refer to that month. This period included several interesting rarities, among them some notable American species, and the first falls of many summer visitors. As previously pointed out, however, we are not attempting to analyse the latter.

AMERICAN VAGRANTS

Two **American Robins** *Turdus migratorius* were reported on Bryher (Isles of Scilly) on 1st and that same day an adult **Bonaparte's Gull** *Larus philadelphia* appeared just across the water at St Ives (Cornwall) to begin a short stay. The **Laughing Gull** *L. atricilla* at Radipole Lake (Dorset) (*Brit. Birds*, 62: 164) remained throughout the month. Male **Green-winged Teal** *Anas crecca carolinensis* were seen at Hornsea Mere and Gouthwaite Reservoir (both Yorkshire) on 8th and 29th respectively. Much more unexpected were a male **Evening Grosbeak** *Hesperiphona vespertina* on St Kilda (Outer Hebrides) on 26th and a **Ring-billed Gull** *Larus delawarensis* at Gairloch (Ross-shire) on 30th; neither has previously been recorded in Britain.

OTHER SCARCER VISITORS

A **Spoonbill** *Platalea leucorodia* was found dead at Minsmere (Suffolk) on 21st. A **Lesser White-fronted Goose** *Anser erythropus* on the Wexford Slobs on 23rd will, if accepted, be the first record for Ireland. A number of sizeable herds of up to 100

Bewick's Swans *Cygnus bewickii* were reported on the move in various counties from Derbyshire and Nottinghamshire southwards in March, particularly during 19th-26th. An unexpected observation at Dungeness (Kent) was a **Black Kite** *Milvus migrans* on 29th—there are only nine previous British records—and a little earlier there had been a **Red Kite** *M. milvus* at Shingle Street (Suffolk) on 23rd. The only **Spotted Crake** *Porzana porzana* reported was at Chiddingstone (Kent) on 25th and the only wader of note a **Kentish Plover** *Charadrius alexandrinus* at Portland (Dorset) on 23rd, but we have had belated news of a **Sociable Plover** *Vanellus gregarius* on Eday (Orkney) for a week in mid-January. Several more inland **Glaucous Gulls** *Larus hyperboreus* were seen in Staffordshire (at Belvide Reservoir on 8th and another there and at Blithfield Reservoir on 9th), in Warwickshire (at Packington on 29th) and in Derbyshire (at Ogston for much of the month up to 27th, at Shardlow on 23rd and at Staunton Harold on 31st). An **Iceland Gull** *L. glaucoides* was also reported inland near Sawley (Derbyshire) on 23rd. A sub-adult **Great Black-headed Gull** *L. ichthyaetus* at Scorton (Lancashire) on 16th will, if accepted, be only the eighth British record of this south Russian and Asiatic species. **Mediterranean Gulls** *L. melanocephalus* included one as far north as Filey Brigg (Yorkshire) on 1st and another west to Chittening (Somerset) on 29th. **Little Gulls** *L. minutus* were well scattered, but as many as ten at St Ives (Cornwall) on 1st and one at Ballycotton (Co. Cork) on 9th seem worth mentioning. A **Pomarine Skua** *Stercorarius pomarinus* at Sandwich Bay (Kent) on 16th was unusually early and so was an **Alpine Swift** *Apus melba* which was picked up with head injuries at Dover (Kent) on the same day (died on 18th). Rather few **Hoopoes** *Upupa epops* were reported, but they included an Irish record at Ballycotton and one as far north as Attingham (Shropshire).

Among passerines there were few real rarities, apart from the American species already mentioned. Worth noting, however, were a **Richard's Pipit** *Anthus novaeseelandiae*, perhaps a relic of last autumn's record influx, at Newquay (Cornwall) on 8th; and, also early in the month, a **Waxwing** *Bombycilla garrulus* as far west as Ballycotton during a winter which has been poor for this species. Two **Nutcrackers** *Nucifraga caryocatactes* still lingered on in Kent, the one at Maidstone staying until 5th and the other at Bearsted continuing throughout the month until 3rd April, and we have now heard of one at Barnsley (Yorkshire) on 7th February. Another belated February record concerned four **Serins** *Serinus serinus* at Clevedon (Somerset) on 16th.

BLACK REDSTARTS AND FIRECRESTS

March, particularly the latter half, often sees an influx from the Continent of such birds as **Black Redstarts** *Phoenicurus ochruros*, **Robins** *Erithacus rubecula* and **Goldcrests** *Regulus regulus*, and this year was no exception. Indeed, the Black Redstarts were very widely commented on as 'good numbers' or even 'unprecedented'. In Kent, for example, where the peak was on 22nd-23rd, there were maxima of seven at Sandwich Bay, nine at Dungeness and eleven at Reculver as well as smaller numbers elsewhere. Similarly, in Essex, where the peak seems to have been during 15th-17th, there were maxima of three at Holland Gap, four on the Dengie coast, five at Bradwell and seven at Walton-on-the-Naze. In Suffolk similar totals were reported at such localities as Covehithe, Shingle Street, Woodbridge, Aldeburgh and Minsmere; and there were others north to Lincolnshire and Yorkshire (five at Spurn) and west to Bardsey Island (Caernarvonshire), the Calf of Man and Cape Clear Island (Co. Cork), including seven at the last locality on 23rd. One or two appeared inland, as at Northampton during 24th-28th and at Fenny Compton (Warwickshire) on 24th. This same period produced a scattering of **Firecrests** *Regulus ignicapillus* from Suffolk to Dorset and west to Cape Clear Island, the highest number being 18 at Dungeness on 19th. Such a March movement almost invariably includes a few **Bluethroats** *Luscinia svecica*, but the only one of which we have heard was a male at Aldeburgh on 21st.

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Some thoughts on the apparent ecological expansion of the Reed Bunting

B. D. Bell

Parslow (1968) found that the Reed Bunting *Emberiza schoeniclus* had apparently increased in numbers and extended its geographical range in the British Isles in recent years. Accompanying such a change, there was some evidence of expansion into drier habitats more characteristic of the Yellowhammer *E. citrinella*.

Although Lack (1933) noted that the two species showed almost no overlap in habitat in the Breckland at that time, he did locate one pair of Reed Buntings breeding successfully on a dry heath several miles from any marsh. Such variations are only to be expected, for, as Miller (1942: 32) pointed out, 'We would not expect the tolerances of these species to be so sharply drawn as to exclude occasional exceptions'. More recently, however, many more cases of Reed Buntings nesting in drier habitats have been recorded, largely in local reports. For example, Longman (1961) reported that the species bred in a young Staffordshire pine plantation, adding '[it] is said in [the] area south-west of Newcastle-under-Lyme to favour this drier type of habitat'.

The phenomenon did not receive widespread publicity until Kent (1964) presented results of a survey in Nottinghamshire in 1963, which showed that a substantial proportion of Reed Buntings were breeding in typical Yellowhammer habitats. Since the earlier literature indicated quite definite differences in the habitats of the two species (stressing in particular the association of the Reed Bunting with water), Kent tentatively suggested that the overlap might be of recent origin resulting from a change in the psychological requirement of the Reed Bunting for water, and that 'Once started this trend might, in the absence of any definite disadvantages . . . continue apace'.

The recent increase in popularity and organisation of field ornithology in Britain will have tended to exaggerate such a trend by increasing

the chances of its being reported. Nevertheless, as Kent pointed out, one would still have expected the phenomenon to have been commented on in the past if it had been so widespread as it appears to be today. Now that he has drawn attention to it, many more reports are likely to follow; indeed, pertinent references have already appeared in the literature (e.g. Williamson 1967, 1968, Parslow 1968, Summers-Smith 1968). Another phenomenon suggestive of a change in the habits of the Reed Bunting is the increased frequency of records in gardens (Bell 1968 and in prep.; Parslow 1968), although this is also subject to a similar bias. On balance, however, it appears quite possible that both phenomena are of recent origin.

Despite there being some uncertainty, it seems worthwhile to speculate now on the factors that might have caused a change in the Reed Bunting's range of habitats. A detailed review of the concepts of psychological habitat selection in birds and the role of ecological isolation in their evolution would be outside the scope of this paper, but further information is given in the literature cited, particularly by Lack (1944, 1949), Svärdson (1949) and Klopfer and Hailman (1965). Some points, however, require mention here.

Firstly, in stabilised communities two species with similar ecology cannot live in the same area (Gause 1934) due to the competitive exclusion principle (Hardin 1960), shown by Lack (1944) to apply to birds. Where two similar species co-exist in the same geographical area, some overlap may occur in certain areas of their habitats where both are equally well adapted, though often ecological overlap is a manifestation of populations undergoing a phase of readjustment, as a result of environmental changes. Secondly, the distinction between proximate and ultimate factors needs to be borne in mind (Lack 1949). Birds select their habitats by utilising recognition features which are not necessarily essential to their existence (Lack 1933, 1937). This is the proximate mechanism, though ultimately the habitat limits are determined by natural selection, which involves selection pressures such as interspecific competition. Thirdly, it was formerly often assumed that the mechanism by which habitats are recognised was innate, and there was little reference to the role of learning until its importance was anticipated by Miller (1942) and Thorpe (1945). Not only might imprinting processes affect the breeding distribution of a species by inducing individuals to home to their area of origin to nest, but also by inducing them to return to a habitat resembling in its visual configuration that in which they were reared. An important lead in evaluating the relative importance of innate and learnt processes in habitat recognition was taken by Klopfer (1963), who found that in laboratory conditions the foliage preferences of Chipping Sparrows *Spizella passerina* seemed to be largely genetically determined, though liable to modification by early experience. A situation similar to that of

these Chipping Sparrows might be expected in other temperate members of the same family, the Emberizidae, including species of *Emberiza*.

It seems probable that a change in the psychological requirement of the Reed Bunting for water, as suggested by Kent (1964), could take place only if selection pressures, which formerly restricted the species to the waterside, had in some way changed, allowing greater survival in the drier habitats. In time, the species might become better adapted to such drier areas, thereby broadening the range of optimal habitats. Svärdson (1949) illustrated how the pattern of a species' distribution is influenced by a balance between intraspecific and interspecific competition. The role of the former had received little attention previously, though the importance of interspecific competition was widely recognised (e.g. Lack 1944). While a change to dominant interspecific competition may cause a species to retreat to the most optimal habitats, or to its 'adaptive peak', dominant intraspecific competition may result in its occupying a greater range of habitats, or to descend its 'adaptive peak' (Svärdson 1949). An ecological expansion in the Reed Bunting, therefore, might result from decreased interspecific competition and/or increased intraspecific competition.

The competitive pressures will vary according to differing environmental conditions in different parts of the Reed Bunting's range, across most of the Palearctic region. The past evolution of the species is a matter for speculation, but it is apparent that significant adaptive changes have already taken place. Vaurie (1959-65) recognised 14, or possibly 15, subspecies differentiated by general size, plumage colour and shape and size of the bill. The Reed Bunting is associated with wetland habitats throughout its range, though little is known concerning the degree to which it also extends into drier habitats outside Britain. Some variation seems to occur in its habitat preferences, however, and this often, though not invariably, accompanies morphological variations (cf. Miller 1942, Svärdson 1949). Those races with the largest bills inhabit the more southern and generally more arid parts of the range where they occur chiefly in *Phragmites* reeds (Vaurie 1959-65), while the nominate race, which breeds in Britain, appears to be more catholic in its choice of habitat.

In general, and where applicable, greater interspecific competition is to be expected between congeneric species which may differ least in their morphology, physiology and behaviour. In Britain probably the most important competitor of the Reed Bunting is the Yellowhammer, though in some areas possibly the Cirl Bunting *E. cirlus* as well. The Corn Bunting *E. calandra*, although currently placed in the same genus, is rather less akin to these other species in its structure and habits, and is less likely to be so directly in competition with them. Species of birds in other genera will naturally affect the Reed Bunting's ecology also, and the fact that they have not been mentioned specifically here

does not mean they are necessarily unimportant as competitors. Lack (1944: 281) noted that 'when two [related] species occupy separate habitats in the same region, their adaptive differences are often particularly hard to see'. Indeed, they may only become apparent after intensive studies of the species in the field. In a study population of Reed Buntings at Attenborough, Nottinghamshire, there is evidence that adult mortality is greater in dry than wet habitats, though this is not necessarily due to intrinsic adaptive factors, but rather to local extrinsic factors, such as greater predation in the drier areas (Bell 1968 and in prep.). Observations of mixed populations of Reed Buntings and Yellowhammers by myself and by Williamson (1968) failed to produce any visual evidence of serious interspecific competition.

The ecological expansion of the Reed Bunting could possibly result from a relaxation of interspecific competition, brought about by a widespread decline of the chief competitors. It is therefore of interest to note that Parslow (1968) found that, although the Reed Bunting had recently increased in Britain, the Corn Bunting and, more particularly perhaps, the Yellowhammer had declined. Of the last he noted:

> 'Except for a few reports of local increases . . . most statements concerning its recent status refer to decreased numbers. In some cases these have been attributed to locally adverse factors, such as the destruction of hedges and increased urbanisation . . . and in a few to the advent of agricultural chemicals; but in others the causes are largely unknown. . . . There does seem to be general agreement, however, that, in parts of eastern England at least, numbers fell sharply in the late 1950's. . . . A partial recovery has since been reported. . . . The ringing figures . . . do indicate a general decline from 1956 to 1961, though, because the rate of decrease and sample size were [small] . . . its significance is uncertain.

Summers-Smith (1968) has also noted a recent decline, though on a local scale. In many areas the Yellowhammer is still abundant, however; indeed, it remains very much the predominant bunting of dry scrub areas in Britain. Comparative densities of the two species in the drier areas of overlap illustrate this point. In two conifer plantations in Nottinghamshire and Staffordshire, for example, I have found Yellowhammers breeding at twice the density of Reed Buntings. Little is known of the changes that might have taken place during the earlier phases of such Reed Bunting colonisation. For instance, it might have been preceded by a partial decline of Yellowhammers.

In recent years numbers of Reed Buntings declined in many areas of Britain following the cold winters of 1961/62 and 1962/63 (Dobinson and Richards 1964, Williamson and Homes 1964), although they have since recovered (Bailey 1967, Bailey and Batten 1968). The decline of the Yellowhammer was less marked (Dobinson and Richards) and farmland censuses in fact indicate that the population levels remained about the same in 1962 and 1963 (Williamson and Homes, Bailey), although they have since increased (Bailey) to remain about the same again in

1966 and 1967 (Bailey and Batten). Scarcity of Reed Buntings compared with Yellowhammers also followed the winter of 1916/17 (Jourdain and Witherby 1918), and Williamson and Homes believed that the Reed Bunting's poor survival might be due to its greater association with marshy habitats which would have been frozen over for a prolonged period. This may indeed be a contributory factor, although throughout periods of cold weather the species often feeds with other buntings, for example in gardens or around farm stack-yards. Before the winters of 1961/62 and 1962/63 numbers of Yellowhammers may already have been relatively low compared with those of Reed Buntings (Parslow 1968). If so, the effects of the cold weather might have been less marked because density-dependent pressures were already relaxed.

As well as experiencing less interspecific competition, Reed Bunting populations may have experienced greater intraspecific competition, partly from a general increase which has forced relatively more individuals to take up territories in drier habitats. Similar changes, on a very local scale and over a relatively short period, were apparent in the study population at Attenborough (Bell 1968 and in prep.). Males, instrumental in choosing the territorial area, generally bred in their first year and returned to the same site, or very near to it, in successive years, often displacing any first-year males competing for the territory. In general these first-year males therefore either fill territories vacated by the presumed deaths of older males, or effect the colonisation of new habitats. When the Attenborough population was low, following the hard 1962/63 winter, relatively more young males were able to occupy marsh areas, but as the population recovered to over twice the 1963 level, relatively fewer were able to find sites there, so bred in drier areas instead. Summers-Smith (1968) also recorded relatively more Reed Buntings in the drier parts of his census area when the population level was high. The preference for marsh habitats was apparent from comparative breeding densities in those Nottinghamshire census areas where both marsh and dry habitats occurred, for the density was consistently greater in the marshes.

Similar effects of high intraspecific competition have been noted in many species, for example those cited by Svärdson (1949). Studies by C. K. Catchpole and myself of *Acrocephalus* warblers at Attenborough bring similar cases to mind. For instance, many Reed Warblers *A. scirpaceus* habitually breed outside their usual *Phragmites* habitat, which is limited there (Bell, Catchpole and Corbett 1968), and such cases were particularly prevalent following overwinter damage to the *Phragmites*, a situation also described by Rosenberg (1931). Alternatively, while Sedge Warblers *A. schoenobaenus* seldom breed in the *Phragmites* at Attenborough, due partly perhaps to interspecific competition, I found many pairs associated with structurally similar beds of reed canary-grass *Phalaris arundinacea* in Sutherland, where Reed Warblers

were absent, though the Sedge Warblers also extended into more 'typical' herbaceous marsh vegetation near-by. Svärdson (1949) noted that the Sedge Warbler is one of the species in Sweden which have more or less strikingly different habitats in the southern and northern parts of the country, but he gave no details of these.

The changes in competitive pressures on Reed Bunting populations in Britain, which might account for the recent overlap into Yellowhammer habitats, are themselves likely consequences of environmental changes, in particular changes in habitats through agricultural and forestry activities and the development of industry and urbanisation. Indeed Lack (1944) partly attributed the relatively large number of instances of apparent ecological overlap among British bird species to such changes, though of the Reed Bunting and Yellowhammer he noted that there was 'scarcely any overlap in habitat'. Of particular significance to the Reed Bunting has probably been the gradual eroding of wetland habitats, through drainage and land reclamation, although in certain areas this might have been counteracted by the development of 'artificial wetlands', such as canals, reservoirs and 'flooded' gravel pits. Faced with such a change, the species theoretically would either decline or, which seems to have been the case, maintain or even increase its numbers, thereby raising intraspecific competition in many areas where wetland habitat has decreased. Williamson (1968) appreciated the possible significance of high intraspecific competition in these habitats, commenting that the Reed Bunting's expansion was most likely to occur in areas where there was a 'high population pressure and a shortage of "normal" sites' so that 'unsuccessful contenders . . . will be forced to pioneer marginal situations, and if they breed successfully a wider habitat tolerance in the population may gradually result'. Such habitat changes will probably have been local, though widespread, and mainly in the more disturbed regions of Britain.

Although the typical habitats of the Reed Bunting have decreased, many of the drier habitats which it may have been forced to occupy have increased in recent years. This change would perhaps be of greatest advantage to such species as the Yellowhammer, already apparently better adapted to these areas. Possibly connected with the Yellowhammer's apparent decline, however, Reed Buntings have started to exploit such areas also, even though they may be less optimal than the typical wetland habitats. Examples of such habitats are the large areas of open ground created by forest clearance during the 1914-18 and 1939-45 wars, and the areas of new afforestation in such cleared areas and in many places elsewhere. An indication of the increase in young forests is given by the acreages of young conifers planted by the Forestry Commission in England and Wales in the seven decades of this century, which have been, respectively, 4,717 acres, 416 acres, 76,939 acres, 107,462 acres, 120,516 acres, 267,576 acres and 162,210

acres (to date). These conifers comprise approximately 88% of all trees planted in England and Wales by the Forestry Commission since 1900 (P. J. Nicholls *in litt.*).

In afforestation areas where plantings are synchronous, suitable open habitats for such species as the Yellowhammer and Reed Bunting are limited to the early period of tree growth. Lack and Lack (1951) found that Yellowhammers generally persisted only at the edge of Breckland plantations after the trees were ten years old, and Reed Buntings probably move out sooner since they are seemingly less attracted by the vertical component in the habitat (cf. Kent 1964). Often tracts of trees of varying age occur, however, so that such species will then be able to persist within the plantation areas themselves. Williamson (1968) suggested that the Reed Bunting may now be one species which will benefit from the present trend towards increased barley production and the reduction of hedgerows to form larger fields. The preference of the Yellowhammer for some vertical component in its habitat may prevent it from doing the same; indeed, there is evidence that this may have caused a decline in some areas (Parslow 1968). Reed Buntings may similarly be deterred from larger expanses of corn. Perhaps the removal of vertical component in the form of six acres of pasture with scrub was a factor in the recent decline of Yellowhammers in the farmland census area of Summers-Smith (1968). Similarly, the increase and spread of Reed Buntings into drier areas may have been influenced by the ditching programme he mentioned and perhaps in some way by reduced interspecific competition, although more probably it reflects a recovery from the cold winters of 1961/62 and 1962/63 causing increased intraspecific pressures and an overflow into the drier areas.

Two extremes of dry habitat which Reed Buntings now occupy need to be distinguished. First, those which are entirely atypical in that they are completely dry and some distance, often many miles, from the nearest marsh or waterside habitat. Many heaths and areas of afforestation fall into this category, as well as some of the areas cited by Kent (1964) and Williamson (1968). Breeding densities at such sites are generally low and the birds could not first have been attracted by more typical waterside or marsh habitat in the area. The second category comprises those dry areas which lie adjacent to territories in more typical habitats. My surveys of Reed Buntings from 1962 to 1968 have shown that most occurrences in dry sites refer to this situation rather than to entirely dry areas or to intermediate situations in which the dry habitats occupied are nearer, but not immediately adjacent, to the typical ones. In this second category, many of the birds eventually breeding in the drier peripheral areas might well have been attracted first by the more typical habitat and by the Reed Buntings already there. A tendency for young birds to home to their area of origin might be an important factor here and there is tentative evidence for such

a tendency amongst Reed Buntings in the Attenborough study area.

Most published cases of possible ecological expansion by Reed Buntings fall into this second category, such as the farm areas censused by Williamson (1968) and Summers-Smith (1968) and the dunes and marsh area at Gibraltar Point, Lincolnshire, censused by Williamson (1967). In my opinion, neither the breeding density nor the habitat of the Reed Buntings at Gibraltar Point was as unusual as Williamson believed. Certainly the site is much more typical than the very dry habitats, such as the conifer plantation surveyed by Kent (1964), where, incidentally, Yellowhammers predominated, in contrast to Gibraltar Point. Although dry in summer when the census was carried out, much of the Gibraltar Point area is essentially marsh and probably more typical at other times of the year, including the early months when territories are first occupied. Equivalent densities of Reed Buntings were found in my Nottinghamshire study, though usually over less extensive areas.

In the previous discussion I have outlined some of the factors that might have induced the Reed Bunting to extend into new and drier habitats in recent years. By so doing I may have oversimplified the case since the distribution and abundance of any species is the result of a complex and dynamic situation, involving the interactions of many organisms and their environment. With the evidence at present available, however, only speculative generalisations are possible. Clearly, the patterns of distribution of all four species of *Emberiza* that breed in Britain present interesting problems requiring further investigation. But more information on their present and their past habitats is needed, so I wish to reiterate the appeal first made by Kent (1964) for more details from those who have personally observed trends over a period of several decades. In particular, it would be valuable to receive confirmation (or otherwise) that the Reed Bunting was formerly more restricted to its wetland habitat in Britain.

While this paper has been primarily concerned with the status of the Reed Bunting, the patterns of distribution of many British birds have changed and will continue to change as a result of the impact of man on their environment and, as Lack (1944) pointed out, cases of ecological overlap between species are, at least superficially, quite common in Britain. Still relatively little is known of the comparative success of species in the range of habitats they each occupy, or indeed of the differential survival of competing species in their areas of overlap. This field of study warrants more attention, therefore, so that the nature of the adaptations that operate to maintain ecological isolation can perhaps be better understood. Although comparisons with the past need to be treated with caution, we now have in Britain adequate ornithological machinery to enable more objective and more detailed investigation of future trends in habitat selection by many of our breeding birds.

At the national level, the necessary data will be provided by the network research schemes of the British Trust for Ornithology, especially the Common Birds Census; this has already produced Reed Bunting results from which pertinent discussions have ensued (e.g. Williamson 1967, 1968, Summers-Smith 1968). Not only does the Common Birds Census provide a valuable annual index of the population levels of birds, but it also accumulates a great amount of habitat data to which the species distributions can be related—though as yet these data are little analysed, apart from the recent paper by Williamson (1969) on the habitat preferences of the Wren *Troglodytes troglodytes*. In addition, the Ornithological Atlas will soon provide a basis against which future patterns of breeding distribution can be compared. Suitable species can be investigated at a local level also, for example through regional surveys of the habitat ranges of one or more congeneric species (e.g. Kent 1964), or through more detailed population studies of such species in which the pattern of distribution and the range of habitats occupied can be related to other aspects of their population ecology (e.g. Bell 1968 and in prep.). In the context of the present paper, a detailed long-term study of a mixed population of Reed Buntings and Yellowhammers in a dry habitat might throw more light on their differential adaptations and on the importance of interspecific competition, while adjacent or overlapping populations of Cirl Buntings and Yellowhammers in the south also warrant investigation.

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SUMMARY

There is circumstantial evidence that in Britain the Reed Bunting *Emberiza schoeniclus* may recently have expanded its ecological range into drier habitats more characteristic of the Yellowhammer *E. citrinella* (Kent 1964), although the recent growth in popularity and organisation of field ornithology may have exaggerated such a trend, through increasing the chances of its being reported. Possible reasons for such a change are examined speculatively in the light of current concepts of ecological isolation, particularly through developing the ideas of Svärdson (1949) on competition. The changes in British habitats brought about by agriculture and urbanisation have probably initiated such an expansion through altering selection pressures on the Reed Bunting. A decrease in interspecific competition may have occurred, allowing the species to survive better in suboptimal habitats. In this context the suspected decline of the Yellowhammer may be important, associated with a widespread increase of many of the dry habitats in which Reed Buntings now breed. Moreover, intraspecific competition has probably increased, partly due to a reduction of typical wetland habitats, forcing more individuals to occupy drier breeding areas.

While further research is needed to assess the nature of competitive pressures and the adaptations of birds to their respective habitats, a more objective assessment of future trends of habitat selection by British species is now possible through the national enquiries of the British Trust for Ornithology, especially the Common Birds Census.

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Little Ringed Plovers in Britain in 1963-67

E. R. and E. D. Parrinder

The Little Ringed Plover *Charadrius dubius* first bred in Britain at Tring, Hertfordshire, in 1938. The history of its increase and spread since then has been recorded by E.R.P. in a series of papers, including a comprehensive review up to 1962 (*Brit. Birds,* 57: 191-198). The present paper continues the account for the five years 1963-67.

INCREASE FROM 1962 TO 1967

In 1962 some 158 pairs of Little Ringed Plovers were located in 24 English counties. By 1967 the total had increased by 46% to about 230 pairs. This number is likely to be an underestimate: new gravel pits, industrial waste areas and other suitable man-made sites are constantly being formed and there is no doubt that some pairs are overlooked, especially in areas where they have nested for many years and so lost their rarity interest.

The number of pairs recorded as summering in each county is given in table 1. Where two figures are shown, the higher includes pairs which, from the dates when they were seen or from their behaviour, are most likely to have summered, although the observations were insufficient for conclusive proof. The higher figures have been used in the comparisons with previous periods.

EXTENSIONS IN BREEDING RANGE

The correlation between the increase and spread of the Little Ringed Plover and the excavation of gravel and similar workings was detailed in the previous paper (*Brit. Birds,* 57: 191-198). In 1962 the only counties with an appreciable gravel production where nesting had not occurred were Durham and Northumberland to the north of the main breeding area and Lancashire to the north-west. It was suggested that the Scottish Lowlands and parts of Wales, where gravel production was rising, were also likely areas for future colonisation. Between 1962 and 1967 sand and gravel production in England rose by 33½% and a high proportion of this increase was in the north and east; production in Scotland increased by 40% (*Sand and Gravel Production 1962-1963* and *1966-1967,* H.M.S.O., 1964 and 1967).

In the north, the number of pairs of Little Ringed Plovers recorded summering in Yorkshire rose from 18 pairs at 10 sites in 1962 to about 33 pairs at 20 sites in 1967. In 1963 they nested north of the latitude of York for the first time and by 1964 were breeding in all the vice-counties of Yorkshire. The spread to Durham started in 1962, when a nest with four eggs was found at a gravel pit, but no birds were

Table 1. Pairs of Little Ringed Plovers *Charadrius dubius* summering in Britain during 1962-67, with history of proved nesting in each county

It must be emphasised that the last column is confined to *proved* nesting, for in some counties (e.g. Bedfordshire 1964) pairs have been present in other years

	1962	1963	1964	1965	1966	1967	History of proved nesting
Hampshire	1	1	—	3	2	2	Occasionally since 1952
Sussex	—	—	—	1	—	—	Annually 1949-60, 1965
Kent	15	12	7	11	11	13	Most years since 1947
Surrey	13	5	4	6	10	3-4	Most years since 1950
Essex	14	13	9	19	16	18	Annually since 1947
Hertford	4	3	7	13	10-15	8	1938, 1944, 1948, annually since 1953
Middlesex	1	5	4	5	7	12	Most years since 1944
Berkshire	6	6	7-9	14-15	9	10-11	Most years since 1947
Oxford	3	2	2	8	9	5	Most years since 1954
Buckingham	6	7	9	4	3	5	Occasionally 1949-58, annually since 1959
Suffolk	—	1	2	2	—	1	Occasionally since 1948
Norfolk	4	5	7	5	1	4	Annually since 1960
Cambridge	7	3	4	5	3	4	Annually since 1952
Bedford	7	7-9	8	10-11	3-5	10-12	1951, 1956-63, 1965-67
Huntingdon	6	8	11	13	9	10	1952, annually since 1957
Northampton	3	3	3	4	3	3	Most years since 1953
Gloucester	3	2	2	6	9-11	6	Occasionally 1953-60, annually since 1961
Warwick	10	7	11	10	15	8	Annually since 1959
Stafford	4	8	3	—	3	6	1952, 1960-64, 1966-67
Lincoln	5	4	6-7	5	10	8	Annually since 1950
Leicester	3	1	2	4	2	3	Most years since 1955
Nottingham	13	15-16	11-14	22-23	22-23	25	Annually since 1956
Derby	5	5-8	13	8	9	12	1950, annually since 1956
Cheshire	6	6	8	10	6	11	1954, annually since 1961
Yorkshire	18	20	28	31	27	31-33	Annually since 1947
Durham	1	1	1	2	2	2-3	Annually since 1962
Lancashire	—	1	—	—	1	3	1966-67
TOTALS	158	157	177	224	212	230	MAXIMUM FIGURES ONLY

seen. In the following year a pair and a single female were at the same pit and a clutch of five eggs was found, but only one chick was reared. Since then, breeding has occurred in each year and a second site a few hundred yards away was occupied in 1967 (*Ornithological Reports, 1966, 1967, for Northumberland & Durham and the Farne Islands*). In 1968, outside the period under review, Little Ringed Plovers nested for the first time in Northumberland (*per* Dr J. D. Parrack) and in Scotland (*Scot. Birds*, 5: 282-283).

In Scotland, apart from two old records well over 50 years ago and three birds on Skye in 1949 (*Brit. Birds*, 43: 141), there were no observations of this species until 1965. Then, however, single ones were reported from Fair Isle, Shetland, during 4th-7th September; from

Whalsay, Shetland, during 17th-19th September; and from Aberlady Bay, East Lothian, on 12th October (*Scot. Birds,* 4: 224-226). Two years later, on 1st July 1967, one was seen on an expanse of rubble near the Clyde in Lanarkshire (*Scot. Birds,* 5: 27) and it was also in the Clyde area that the first nesting was successful in 1968.

In north-west England, a pair settled at some shallow stony flashes in Lancashire in 1963 and the birds were seen in display flight, but they were disturbed by bulldozers levelling slag heaps and deserted the site. Successful breeding, the first for the county, was established in south Lancashire in 1966, and in 1967 three pairs nested at different sites (*per* Eric Hardy and K. G. Spencer). Apart from Lancashire, there was no further extension to the west or south-west of the breeding range. In these areas gravel production is relatively low (see map in *Brit. Birds,* 57: 197), although increasing in Wiltshire and Dorset.

In the west, Little Ringed Plovers were seen on passage in Shropshire in each of the years 1963-66 (maximum seven in 1965), in Worcestershire in 1965 and 1966, and in Herefordshire in 1964 and 1967. In Wales, Little Ringed Plovers are now 'regular during the autumn migration' in Flintshire (*The Birds of Flintshire,* 1968). Other passage records, all of one or two birds, came from Anglesey in 1964, Merioneth in 1966, Pembrokeshire in 1963, Glamorgan in 1965, and Monmouthshire in 1964 (the first county record) and 1967. In the south-west, there was a small increase in the number of spring and autumn passage records, with one or two in Dorset in 1964, 1965 and 1967; in Wiltshire in each of the five years except 1964; in Somerset in each year; in Devon in 1964 (including four by the River Tavy in August) and 1967; and in Cornwall in 1965 and 1966. In 1968 a Little Ringed Plover was seen in Co. Cork from 22nd to 27th September; the only other record in Ireland was in September 1953 (*per* Major R. F. Ruttledge).

RATE OF INCREASE

Between 1948 and 1962 the average annual increase in the summering population was approximately 15% but the rate of increase in the eight counties where Little Ringed Plovers were breeding north of a line from the Welland to the Severn was more than double that in the counties to the south. In the much shorter period now under review, the average annual increase was only 8%; the rate of increase was lower than previously in both the southern and northern areas, although in the north it was still nearly twice as fast as in the south. The southern counties had a peak year in 1965 and there was an apparent decrease in 1966 and 1967, but it is too early to say whether this will be permanent or whether the total rate of increase has begun to slow down.

Disturbance and predation (human and avian) still seem to be the primary factors affecting the rate of increase. B. S. Milne made a special study at a gravel pit in Huntingdonshire: between 1962 and

1967 he located 17 clutches comprising 65 eggs; of these, 13 clutches were taken by Carrion Crows *Corvus corone,* three were flooded out, and only one clutch of four hatched, three of the young reaching the flying stage. The nests were on gravel mounds and Mr Milne commented that 'the problem does not seem so acute at other pits, where digging methods are rather different'.

SITES

Two pairs were found nesting on river shingle in Yorkshire in both 1964 and 1965. Apart from these, all the other sites used appear to have been man-made. Gravel pits still predominate, but, especially in the north, industrial wasteland and areas associated with coal mining are frequently used. The 230 pairs in 1967 occupied 154 separate sites which are classified in table 2. In other years, a pair bred in a watercress bed in Lincolnshire in 1964 and a nest was found in clinker among old car bodies in the Metropolitan area of Essex in 1965.

Table 2. Sites used by Little Ringed Plovers *Charadrius dubius* in Britain in 1967

	South	North	TOTALS
Gravel and sand pits and other quarries	60	48	108
Reservoirs, including one under construction	3	—	3
Sewage farms	4	—	4
Disused airfields	2	—	2
Waste ground and dumps adjoining industrial plants	3	13	16
Areas associated with coal mining, including opencast	—	14	14
Unspecified	7	—	7
TOTALS	79	75	154

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SUMMARY

The status of the Little Ringed Plover *Charadrius dubius* during 1963-67 is given year by year for each of the counties in which it has bred. In 1967 about 230 pairs summered in England, an increase of 46% since 1962. The proportion of pairs north of a line from the Welland to the Severn increased from 41% in 1962 to 49% in 1967 and the species spread to north Yorkshire and Durham (as well as to Northumberland and Scotland in 1968). Despite the higher number of pairs and the spread into new areas, the rate of increase may be slowing down.

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Observations on Audouin's Gulls in Majorca

D. I. M. Wallace

Plate 41

In May 1968 I came upon a small population of Audouin's Gulls *Larus audouinii* in Majorca. I was able to distinguish at least 15 individuals from plumage records (mainly drawings and photographs) and no less than ten were present on 16th May; I estimated that, in all, there were at least 20 individuals. Most of my observations involved single birds, couples or small parties patrolling the bays and cliffs of a headland. Views of this kind were short, but on several occasions I was able to watch the gulls feeding and on the ground for longer periods up to half-an-hour. In total, over 13 days, I logged about five hours' experience of Audouin's Gulls at ranges from a few yards to half a mile and in various light and sea conditions. The following notes summarise the results of these observations.

HABITAT AND PATTERN OF OCCURRENCE

It is possible that I found a breeding locality on 12th May. A stack 20-30 metres high stood close to an eroded ridge which ran down from a small cape. Obviously settling to nest in the vegetation on the top were at least 20 pairs of Mediterranean Herring Gulls *L. argentatus michahellis*. Near them that day were two adult Audouin's Gulls, apparently paired, and on the 18th a sub-adult was seen flying round the stack. All other observations were made along the cliffs, rocky shores and sandy coves that abounded south of the area of the stack and in the adjacent inshore waters. In terms of actual seaboard, the gulls were frequenting a distance of at least ten kilometres.

The observed pattern of occurrence indicated pronounced northward coasting between 06.50 and 08.05 hours, some wandering during the morning and early afternoon, a distinct southward movement between 17.00 and 18.10 hours (once later), and a northward return

(often of individuals known to have moved south) between 17.50 and 20.00 hours. Given that a southward passage occurred around first light, these movements would be consistent with feeding south of the likely breeding place in the early morning and again in the late afternoon and evening. The observations of actual feeding also fitted this explanation. In the last hours of light, the pattern of occurrence in one large bay closely paralleled that of shearwaters, particularly Cory's *Calonectris diomedea,* which came in to feed at dusk.

Although my observations began in a period of low pressure and high winds and I thought at first that the Audouin's Gulls were vagrants, I later became convinced that they were virtually sedentary in the area and merely involved in local, primarily feeding, movements. The records summarised above constitute the most significant series for Majorca in recent years (M. Kendall *in litt.*).

FIELD IDENTIFICATION

In this section I discuss the general appearance of adults and younger birds, particularly in relation to the text and illustration in Peterson *et al.* (1966). Left to the next section is a more detailed discussion of plumage differences related to age. The confusion species in the case

Table 1. Structural differences apparent between Audouin's Gulls *Larus audouinii* and Mediterranean Herring Gulls *L. argentatus michahellis,* Majorca, May 1968

All comments relate to the former in comparison with the latter

Bill	At close range, looks shorter and deeper, appearing rectangular in shape (in part a function of the terminal yellow and the subterminal black bar). At a distance, the length is even less obvious and the heavy drooping appearance increases. The 'dark blob' of the bill is very much the clinching character
Head	Smaller and shorter, with gentler outline (the different facial expression enhanced by the dark bill and eye) and forehead feathers markedly cloaking upper mandible
Body	Distinctly shorter and less bulky, particularly around the chest in flight
Wings	Though actually shorter by about one-tenth, appear as long due to being narrower (or longer in relation to rest of bird), prompting comparison with shearwaters and, considering the outer wing pattern, Gannets *Sula bassana.* It was apparent that the primaries were held closer together, forming a sharper point to the wing
Tail	Less full and apparently more closely folded in normal flight
Stance	Legs proportionately slightly longer and apparently set further forward, yielding a very upright appearance to the forepart of the body. Wing/tail overlap at least three primary tips, creating a tapering silhouette

of Audouin's Gull is without doubt the Herring Gull. Even after ten days of constant sightings, I found no quick way of identifying single gulls at middle and long ranges (say half a mile) as one or the other. It follows that the most useful discussion of field identification is one of comparison, and so the structural and plumage differences are summarised in tables 1 and 2.

In flight Audouin's Gull exhibits differences not only in terms of structure as noted in table 1, but also in action. It is a much abler flier than the Herring Gull in tight spaces. The wing-set prompted me to note such terms as 'sail-plane' and 'recalls Gannet *Sula bassana*' and I suspect that the length between shoulder and carpal joint may be relatively greater than in the Herring Gull. The wing stroke is lighter, less deep and less 'padding' in most circumstances. Often wing movement seems to be restricted to the primaries only. Out at sea, the bird has a very rakish character, though not all gulls showing this proved to be Audouin's: some were energetic Herring Gulls, particularly sub-adults with blackish primaries.

Plate 41 attempts to summarise the above comments and tables in visual terms. It remains merely to point out that most of the characters given in the *Field Guide* are confirmed with one notable exception, the outer wing pattern. I saw no primary on any individual that graded from a grey base to a black tip, though the grey on the inner web did show once or twice; at the same time, except in the case of one near-adult with rather worn plumage, the white spot on the inner web of the 2nd primary was invisible, though the terminal white spots on the 3rd, 4th and 5th primaries were often obvious. It follows, therefore, that the plate in the *Field Guide* is very misleading and it also misses the general character of the species. Inaccurate, too, is the text by Etchécopar and Hüe (1967) who state that the yellow bill tip is invisible in the field. In fact, in good light and under 100 metres or so, it is often quite obvious. They hardly describe the wing pattern at all, but the plumage at rest is quite well caught in the plate by Paul Barruel, though there the bill wrongly has a red tip. A useful drawing of the three outermost primaries of an adult Audouin's Gull appears in Meinertzhagen (1954) and the brief text in that work rightly mentions the grey underwing. Through F. G. H. Allen I have had the opportunity of reading some notes by E. J. Mackrill and others on a flock of up to 120 Audouin's Gulls in southern Spain in September-October 1968: these were most useful in confirming and in one case expanding my own observations.

WING PATTERN RELATED TO AGE

There has been much recent discussion of what is or is not visible on a flying gull's wings (Grant and Scott 1967, Bourne 1968, Grant 1968) and this section is therefore somewhat more tentative. Nevertheless,

Table 2. Main plumage differences apparent between Audouin's Gulls *Larus audouinii* and Mediterranean Herring Gulls *L. argentatus michahellis*, Majorca, May 1968

	Adult or apparent adult compared with Herring Gull	Sub-adult compared wtih adult	Immature compared with sub-adult
Bill	Totally distinct: at close range, yellow tip and black band obvious against deep coral-red of remainder; at a distance, even in sunlight, looks black	Similar or apparently so	No pattern noted, but appears black at distance
Eye	Totally distinct: dark with prominent coral-red rim, giving less gull-like appearance to 'face'	Apparently similar	Appears dark, red rim not seen
Head and neck	Often apparently whiter due to contrast with darker bill and eye and grey suffusion on under-parts	Head less white	Greyish, but exact details not seen
Mantle	Paler, less dusky, with bluish tone in certain lights	Similar	Appears browner with streaks and blotches
Wing coverts	As mantle, with less distinctly white leading edges	Similar	Appear browner with markings forming at least one band on some
Secondaries	As mantle, with less distinctly white trailing edges; white tertial edges also less distinct	Similar ground, but with complete subterminal band of brown	Subterminal band apparently darker
Primaries	Inner as secondaries, but occasionally with dark marks on 6th to 8th; outer generally appear totally black relieved only by terminal white spots on 3rd, 4th and 5th, this pattern also visible from underneath	Similar, but also showing dark lines on most inner primaries	Outer primaries less black and innermost marked with dark lines
Under-wing	Suffused greyish, particularly obvious in evening sunlight	Apparently similar	Not seen
Lower breast and flanks	Lightly suffused greyish (once pinkish-grey), but obvious only at very close range and in evening sunlight	Apparently similar	Not seen
Legs and feet	Totally distinct: all olive to grey (but yellow soles)	Apparently similar	Not seen

most of my sketches of wing pattern were confirmed by photographs developed afterwards and I am confident of the following discussion.

The 15 Audouin's Gulls individually identified and numbered were

all seen within a few metres and usually in sunlight. In these circumstances, observation of precise detail was not difficult and I was able to distinguish, in addition to differences in body plumage between obvious adults and obvious immatures, no less than six post-juvenile plumages on the 14 birds that appeared to be in fresh or unworn plumage. These are summarised in table 3.

Due to the lack of knowledge about the plumage sequences of Audouin's Gull, this information is difficult to interpret. If the species' moult sequence is similar to that of the Herring Gull and it attains fully adult plumage in its fourth year after hatching, I must have noted two transitional plumages in table 3 or been confused by one or other of the youngest individuals retaining winter dress. I saw only two birds in worn plumage (an adult and a sub-adult), however, and even the three youngest stages showed no sign of moult, though this was apparent on Herring Gulls of similar age in the same area. A more interesting ex-

Table 3. Plumages of Audouin's Gulls *Larus audouinii*, Majorca, May 1968

	Number of individuals	Fig. number on plate 41	Main distinguishing features
Full adult	2	1,2,7,8,11	Clear mantle; four longest primaries black and isolated, but next two or three often showing dark near tips; primary coverts pale grey and unmarked
Apparent adult	6	4	Clear mantle; outer primaries similar to full adult; primary coverts marked by one or two rows of blackish streaks
Sub-adult	3	6,10 (also plate 39b)	Clear mantle; outer wing as apparent adult, but with more dark lines on inner primaries and outer primary coverts totally dark; secondaries with subterminal brown band; tail with subterminal dark brown band, thicker in centre; one individual retained a patch of brown feathers on the secondary coverts
Near sub-adult	1	—	Clear mantle and as sub-adult, but with secondary coverts blotched with brown
Old immature	1	3	Greyish head; streaked mantle; wing as near sub-adult, but showing distinct band across both secondaries and secondary coverts
Young immature	1	9	As old immature, but lacking distinct band on secondary coverts and band on secondaries darker, extending on to all inner primaries

planation would be that Audouin's Gull does not attain fully adult plumage until at least five years after its year of hatching.

VOICE

I heard a call only once, from an Audouin's Gull that had just flown past, and noted this down as *geeaak*. It had the quality of a child's cry about it and was surprisingly loud.

FEEDING BEHAVIOUR

I observed two main types of feeding behaviour, surf fishing and open water fishing. Discussion of these follows.

Surf fishing

I saw no definite feeding activity until 13th May when a pair of apparent adults were discovered fishing in a rocky cove. From the cliff-top above them, I was able to watch them for ten minutes. They used rocks as vantage points from which intently to watch the surf breaking over the ledges near-by. Usually they sat apart, but twice they settled on the same rock. As soon as something caught the eye of one of them, it would make a 'shallow run' over the surf and, without settling, attempt to pick the food from the water with a lunge of the head and bill. Their attentiveness and flight control was remarkable and I saw at least one small fish successfully plucked from the water. Involved in the same hunt was a Shag *Phalacrocorax aristotelis* and a dogfish, probably *Pristiurus melastomus*. One of the gulls made an unsuccessful attempt to rob the former. During this episode, when the gulls were constantly changing positions and getting in each other's track, I was surprised to note absolutely no overt display or bickering at all.

I did not see the above feeding behaviour repeated, but on 21st May an immature or sub-adult was observed in clearly related actions. It was coasting northwards when it suddenly dropped to make a series of shallow runs over an area of surf below a sheer cliff. Once again I noted the lunging action of the head and bill, but I saw no prey captured. The manner of flight was identical to that of the two seen on 13th May. It later became obvious that most coasting individuals were intently scanning the littoral water as they passed and occasionally up to five would circle over areas of surf. It seems evident that Audouin's Gulls rely heavily on visual acuity in this form of feeding.

Open water fishing

As surf fishing was evidently uncommon or required special conditions, I became puzzled as to where the bulk of the species' food was obtained. Observations made mainly between 16th and 20th May suggested two answers, however:

(a) *Calm water searching*. In a shallow bay south of the area where surf

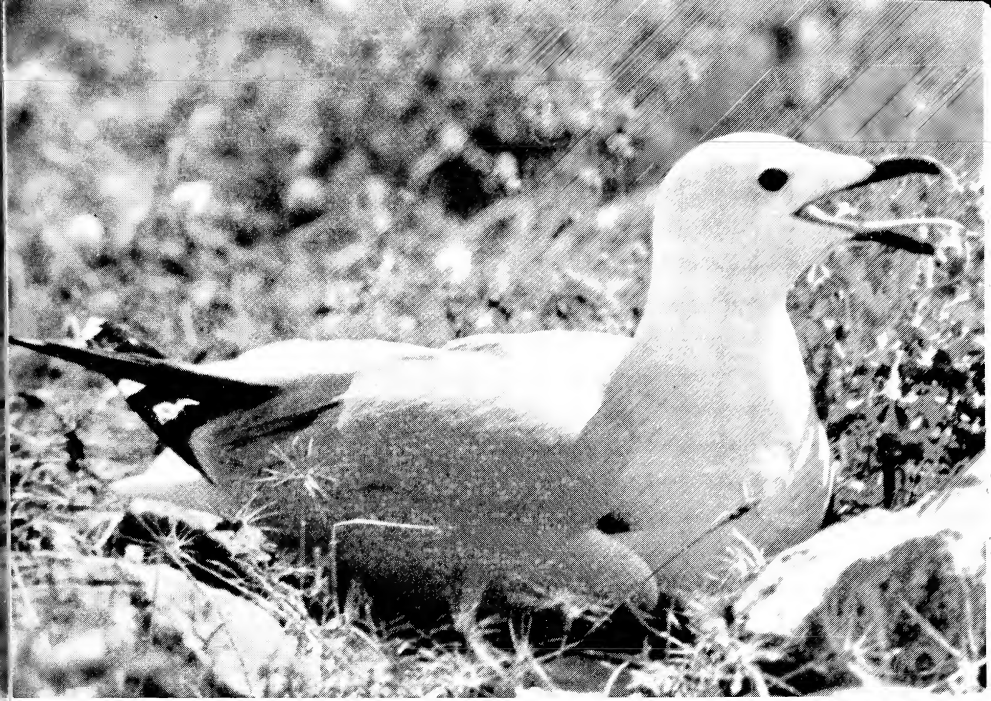

PLATE 37. Audouin's Gulls *Larus audouinii* at the nest, Greece, May 1966. The distinctive bill is coral-red with a black subterminal band and a horn-yellow tip. Note also the dark eye (which has a coral-red rim) and the conspicuous white tips to the black outer primaries (pages 230-232 and 223-229) (*photos: Ilse Makatsch*)

PLATE 38. Audouin's Gulls *Larus audouinii,* Greece, May 1966. Note the dark eye again and the feather 'cloak' to the upper mandible (page 224); the legs are grey to olive-grey. These nests in the Northern Sporades were each situated between a big stone and thistles, and most had three eggs (page 231) (*photos*): *Ilse Makatsch*)

PLATE 39. Audouin's Gulls *Larus audouinii* in flight. Above, adult, Greece, May 1966: note the under-wing pattern and longish dark legs; the bill usually looks blacker (*photo Ilse Makatsch*) Below, sub-adult, Spain, October 1968: the wing is black ended with bars on the inner part (pages 226-227) (*photo: F. G. H. Allen*)

PLATE 40. Audouin's Gulls *Larus audouinii* in southern Spain where about 120 were seen in September-October 1968, adults outnumbering immatures by twelve to one. Note the outer wing pattern and, again, the conspicuousness of the white spots and the shape of the blackish-looking bill (pages 224-227) (*photos: F. G. H. Allen*)

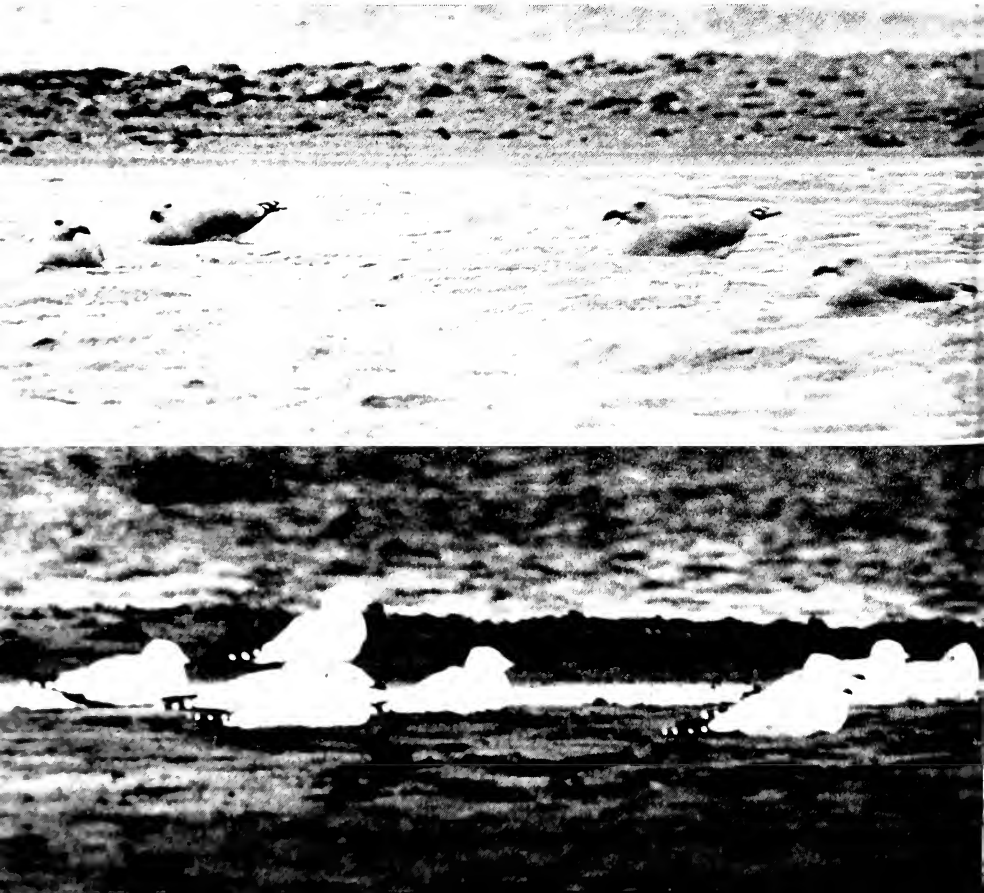

PLATE 41. Audouin's Gulls *Larus audouinii* and one Herring Gull *L. argentatus* in flight, Majorca, May 1968: (1) adult lit from side in evening light, with greyish wash on under-parts (including under-wings) and bill appearing black; (2) adult from behind; (3) immature from behind, showing two bars on inner wing; (4) apparent adult lit from above, retaining dark tips to primary coverts; (5) immature Herring Gull, showing greater bulk and broader wings with more diffuse pattern; (6) soaring sub-adult lit from above, revealing dark feet; (7) adult lit from above, showing immaculate plumage and narrow tail; (8) patrolling pair of adults, illustrating white-headed appearance; (9) immature in diffuse light; (10) sub-adult lit from above, flying into strong wind; (11) adult surf fishing, in pre-lunge attitude (pages 223-229) (*drawings by D. I. M. Wallace from his own photos and field sketches*)

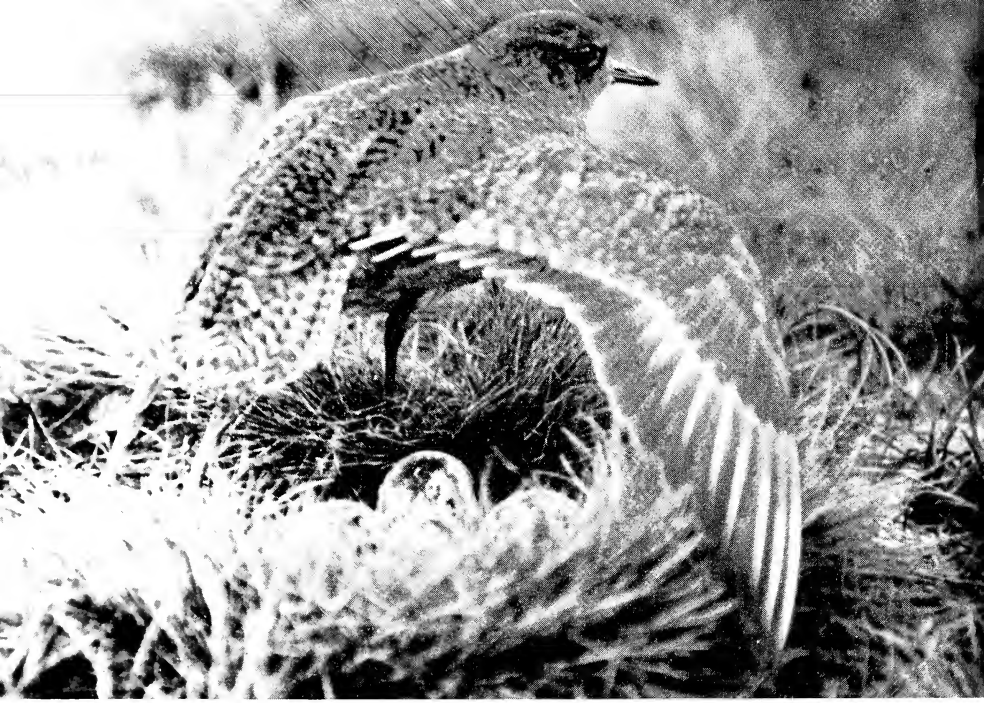

PLATE 42. Golden Plover *Pluvialis apricaria* injury-feigning and showing extent of wing-bar (*photo: G.A. Booth*). Below, wing of Golden Plover (*left*) and Grey Plover *P. squatarola*, illustrating the amount of paleness in each (*photos: C. D. T. Minton and G. H. Green*). Books state that Golden Plovers have no wing-bar (page 233–234)

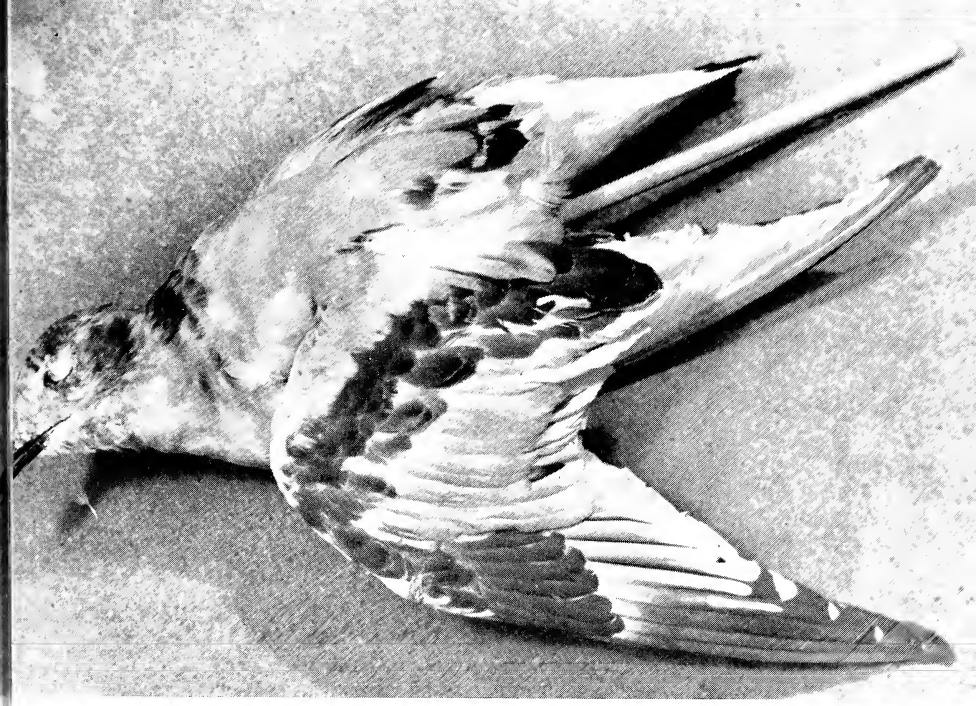

PLATE 43. Dead first-winter Little Gull *Larus minutus*, Norfolk, November 1967. Apart from the usual black zigzags on the wings, it shows traces of a sepia band on the nape: this can be more marked in August-September and thus cause confusion with immature Kittiwakes *Rissa tridactyla* (pages 234-237) (*photos: Ulster Museum*)

PLATE 44. Nest with three eggs of Ringed Plover *Charadrius hiaticula* and four of Little Ringed *C. dubius,* Essex, June 1968 (page 233) (*photo: E. D. Parrinder*). Below, hole made in snow by Jay *Garrulus glandarius* in February to recover an acorn (note broken shell) hidden in the previous autumn (pages 239-240) (*photo: P. O. Swanberg*)

fishing occurred, I saw the gulls employing 'search and pick up' tactics. These seemed to be associated with still water conditions only and were apparently related to the 'shallow run' flight already described. The individual involved would drop from normal flying height to within a foot or so of the water and, very much in the manner of Cory's Shearwaters in similar conditions, plane about looking for food. The wing action was remarkable, there being very little stroke evident inside the carpalia and momentum being maintained by the 'rowing' action of the primaries. Flat glides of up to 100 metres were maintained and their outcome was either the lunge already described or a brief settling on the water without the remiges being folded. I was never able to diagnose the food obtained. This method was once employed continuously for 30 minutes by an immature. No Herring Gulls were seen to employ anything like these manoeuvres and I was left with a remarkable impression of the Audouin's Gull's skill.

(b) *Open water fishing.* Although Audouin's Gulls were never seen to take any interest in offal from fishing boats or harbour flotsam, they did associate with Herring Gulls, Cory's Shearwaters and Balearic Shearwaters *Puffinus puffinus mauretanicus* when these species attacked surface shoals of fish. In the last hour of light on 19th and 20th May I saw up to five doing this. Unfortunately the observations were made at considerable distances, but it appeared that the Audouin's Gulls accelerated the planing and lunging actions already described in line with the feeding tempo of the other species. I also noted that in such situations they often landed on the sea for longer periods and also that they looked like 'ponderous marsh terns *Chlidonias spp.*'

To conclude, I found Audouin's Gull to possess a very individual character when feeding. While it may be an old and relict species, it nevertheless gives the impression of being a skilled hunter which clearly outclasses the Herring Gull in its aerodynamic performance. It would surely repay a full study. I formed the distinct impression that it was a highly specialised gull and its conservation will require a much better understanding than we currently possess.

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Studies of less familiar birds

154 Audouin's Gull

Wolfgang Makatsch

Photographs by Ilse Makatsch and F. G. H. Allen

Plates 37-40

Audouin's Gull *Larus audouinii* is certainly one of the rarest gulls in Europe, perhaps even the rarest in the world. It breeds solely in the Mediterranean and at the present time we know of only eight colonies which together total at most 800 to 1,000 pairs. Originally we had calculated the population to be much smaller, but in 1966, the same year that my wife and I watched and photographed these gulls on a small uninhabited island in the Aegean Sea, Brosset and Olier (1966) found a very important colony on one of the Islas Chafarinas off the coast of Morocco, which they estimated at 1,000 adults. All the other regular colonies known between Corsica and Sardinia, off the coast of Tunisia, in the Aegean, and in north-east Cyprus are smaller. Further breeding places have been recorded on the Columbretes Islands off the east coast of Spain, and on the isle of Nakl off the coast of Lebanon.

In size Audouin's Gull comes between the Herring Gull *L. argentatus* and the Common Gull *L. canus*. Its main characteristic is its coral-red bill with a black band and a horn-yellow tip (see especially plate 38a), though the last, like its grey legs, can be distinguished only at close range. In flight or at a distance the bill appears very dark-red, nearly blackish (plates 39a, 40), and it stands out clearly in comparison with the yellow one of the Herring Gull, the only other gull which occurs in the same habitat in the breeding season.

On the northern Sporades, in the Aegean, Reiser (1905) recorded Audouin's Gull on 1st June 1894, but afterwards there were no further records from that area until 1961, exactly 67 years later, when we were lucky to find a nesting place on a small island in this group. Unfortunately, however, the breeding season was already almost over. About 20 Audouin's Gulls were flying over the area, warning their young concealed under low but very thick bushes. We found four addled eggs and could take only some token photographs.

Another five years passed before we were able to return to this group of islands to continue our observations. Then at last, on 26th April 1966, we arrived back at the 1961 nesting place, only to find that all the bushes had been burned; there was not an Audouin's Gull to be seen. (Later D. de Bournonville *in litt.* informed us that, in any case, it is quite normal for these birds to change their nesting site.)

After we had got over the initial disappointment, we continued our search by motor boat from island to island until we finally found the colony. We located only two nests, each containing one egg, but about 30 Audouin's Gulls were swimming on the sea in a flock. The weather was cold and rainy and so, for the sake of the birds, we left after only 15 minutes, but we returned on 1st May with our camping and photographic equipment and stayed for five days. Later we paid a further visit of four days, from 25th to 28th May, when the chicks were hatching.

The habitat was similar to that which we had seen in 1961, sloping gently to the sea and covered with big stones, thistles, grass, and low bushes of lentisk *Pistacia lentiscus*. (In the Aegean the Herring Gulls nest in quite different habitats, on steep and rocky slopes among the bare sea-cliffs.) By 3rd May nine pairs had full clutches of three eggs and later there was a total of 20 nests, of which only three had two eggs. The nests were typical of those of gulls, flat and built of grasses and sticks, always situated between a stone and thistles (plates 37-38). The eggs did not vary so much as those of the Herring Gull and Black-headed Gull *L. ridibundus*, and in colour and markings were closer to the normal eggs of the Common Gull. We marked all the nests with numbered sticks and measured a few eggs at a time when changing over in the hides. Sixty-three eggs averaged 63.6 × 44.5 mm (maxima 68.1 × 45.3 and 62.8 × 46.6, minima 58.9 × 41.9 and 61.4 × 40.9) with a mean weight of 67.5 grams. For comparison, 131 eggs of the Mediterranean Herring Gull *L. a. michahellis* averaged 69.3 × 48.7 mm (maxima 75.9 × 50.5 and 70.2 × 53.6, minima 64.2 × 48.2 and 72.2 × 43.4) with a mean weight of 72.7 grams.

Eggs were usually laid on alternate days. Incubation, which was by both sexes, began with the second or sometimes the third. The pair relieved each other at intervals without much ceremony. The relieving gull would slowly approach the nest, uttering soft nasal sounds *garh garh* with its head lowered; then the one that was incubating would rise and fly towards the sea. We saw no copulation, but males occasionally displayed to females. Having marked the nests, we were able to record the incubation period as 21-25 days (Herring Gulls average 26 days, Common Gulls 21-23 days). The chicks in any brood of three hatched within two days, each taking less than 24 hours from the first chipping of the egg. The shells were carried away by the adults.

On the first day after hatching each chick remained in the nest, shaded by one of the adults. On the second day it left the nest for varying periods and hid among the stones and thistles; only faint peepings and soft warblings then betrayed its presence. From the third day it did not return to the nest at all, but crouched under the lentisk bushes further away. There the parents called it out to feed it with fish and other marine organisms; the chick pecked at the tip of the bill of the adult which then regurgitated the food. The downy young resembled

those of other gulls: upper-parts pale buffish-grey with variable blackish-brown markings, under-parts greyish-white to buffish-white, legs pale grey, bill light flesh-coloured with the base pinkish-grey, and eyes soft dark brown like those of the adults.

The voice of the adult Audouin's Gull is rather unlovely in all its forms. We noted the alarm call as a goose-like *gugguggguggug*, usually of four syllables and fading in intensity; a warning sound at the end might be written *how how*. Especially unlovely to our ears were the long and hoarse greeting calls. From gulls on the nest we sometimes heard a soft *dog dog* sound. To feed the young, the adults cried like furious geese and the chicks answered with a warbling *plee* as they hurried from the protection of the bushes. We tape-recorded all these sounds, which are quite distinct from the corresponding calls of Herring Gulls. Herring Gulls often flew over the colony, but they caused no alarm and apparently made no attempt to prey on the eggs or young. Nor was there any reaction when an Eleonora's Falcon *Falco eleonorae* flew over, but, if a Raven *Corvus corax* approached, all the gulls not actually incubating excitedly attacked it and any Herring Gulls in the vicinity joined in.

We do not know why Audouin's Gull is so rare. The species has hardly any natural enemies and the Greek fishermen, though they may sometimes take the eggs of Herring Gulls, do not apparently molest the later breeding Audouin's Gulls. We hope that these birds will never become extinct, but the situation needs to be watched and steps taken to avert any threat to their colonies.

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Notes

Little Ringed and Ringed Plovers laying in the same nest For about 1½ hours on 15th June 1968, at a gravel pit in Essex, Mrs Gillian Craw and I watched a Little Ringed Plover *Charadrius dubius* sitting on a nest which contained four eggs of that species and three of Ringed Plover *C. hiaticula* (plate 44a). The latter were brighter in colour and gave the appearance of being more recently laid. During the time that we were watching, there were other Little Ringed in the area, including a second pair which had a nest closer to our observation point, but we saw no Ringed Plovers in that part of the pit.

On 17th June, however, we found that a Ringed Plover had taken over the mixed nest and during the next two hours Little Ringed Plovers twice attacked it as it incubated. First, two flew fast towards it, uttering an excited high-pitched *gree-gree-gree,* but it remained sitting; then three attacked together and disturbed it from the nest, but, after standing in the surrounding vegetation for a minute or two, it returned and continued to incubate.

On 29th June the Ringed Plover was still incubating, but the nest then contained only four eggs, three of Ringed and one of Little Ringed. A Little Ringed was sitting on a nest with four eggs about five yards away; this was possibly a replacement by the original owners of the mixed nest, as the other pair found on 15th June was still incubating. We last visited the site on 10th July and saw a Ringed Plover chasing a Little Ringed in the neighbourhood of the three nests, but these were all empty and there were no signs of any young near them. We did see a Ringed Plover accompanied by a small chick on a track above the gravel pit, but, as there were two pairs of this species in the area, these may or may not have come from the mixed nest.

Apart from a Swedish nest found with four eggs of Ringed Plover and two of Little Ringed, the only comparable record, also in Sweden, was of a nest with two eggs of each species, in which the Ringed Plover then laid two more eggs and took possession (S. Durango, *Fauna och Flora*, 1943: 145-154). EILEEN D. PARRINDER

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Golden Plovers with wing-bars Such standard books as *The Handbook* and the *Field Guide* state categorically that the Golden Plover *Pluvialis apricaria* has no wing-bar. It was therefore with some surprise that, while watching Golden Plovers in numbers up to 50 or more in Guernsey, Channel Islands, during 15th-21st February 1969, I noted that a whitish wing-bar was present on each individual that I was able to see reasonably well in flight. Once I had an excellent view from only about 15 yards and clearly saw that this bar was more prominent on

the primaries. On another occasion I was able to make a direct comparison when one of the Golden Plovers was chased in flight by a Grey Plover *P. squatarola* and the latter's wing-bar (which is always referred to in books) was no more distinct. It was obvious that light conditions affected the conspicuousness of this feature, but there is no doubt that the Golden Plover has a wing-bar and the books are therefore misleading. A. J. Bisson

Le Petit Ruisseau, La Mare Estate, Vazon, Guernsey, Channel Islands

Mr Bisson has drawn attention to a small but significant point. We showed this note to Dr C. D. T. Minton in view of the latter's exceptional experience of waders of many species in the hand and he was able to produce a colour transparency (one of four similar ones of different individuals) which illustrated this feature quite clearly; this and a Grey Plover's wing are reproduced in black-and-white on plate 42, together with an interesting photograph of a Golden Plover injury-feigning with the wing-bar very prominent. He commented: 'I was somewhat surprised myself when I first noticed this whitish wing-bar in the field—I remember the occasion well, at Fife Ness in December 1953—but I have since found that all Golden Plovers are similarly marked, though it seems as if it shows up more in certain lighting conditions.' Presumably the wing-bar is caused by the whitish bases to the primaries and secondaries (referred to in the detailed plumage description in *The Handbook*), while the more prominent effect noted by Mr Bisson on the primaries may be increased by the white tips to the primary coverts. Eds

Field-characters of immature Little Gulls and Kittiwakes On 3rd September 1963, while carrying out a sea watch at Pointabullaun, Cape Clear Island, Co. Cork, G. R. Hopkins, J. R. Hopkins, E. E. H. Jones, M. H. Terry and I observed a Little Gull *Larus minutus* in a plumage intermediate between juvenile and first-winter. A full description was taken and entered in the observatory's log, but here it will suffice to say that it seemed a typical first-winter Little Gull save for a sepia bar across the nape similar to the black one on a juvenile Kittiwake *Rissa tridactyla*. This feature came as a considerable surprise and we could find no reference to it in the literature. Because of this, indeed, the record was considered unacceptable for inclusion in the *Irish Bird Report* for 1963, though it has since been accepted and published in that for 1967.

Since 1963 I have contacted three other observers who have seen Little Gulls in similar plumages. First, D. B. Wooldridge (*in litt.*) described two sightings of Little Gulls which appeared to be in first-winter plumage except for a 'dark bar across the nape similar to a young Kittiwake', the rest of the back and mantle being grey: one was

at Dibden Bay, Hampshire, on 2nd September 1959 and the other at Falsterbo, Sweden, on 23rd August 1968; Mr Wooldridge added that the latter caused no little surprise to other persons who saw it. Secondly, R. J. Johns (*in litt.*) informed me that since 1965 he has seen several first-winter Little Gulls with this dark bar on the nape at the London reservoirs, the most recent being at least one 'which, although having a predominantly grey mantle, showed a very conspicuous blackish-brown bar running across the hind neck on to the shoulders' at Barn Elms Reservoir, Surrey, in late July/early August 1968 and two in similar plumage at Staines Reservoir, Middlesex, on 8th August 1968. Mr Johns added that he met people at both Barn Elms and Staines who had identified these birds as Kittiwakes *because* of the bar on the hind neck: indeed, one observer at Staines accepted that they were Little Gulls only when an immature Kittiwake flew close by and the differences in size and structure became apparent. Thirdly, Jean-Pierre Vandewoghe (*in litt.*) reported that during the autumn passage up to 1,000 Little Gulls may be seen in sea-watches off the coast of Belgium and that he has noted perhaps ten individuals showing this dark nape bar on the otherwise grey upper-parts of first-winter plumage.

In addition, Dr J. T. R. Sharrock (*in litt.*) informed me that in late August/early September 1967 up to 15 immature Little Gulls were watched by many observers at Stewartby Lake, Bedfordshire: he saw only six of these, which he described as 'blackish-brown on the upper mantle (like a saddle just behind the neck) and extending in a bar down the "shoulders" or sides of the neck at rest'. This plumage is very close to the one described above and appears to be due to a less advanced state of moult. Finally, on 25th November 1967, at Cley, Norfolk, D. J. Holman and T. Inskipp found the remains of a first-winter Little Gull which still bore traces of juvenile plumage. The corpse was donated to the Ulster Museum (catalogue no. LG615) and during the course of preparing the skin J. C. Sinclair had photographs made which I am grateful to the museum for allowing to be reproduced here (plate 43). From these it can be seen that, while the mantle and back are in the typical grey plumage of first-winter, strong traces of a sepia bar remain on the nape. It must be emphasised, however, that this feature is less well-marked than it was on the Little Gulls seen in August and September.

It seems from these records that at least a proportion of Little Gulls, during transition from juvenile to first-winter plumages, are left with a dark sepia bar on the nape when the back and mantle have become grey or mainly grey. That this plumage is not commonly seen is evident from the lack of reports and also from such statements as the following: 'juvenile wing-and tail-pattern is retained through first winter and summer, though back and rest of plumage become much as adult' (Witherby *et al.* 1938-41); 'young Kittiwake has similar zig-zag [pattern

on wings] but a dark nape patch' (Peterson *et al.* 1966); and (as a distinction from the immature Little Gull) the juvenile Kittiwake 'has dark patch on back of neck and dark legs, and is much larger' (Fitter and Richardson 1952). In addition, Hollom (1962) quoted *The Handbook* and published a line-drawing showing a first-winter Kittiwake and a first-winter Little Gull with the caption 'Note dark hind-collar on Kittiwake'.

Presumably this stage of plumage occurs when the juvenile mantle and back feathers have been replaced by those of first-winter, but the sepia juvenile feathers on the back and sides of the nape have not yet been shed. (A photograph of a typical juvenile Little Gull was published in *Brit. Birds*, 52: plate 12; the dark nape bar can clearly be seen, although the rest of the mantle and back are, of course, sepia.) It is very probable that most Little Gulls possess this plumage for only a very short time, as indicated by the dates of the records above. Nevertheless, the one at Cley had strong traces of the sepia bar as late as November.

Since the original sighting of the Little Gull at Cape Clear Island, I have also studied immature Kittiwakes and found that they too assume plumages which do not seem to be widely known. First, in late May to early July small numbers of one-year-old Kittiwakes are present at the breeding colonies on Rathlin Island, Co. Antrim: most have the greater part of the plumage as in the first-winter, except that the dark bar on the nape has turned grey as in the adult. Although Witherby *et al.* (1938-41) remarked on this feature, I have not seen it mentioned in any of the field guides. Secondly, J. Donaldson observed two immature Kittiwakes at Inishtrahull, Co. Donegal, during October 1955, which were in almost complete adult plumage except that a few of the outermost primaries were completely blackish. Since then I also have noted one or two immature Kittiwakes with no neck bar and only a very few indistinct pallid smudges on the forewing, but the outermost primaries remaining blackish. I have not seen this particular plumage described anywhere.

I wish to publicise these points to fill apparent gaps in present knowledge rather than to point out errors in the excellent works quoted. I also think that it may be of some help to county and regional recorders to bear these features in mind when inexperienced observers submit inland records of juvenile Kittiwakes or late spring to early autumn records of Little Gulls or even Sabine's Gulls *L. sabini*.

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WITHERBY, H. F., *et al.* 1938-41. *The Handbook of British Birds*. London. vol. 5: 61, 115.

Arctic Terns feeding on earthworms At 08.15 hours on 23rd April 1969, near Newburgh, Aberdeenshire, I saw two Arctic Terns *Sterna paradisaea* flying low over a field of newly sown barley and periodically dropping to the ground. Observation at about 30 yards with a 40× telescope showed that they were obtaining items of food, two of which I was able to identify as earthworms (probably *Allolobophora sp.*) about twice the length of the terns' bills. The behaviour was very reminiscent of Black Terns *Chlidonias niger* picking insects off the surface of water. The two Arctic Terns twice settled on the field, but I do not know whether they obtained food while on the ground. It was a misty morning which had been preceded by heavy rain and the behaviour of Rooks *Corvus frugilegus* in the area suggested that earthworms were lying on top of the soil.

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Perch and Roach as prey of Tawny Owl *The Handbook* includes 'Fish (trout, etc.) not infrequent' among the food of the Tawny Owl *Strix aluco,* but specific identifications of fish prey may be worth recording. On 25th April 1969, at a nest ten feet up in a decaying elm *Ulmus procera* 100 yards from the Grand Union Canal, near Tring, Hertfordshire, I found the remains of several Perch *Perca fluviatilis* and Roach *Leuciscus rutilus* among small mammal and bird prey that had been brought to a single young Tawny Owl.

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Carrion Crow taking Starling in the air On 16th June 1968, at Harold Wood, Essex, my 14-year-old son and I were watching a Carrion Crow *Corvus corone* patrolling neighbouring gardens when it began to pursue a Starling *Sturnus vulgaris* well above the tops of the trees; I could not see whether the latter was an adult or a juvenile, but it was flying strongly. At first I thought that the Starling was being mobbed for food, but after about 50 yards the Carrion Crow gained on it and caught it. Other Starlings in the vicinity wheeled round and round in a flock when it was captured, much as they would do in the presence of a bird of prey. Unfortunately the Carrion Crow then disappeared behind some trees with its victim and therefore we could not see the outcome.

The actual capture took place in a flash, but both my son and I had the firm impression, remarkable as it may seem, that the Carrion Crow actually caught the Starling in its claws. On reflection later I realised that, as the two birds twisted and turned, the Starling might

have been momentarily out of sight behind the Carrion Crow and that in this very short space of time the latter could possibly have caught it in its bill and immediately transferred it to its feet. Certainly, however, the Carrion Crow carried the Starling away in its claws and I still consider it to be much more likely that the bill was not used at all in the capture.

R. B. WARREN

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Magpie preying on snake On 24th May 1969, in the churchyard of Christ Church, Virginia Water, Surrey, I saw an adult Magpie *Pica pica* drop down among the gravestones and then fly up into an old yew, carrying in its bill a writhing snake which I estimated to be 20-24 inches long. I could see no colours on the snake and was therefore not able to say whether it was a Grass Snake *Natrix natrix*, an Adder *Vipera berus* or even a Smooth Snake *Coronella austriaca*. (It should be added that the last has been recorded not far from Virginia Water and that this particular churchyard is very sandy.) On size alone, however, which if anything was probably underestimated, a Grass Snake is much the most likely. It was certainly too big and too thick for a Slow-worm *Anguis fragilis*. Once in the tree, the Magpie stood on the snake with both feet and started to pull at it. Then, however, it saw me and flew off with the snake in its bill to some Scots pines, where it was greeted by the calls of its fledged young. Unfortunately, these were hidden from view and therefore I could not see whether the snake was fed to them.

DOUGLAS CARR

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Jays recovering buried food from under snow At the beginning of February 1969, in our garden in Hampstead, London, a Jay *Garrulus glandarius* removed about ten peanuts from a hanging wire holder, swallowing half of them and retaining the rest in its beak. These it then buried separately in a flower bed, covering each place with dead vegetable matter. When its beak was empty, it regurgitated the other nuts one by one and buried them also, except for the last which it took up into a tree to eat. Ten days later, when the flower bed was under three inches of snow, the Jay returned and began to dig with its beak in the same area. After two apparently unsuccessful tries it dug a deep hole, threw aside some dead leaves and picked out a peanut which it carried away.

DENISE SALFELD

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We showed Mrs Salfeld's note to Dr P. O. Swanberg who has made similar observations in Sweden on Jays recovering buried acorns and ears of corn from under snow, and he has contributed the following note. EDS

It is well known that Jays store food in the autumn and winter. At my observation area, a hill about 120 km ENE of Gothenburg, Sweden, they collect acorns among the oak trees at the foot or on the lower slopes and carry these for 2-3 km up into the conifer forest on the top. While Nutcrackers *Nucifraga caryocatactes*, which likewise bury food, do this journey in only one or two stages, Jays often make intermediate stops on the tree-tops before reaching their destination. They begin on a small scale in August by burying ears of corn, but as soon as the acorns ripen, usually early in September, they turn to these and go on collecting them for all the time that they are available, which in good years may be well into December or until the ground is snow-covered. The high intensity of the collecting activity has been described by Schuster (1950), Goodwin (1951, 1956) and Chettleburgh (1952), among others. In my opinion, it might be added, most food is stored in the breeding area, probably within the individual's past or future territory.

In the Swedish forests the ground may be covered with snow from mid-December to late March and it is obviously important for the Jays to be able to remember and rediscover their buried stores in these conditions. Their ability to find buried food seems to be as well-developed as that of Nutcrackers which can locate their stores accurately under as much as 45 cm (18 inches) of snow (Swanberg 1951). My first observations of a Jay's ability to find snow-covered food were made on 15th January 1939 when the snow was 32-35 cm (13-14 inches) deep. At one spot the Jay had dug out a hole and 700-800 metres away there were two more excavations. In each case there was just enough space for the Jay to reach the ground under the snow and at the rim of each hole were the remains of the shell of a single acorn. A typical hole and the characteristic pieces of acorn shell are shown on plate 44b.

Bossema (1968) noted that 'One to six acorns at a time are transported in the oesophagus, throat and bill', but it should be added that, in my experience, as happened with the peanuts referred to by Mrs Salfeld, only one acorn is hidden in each place. On 8th February 1942, for example, in an area where there are no Nutcrackers, I found many excavations in the snow under the sheltering branches of Norway spruces—two, three or four beneath each tree—and at each of these there was the broken shell of only one acorn. On that same day, but at another locality, I saw the tail of a Jay come backwards up out of the snow. It had just dug out an acorn and it broke this into pieces while sitting in the hole before flying up to a branch to eat the kernel. On 25th February 1945 and 7th December 1947 I saw Jays digging out acorns from under as much as 40 cm (16 inches) of snow; it is not known what is the maximum depth of snow that they can tackle. I have seen Jays carry ears of wheat 2 km from the nearest cultivated field and on 16th December 1962 I found an excavation 10 cm (4 inches)

deep from which one had dug out an ear of oats, carrying it by a few jumps to a stone about one metre away and there stopping to pick out the grains.

Incidentally, Bossema (1968) found that Jays were hiding food in the vicinity of oak saplings and suggested that 'it seems possible that the jays prefer to conceal the acorns in the close vicinity of young oaklings in order to be able to use these later for the recovery of the hidden acorns'. In my observation area, however, the Jays carry the acorns well into the dense conifer forests and I can find no evidence that they use such obvious markers. This species is certainly helped by a memory which may be compared with that of the Nutcracker. In most cases it alights right at the point where it has to dig and never or rarely does a Jay seem uncertain how to find the store. Like the Nutcracker, too, it does not dig perpendicularly down through the snow, but enters it at an angle and yet still manages to hit its mark with great accuracy almost every time.

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Undomed nests of Dipper On 7th May 1967, on Crowden Brook, Kinder Scout, Derbyshire, Mr and Mrs R. Mellors and I found a Dipper *Cinclus cinclus* incubating three eggs in an open nest by the side of a waterfall. No attempt had been made to build the usual dome and, when the bird was off, the eggs could be seen from a distance of over 20 feet. Unfortunately, I was unable to keep this nest under observation. In spring 1968 I returned to the site and found an identical new nest in the same situation, but, although I revisited this on a number of occasions in April, May and June, I found no evidence that any eggs were ever laid. In 1969 this particular territory was unoccupied, but during the ten years 1960-69 a pair of Dippers has been present here in eight breeding seasons and I have found six clutches of eggs (five of four, all in normal nests, and this one of three); at least 15 young have reached the flying stage.

PHILIP SHOOTER

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Reviews

Rehabilitation of Oiled Seabirds. A Report to the Advisory Committee on Oil Pollution of the Sea. By R. B. Clark and R. J. Kennedy. Department of Zoology, University of Newcastle upon Tyne, 1968. ii + 57 pages, including bibliography of 12 pages. 10s, post free.

The writing of this document and its production were partly financed by the World Wildlife Fund, the Royal Society for the Prevention of Cruelty to Animals, and the Royal Society for the Protection of Birds. It is a most valuable review of the literature on the subject and the extensive bibliography (some 350 references) will prove of considerable use. The scope is perhaps best given by listing the seven main headings: (1) Incidence and distribution of oil pollution and its long-term effects on bird populations, (2) Effects of oil and other contaminants on birds, (3) Rehabilitation, (4) Renewal of water-repellancy of the plumage, (5) Metabolism and nutrition, (6) Diseases of captivity, and (7) Behavioural aspects of rehabilitation.

The report emphasises the chronic, long-term aspect and the serious pollutions in other parts of the world, particularly in the Baltic and Newfoundland. Some three million tons of oil may be spilled into the sea annually; the biggest disasters have included losses of perhaps 350,000 Eiders off Massachusetts in 1952 and of some 450 Brünnich's Guillemots per lineal mile of a large area of the coastline of Newfoundland in 1959/60. The species most liable to become oiled are those that spend much of their time swimming, such as the auks and some of the sea-ducks. In Newfoundland all auks have been badly affected and the Razorbill has been practically exterminated in the last 20 years. In Finland the Long-tailed Duck (a species that apparently chooses to land on oil slicks) was reduced by 90% between 1937-40 and 1958-60.

The authors discuss the effects of oil (and of the emulsifiers used to clear it) in detail. Small patches of oil may kill a bird either by breaking down the feather arrangement and allowing water to reach and chill the body or by causing internal damage when oil is swallowed during preening.

Death by water-logging or 'exposure' has been observed among ducks polluted by less than one gram of oil. To maintain body temperature, up to twice the normal food may be required by an oiled bird, thus increasing the likelihood of death by starvation. The emulsifiers—normally used only in cases of serious, localised oilings—appear to be equally harmful in that they may cause severe dermatitis, inhibit enzyme action or affect the waterproofing of the feathers.

One of the most important aspects of rehabilitation is that of restoring the waterproofing. The authors discuss this, together with

the possibility of artificially inducing moult, and the role of the preen gland. The nutritional requirements of seabirds are large, up to 30% of their weight in fish each day. The need for salt in the diet may be partly to reduce the dangers of infections which are a common cause of mortality in birds undergoing rehabilitation. The authors stress how little is known of the pros and cons of different methods of treatment. Careful recording of the results of the many different methods currently advocated by different exponents of the 'art' of bird cleaning—it is certainly not yet a science—could rapidly increase the effectiveness of the process. Even the knowledge that certain conditions were incurable and that birds showing these should be destroyed at once would be an improvement from the humanitarian angle.

The cynic may well ask whether it is all worth it. The cost of the care of birds injured in the *Torrey Canyon* episode has been put as high as over £100 per individual released and, since in one ringed sample 44 out of the 58 released were subsequently *found* dead, one must wonder whether any of them are still alive. I have little doubt that the treatment of oiled birds could be dramatically improved, but, as most are picked up by unskilled members of the public, the methods must be very simple for there to be much chance of success. Since probably the vast majority of oiled birds die or disappear at sea, the numbers saved will never be more than a very small percentage of those affected. In many species of seabirds, however, mature individuals may have an *average* life expectancy of a further 20, perhaps even 30, years. Hence, if they could be saved, they might be important members of the breeding population for many years to come.

The review is weak on the population dynamics. It is a characteristic of natural populations that losses due to a disaster are made good in a comparatively short time. (The authors quote the Guillemot as laying only one egg and needing 53 years to double its numbers, but this is based on far too gloomy an estimate of survival rates, especially at low densities.) What birds cannot do is to survive the continual, annual battering given by the present chronic pollution of the seas. In other words, a *Torrey Canyon* every once in a while is less serious than smaller, persistent annual spillages. The latter *could* be stopped. As usual, prevention is far better than cure, but let us try to do the cure properly and humanely. CHRISTOPHER PERRINS

The Kingfisher. By Rosemary Eastman. Collins, London, 1969. 159 pages; 7 colour and 7 black-and-white plates. 30s.

This book is a first-class condensation of most of the published work on Kingfishers and, especially, of Mr and Mrs Ronald Eastman's own studies. It is also a fascinating description of the techniques and ingenuity required of a brilliant natural history film maker, and an exceptionally well written book which will surely hold the enthusiasm

of naturalists throughout its pages. The chapters on the natural history of Kingfishers are interspersed with descriptions of how the award-winning film 'The Private Life of the Kingfisher' was made. It is in the telling of this story that the book holds much of its appeal: how the birds were attracted to display, to fish and to nest in the right places and at the right times; how on several occasions, through their vigilance, the Eastmans were able to save the lives of the adults and their young when weather and human interference threatened disaster; and how, despite apparently impossible obstacles, Kingfishers were filmed without disturbance, in the wild, under water *and* with ultra high speed camera equipment. A truly astonishing achievement.

Two small points of criticism, I did find the index rather scanty, and I felt like quibbling with one or two almost trite remarks, such as 'this is the rule of nature: eat and be eaten. Nature may be compellingly beautiful but it is also incomparably cruel.' The illustrations, both colour and black-and-white, are superb. Perhaps they are rather few, but at the price I suppose it is unreasonable to expect more. I particularly liked the Kingfisher cover of royal blue and russet red. In all, an award-deserving book about an award-winning film.

ANTHONY CLAY

Letters

Bill-length as a field-character of the White-winged Black Tern? In his paper on 'Juvenile and winter plumages of the marsh terns' (*Brit. Birds*, 53: 243-252) Kenneth Williamson differentiated without qualification between the bill of the Black Tern *Chlidonias niger* as 'long, slender and looking slightly decurved' and that of the White-winged Black Tern *C. leucopterus* as 'short and stubby' (p. 249) and he stressed such a difference in two other places (pp. 244, 250). This has led observers to look at the bill as an essential feature in the field identification of these two species, especially in non-breeding plumages and when, as is often the case, the dark carpal mark on the Black Tern is difficult to detect. I think, however, that a word of warning would not be out of place, the more so when one reads Mr Williamson's emphasis that 'in some cases the conclusions are tentative and need further testing in the field' (p. 251).

On 24th September 1968, at Akeragh Lough, Co. Kerry, Dr L. H. Byrne, F. King and I were watching three marsh terns. One was an immature Black Tern and another we had little difficulty in identifying as an immature White-winged Black Tern, but the third puzzled us because of the length of its bill. Luckily, all three alighted on adjacent posts about 20 yards from us, which gave us ample opportunity for direct comparison. As we had noticed in flight, the immature Black

Tern had a longer and thinner bill than the stubby one of the immature White-winged Black Tern, but the bill of the third looked longer than that of either of the other two. Yet the rest of its field characters showed this long-billed individual to be an adult White-winged Black Tern in transition to winter plumage. Had it just been seen in passing, without ample views of plumage characters, the bill length would have been thought to rule out this species. R. F. RUTTLEDGE

Doon, Newcastle, Co. Wicklow

Status of Little Terns in Great Britain and Ireland in 1967 With reference to the recent paper by R. K. Norman and D. R. Saunders (*Brit. Birds,* 62: 4-13), I should like to point out that no Little Terns *Sterna albifrons* nested in Co. Durham in 1967 and, indeed, had not done so since 1962 until they returned in 1969. The 1967 colony listed under Durham was, in fact, in Yorkshire and was duplicated by Messrs Norman and Saunders under that county; at the same time I am told by N. W. Harwood, who photographed there twice, that on his second visit five pairs were nesting (i.e. neither four nor three as stated). All the pairs hatched young, although whether any of these fledged successfully is another matter. This colony was deserted in 1969 when two nests were again found on the Durham bank of the Tees estuary and so it seems likely that the same birds have been involved on both sides of the county boundary. PHILIP J. STEAD

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D. R. Saunders has checked his cards and confirmed that this colony was reported under both 'Teesmouth' and Yorkshire in 1967 by different observers who also recorded four and three pairs as quoted in the paper. It is now clear, however, that the colony was in Yorkshire in 1967 and that at the time of Mr Harwood's second visit there were five breeding pairs. EDS

Large roosts of Wrens in nest-boxes With reference to Miss Winifred U. Flower's record of 61 Wrens *Troglodytes troglodytes* roosting in a nest-box (*Brit. Birds,* 62: 157-158), it may be worth noting that there is a larger previous total than the 46 mentioned by the Reverend Edward A. Armstrong in his accompanying comment. From 1st to 9th January 1963, during the severe cold spell, Wrens occupied a roost in a nest-box belonging to Mr T. V. Pretty at Parkhurst, Isle of Wight. A careful count at dusk on 8th January showed that 51 entered the box that evening. The record was published in the Isle of Wight Bird Report for 1963 (*Proc. I.W. Nat. Hist. & Arch. Soc.,* 5: 432), and the B.B.C. made an amusing television film which was subsequently shown in a regional news programme. J. STAFFORD

Westering, Moor Lane, Brighstone, Isle of Wight

News and comment *Robert Hudson*

Maltese birds There was a time, not so long ago, when the average British bird-watcher confined his attention to the birds of his own islands. In this affluent age, however, with faster (though not cheaper!) transport, an increasing number travel abroad, especially to the Mediterranean. Visitors like to know beforehand what birds they are likely to see. English-language literature is available for most Mediterranean regions (though there is a niche for anyone who cares to write up the birds of the Balearic Islands); the latest addition is *A Revised Check-list of the Birds of the Maltese Islands* by C. De Lucca, published by E. W. Classey Ltd, 353 Hanworth Road, Hampton, Middlesex, at a price of 16 shillings. This 95-page publication is, as its title suggests, a check-list from the traditional mould, with subspecies listed (and numbered) separately; 333 species, divided into 364 forms, are admitted. Information on status is exceedingly brief—generally two or three lines except where occurrences of vagrants are listed—and because of this the visitor to Malta should really also have E. L. Roberts's *The Birds of Malta* (1954), if he can obtain a copy of that out-of-print book. Nevertheless, the *Check-List* does give the foreign observer the means to check the likelihood of his identifications. By all means see Cory's Shearwater and Blue Rock Thrush (both breeding species), but if you think you have identified Stock Dove or Redwing, for example, then your fieldnotes had better be good!

There is in Malta a strong tradition of netting and shooting, with no close season, and cage-bird keeping is very popular. On such a small island, excessive slaughter has a deleterious effect on the breeding bird populations. The small but vigorous Malta Ornithological Society is agitating for legal restrictions on bird hunting, and favourable press reaction was (at least in part) responsible for a recent debate on bird protection in the Maltese House of Representatives; Members on both sides of the House voiced the need for an enforced close season, and an all-party committee was set up to examine the matter.

Belgian protection moves In 'News and comment' in September 1968 I referred to the need for a revision of bird protection laws in Belgium, for which there has been widespread demand within that country. A recent Royal Decree has gone a long way towards ending the exploitation of small birds. Though there is to remain a short open season (1st October to 15th November) for the trapping of birds to be kept in captivity, it is now illegal for wild-caught birds to be transported, sold, imported or exported. These prohibitions ought to eliminate commercial aspects of Belgian bird-catching, though one must expect some clandestine trade to persist; this will be hazardous, however, since the Royal Decree further forbids dealers to keep birds in shops and warehouses. Nets must not be larger than 7 × 2 metres, and therefore mass captures (so common in the past) should be impossible. These moves were long overdue, but are none the less welcome.

A come-back by the Whooping Crane? One of the best-known conservationist battles is that to preserve the North American Whooping Crane from extinction. In 1941 there were only 23 living, two in zoos and 21 in the wild; of the latter, only 11 were breeding adults (from their behaviour). At that time the surviving breeding ground was unknown, while the small Texas wintering area was threatened by drainage, by oil prospectors and by the military. The outlook was bleak. The now famous Aransas National Wildlife Refuge in Texas came into being, however, and massive propaganda was directed at hunters to reduce the number of Whooping Cranes shot out of ignorance while on migration; then in 1954 the breeding area was discovered—in an existing Canadian national park. Slowly but surely the numb er

of Whooping Cranes has increased, and in January 1969 the total had risen to a record 68. This is still too low a number to guarantee the continued survival of the species, but the steady increase gives cause for optimism. Of these 68 individuals, 50 are wild and 18 in captivity. It has been discovered that, though this crane lays a clutch of two eggs, normally only one chick is reared. Because of this, biologists have developed a technique of collecting one egg from each nest discovered and hatching this artificially; Whooping Cranes will breed in captivity, and it is hoped to establish a captive breeding stock as a form of 'insurance' against any future catastrophe to the wild population.

Kodak/R.S.P.B. photographic exhibition 'Flying Free' was the title given to an exhibition of bird photographs, organised jointly by Kodak and the Royal Society for the Protection of Birds, and held in London in April. Dr J. J. M. Flegg has given me his impressions:

The appetite was whetted in the entrance hall by a series of superb colour transparencies by Eric Hosking of a Kingfisher in flight; but the continued recurrence of the traditional approach to bird photography (two out of three were taken at the nest), coupled with some conspicuous absentees among known exponents of stalking, tended to reduce the attractiveness of the exhibition. Following an initial section devoted to the fathers of bird photography, with examples of their work and techniques, the viewer passed through a series of large-scale colour and black-and-white prints, with a few colour transparencies, roughly categorised by habitat. Mostly the quality was fairly high, but, surprisingly, both the 'Garden' and 'Coastal' sections were disappointing. Throughout, the masterly touch of Eric Hosking could be seen, and his standards were matched by series shown by Stephen Dalton and Arthur Gilpin. Other examples to catch the eye were M. D. England's back-lit Buzzard, W. S. Paton's Kittiwake and Dr Pamela Harrison's stalked (if the word applies to this species) Nutcracker. It was interesting to see Robert Gillmor using an even more accurate artistic medium than usual, but artistically the show was perhaps stolen by Bobby Tulloch with an evocative line of silhouette Herons fishing against a sunset (since reproduced on the cover of the R.S.P.B. magazine, *Birds*). On leaving, one was brought back to earth in passing again the two panels of 'old masters' by G. K. Yeates: will his Great Northern Diver, for example, ever be equalled?

Memorial to Canon Hervey The late Canon G. A. K. Hervey was a well-known Lake District ornithologist, being a popular lecturer and field party leader, regional representative of the British Trust for Ornithology, and founder of the *Field Naturalist* (now, alas, defunct) and of the flourishing Lake District Naturalists' Trust. This Trust is now creating a permanent memorial, in the form of a reserve on part of Whitbarrow Scar in the Lyth Valley (near Kendal), which it has had the opportunity to purchase on most generous terms. This limestone area, with a rich flora and fine panoramic views, will now be known as the 'Canon Hervey Memorial Nature Reserve'.

Fair Isle's new bird observatory An appeal for funds to provide new bird observatory buildings on Fair Isle was made last summer (see 'News and comment' in July 1968). As a result of the substantial support received, including handsome donations by the National Trust for Scotland, the Carnegie United Kingdom Trust, the Dulverton Trust, the Pilgrim Trust and various private donors, work on the new bird observatory was able to begin in May. This will be a system-built timber building costing £51,000 (excluding site services) and will provide accommodation for 24 visitors in single and double rooms, plus dormitories at cheaper rates for young enthusiasts; a bird-ringing room, laboratory, darkroom and library are included. It is hoped that the building will be completed during this summer.

The observatory began in 1948, basically as a station for the scientific study of bird migration, but has now assumed an important role in the island's economy. It purchases its stores from the island shop, and fresh vegetables and meat from the crofters. Visitors buy the famous Fair Isle hand-knitting, and make the boat (a vital link) profitable. The National Trust for Scotland, which owns the island, has provided electricity, water and drainage to the crofts, and encouraged land improvements. At a time when other small island communities are giving up the struggle and moving to the mainland, Fair Islanders can now look with confidence to the future. Youngsters who had left are returning. The island has come alive.

Toxic chemicals in Sweden Following a conference on the use of toxic chemicals in agriculture and industry, held in Stockholm in March, the Swedish National Poisons and Pesticides Board issued a statement to the effect that from 1st January 1970 every use of aldrin and dieldrin will be forbidden, that the use of DDT and lindane in household and garden preparations will likewise be prohibited, and that other uses of DDT will be severely limited for a two-year trial period. The preceding conference stated clearly that while there was no immediate health risk to man in the present use of chlorinated hydrocarbon pesticides, nevertheless it had been demonstrated that there were considerable risks to the environment as an integrated biological system. The British expert at the conference was Dr N. W. Moore of the Nature Conservancy's Monks Wood Experimental Station; it was clear that the ecological and toxicological work done in Britain, much of it under Dr Moore, played an important part in influencing the decisions of the Swedish Pesticides Board.

Sweden is not so intensively farmed as most other European countries, and thus the virtual prohibition there of the persistent chlorinated hydrocarbons will not arouse an outcry such as might a similar ban in this country. Nevertheless, Sweden has pointed the way. Herbicides and pesticides are with us to stay; but the emphasis should be towards the development of non-persistent, and eventually pest-specific, compounds, and further limitations on the use of DDT and its metabolities might encourage research along those lines.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Requests for information

Colour-marked Sandwich Terns In connection with the final year of a study of post-fledging dispersal in the Sandwich Tern *Sterna sandvicensis*, a large number of chicks have been marked with white and red colour rings; some have also been given two-colour patagial wing tags which may or may not carry a two-digit number in black. These chicks are related to adults marked with similar tags which bear a single digit followed by a letter; parents and offspring are likely to be found in the same flock. Numbers and letters can be read fairly easily at 300 yards with a 60× telescope. While all sightings are of interest, coverage of the western coasts of the British Isles is particularly wanted. Anybody who sees or has seen one of these marked Sandwich Terns is asked to send details to **A. J. M. Smith, 68 Woodend Place, Aberdeen AB2 6AN,** who will refund postage.

Status of the Eider in Ireland Data are being collected on the distribution of the Eider *Somateria mollissima* in Ireland to assess the status of the species in that country. A summary will be published if sufficient information is received and so observers are asked to make it clear if they wish localities to be treated as confidential. Please send any records of Eiders in Ireland, whether breeding or not, **to Michael P. Walters, 74 Grange Road, Ealing, London W5.**

Recent reports

I. J. Ferguson-Lees and J. T. R. Sharrock

These are largely unchecked reports, not authenticated records

This summary covers April 1969 and all dates refer to that month. An annual feature of April (and, more particularly, May) is the occurrence of vagrants from further south in Europe, including some which have overshot on their way north. Among records in this southern category were a male **Red-footed Falcon** *Falco vespertinus* at Cley (Norfolk) on 24th; **Kentish Plovers** *Charadrius alexandrinus* at Ferrybridge, near Weymouth (Dorset) on 14th, at Havergate Island (Suffolk) on 18th, 19th and 23rd, and at Minsmere (Suffolk) on 24th; a **Whiskered Tern** *Chlidonias hybrida* at Belvide Reservoir (Staffordshire) on 27th; an **Alpine Swift** *Apus melba* at Pett (Sussex) from 14th to at least 16th; and a **Red-rumped Swallow** *Hirundo daurica* near Beverley (Yorkshire) from 16th to 20th. Single **Spoonbills** *Platalea leucorodia* at Minsmere on 1st-5th and at Chew Valley Lake (Somerset) on 13th and 21st, as well as a **Purple Heron** *Ardea purpurea* at Minsmere on 19th, had presumably come from the Netherlands. A spate of **Red Kites** *Milvus milvus*, likely to be wanderers from the Continent, included one at Egginton (Derbyshire) on 8th, one at Old Leake (Lincolnshire) on 9th and proably the same bird at East Keal (Lincolnshire) on 12th, two at Ludham and one at Worstead (both Norfolk) on 16th and one at Norwich on 22nd, and one at Vane Farm, Loch Leven (Kinross) on 26th; another at Ulverscroft (Leicestershire) on 26th and 27th was afterwards found dead at Shepshed and seems to have been an escape. Other southern species included a **Spotted Crake** *Porzana porzana* at Donna Nook (Lincolnshire) on 10th; a few **Hoopoes** *Upupa epops* north to Dunstable (Bedfordshire) on 1st and west to Cape Clear Island (Co. Cork) on 8th and 20th; and a **Golden Oriole** *Oriolus oriolus* at Newington (Kent) on 25th. Incidentally, the first **Savi's Warbler** *Locustella luscinioides* was reported at the Kent breeding site on 19th. Among early summer visitors we might mention a **Swift** *Apus apus* at Packington (Warwickshire) on 3rd and a **Turtle Dove** *Streptopelia turtur* at Bromsgrove (Worcestershire) on 7th.

Vagrants from other directions were rather few. Eastern birds included a **Richard's Pipit** *Anthus novaeseelandiae* on Bryher (Isles of Scilly) on 20th; **a Little Bunting** *Emberiza pusilla* at Barn Elms Reservoir (Surrey) on 27th-28th; and lingering **Nutcrackers** *Nucifraga caryocatactes* from the 1968 invasion in Yorkshire, Lincolnshire and Kent. Among arctic species on their way north there were a male **King Eider** *Somateria spectabilis* in Ronas Voe (Shetland) from 19th and **Rough-legged Buzzards** *Buteo lagopus* at Minsmere on 3rd and at Sandwich Bay (Kent) on 10th. American vagrants included a **Pectoral Sandpiper** *Calidris melanotos* at Frodsham Marsh (Cheshire) on 27th and a **Laughing Gull** *Larus atricilla* at Ruan High Lanes (Cornwall) on 15th; the Dorset **Laughing Gull** (*Brit. Birds*, 61: 164, 207) was still to be seen at Radipole Lake, where two other Nearctic birds were a **Green-winged Teal** *Anas crecca carolinensis* on 4th and a **Bonaparte's Gull** *L. philadelphia* on 8th.

Finally, there were several interesting seabirds, among them a **Black-browed Albatross** *Diomedea melanophris* off Hornsea (Yorkshire) on 24th; a **Balearic Shearwater** *Puffinus puffinus maureanicus* off Cape Clear Island on 12th, and an early **Cory's Shearwater** *Calonectris diomedea* off Dungeness (Kent) on 13th (there were a few April records in 1965 and 1968 too). A **Caspian Tern** *Hydroprogne tschegrava* was seen at Worthing (Sussex) on 30th. **Mediterranean Gulls** *L. melanocephalus* included one at Formby Point (Lancashire) late in the month. More inland **Glaucous Gulls** *L. hyperboreus* (*Brit. Birds*, 61: 128, 164, 208) were reported at Upper Bittell Reservoir (Worcestershire) on 20th and at Staunton Harold (Derbyshire) on 22nd.

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Sunbathing behaviour of birds

R. J. Kennedy

Many species of birds have been observed in sunbathing postures and it is clear that the behaviour is not rare, but its significance remains obscure. This short review discusses sunbathing in general terms and, in the hope of providing a basis for future work, lists the species for which I have been able to find records.

The literature on sunbathing by birds is small: it consists of short notes on specific records, tentative suggestions concerning its possible significance, and brief general summaries (e.g. Simmons 1964). The only detailed paper is that by Hauser (1957), which described sunning by 33 species observed over nearly a year in the United States of America. The subject has been neglected and largely left to amateur description, and almost no experimental work has been undertaken. It is likely that I have overlooked many descriptions of sunbathing, especially where these are hidden away in literature which, by title, may not appear relevant. Nevertheless, that should not invalidate the general statements made here.

BEHAVIOURAL ASPECTS

Hauser (1957) distinguished two types of sunning. These were *voluntary,* 'an attitude assumed by a bird apparently for reasons of health and well-being, accompanied by preening', and *compulsory*, 'the same attitude assumed when a bird is suddenly and apparently unexpectedly exposed to direct sunlight, under more or less extreme conditions of humidity and heat. This response . . . appears to be unpremeditated and irresistible.'

The typical attitude is spread-eagled with tail and wings spread, contour feathers ruffled, mandibles parted and the eye facing the sun wide open (e.g. Dilger 1956). *Ruffling* of the feathers (complete erection) was distinguished from *fluffing* (partial erection) by Morris (1956). Fluffing improves insulation by increasing the volume of air trapped

in the plumage; ruffling, on the other hand, greatly decreases it. Morris considered that such ruffling was a thermoregulatory response and, associated as it is with gaping, this certainly is the likeliest explanation. It also has the effect, however, with the spreading of remiges and rectrices, of exposing the maximum possible surface area of feathers to the sun. Similar responses are shown by birds shielding their young from the sun: Brown and Davies (1949) described a sudden raising of one wing when a Reed Warbler *Acrocephalus scirpaceus* appeared to be suffering from heat exposure whilst shielding its young, and they suggested that this facilitated heat loss by exposing the subclavian vein to the air. It may therefore be significant that the underwing is exposed by some species during sunbathing—for example, pigeons (Goodwin 1967b), hirundines (Barlow, Klaas and Lenz 1963), Treecreeper (Buxton 1950) and Dunnock (Teager 1967).*

Hauser (1957), Barlow, Klaas and Lenz (1963) and Teager (1967) pointed out that sunning is frequently a social act, and that single birds attract others of the same and other species to do likewise. Aggressive displays and attempted copulation may occur at the same time, as has been noted among Cliff Swallows (Barlow, Klaas and Lenz 1963). This attracting of other birds can result in synchronised sunning, which may be advantageous in reducing the probably great risk of predation when a bird is in this vulnerable position. Hobbs (1958) recorded social sunning by White-necked Herons and Straw-necked Ibises in Australia, and it is interesting that Taylor (1957) described a similar incident with Grey Herons and Yellow-billed Storks in Africa, though he was unaware of its significance. Hauser (1957) noted that some birds favoured particular sites where repeated sunning might occur over a period of months.

Sunbathing has been classified under 'maintenance behaviour' and 'care of the body surface', and Nicolai (1962) has shown that the postures adopted by pigeons for rain-bathing and sunbathing are very similar, suggesting a common derivation. Rothschild and Clay (1952) thought it likely that anting had been derived in the course of evolution from sunbathing. The postures adopted in sunning vary somewhat between different families, and to a slight extent between related species, but far more detailed observation is necessary before this aspect can be usefully reviewed. The sunning bird is invariably orientated in such a way that the sun strikes the largest possible area of plumage. Lanyon (1958) showed that birds sometimes adopted a sunning posture when subjected to heat alone, and it is generally held to be a simple temperature response (Morris 1956, Simmons 1964). A very good case can be made for this being the explanation for Hauser's 'compulsory sunning', i.e. a heat dissipation mechanism, but the existence of 'voluntary

*Scientific names of species not given in the text will be found in the appendix on pages 256-258.

sunning' certainly requires some further explanation.

Simmons (1964) considered that sunbathing had both innate and learned components, and Nice (1962) and Dilger (1956) both established that the posture was adopted in early life. Many reptiles, especially lizards, sunbathe regularly, and in their case it is connected with temperature regulation, heat being absorbed (Prosser and Brown 1965). Hauser (1957) showed that birds often sunbathe after periods of rain and days without sun. Brown and Amadon (1968) noted that the New World vultures sun themselves especially in the morning, before leaving the roost, and in the evening. Since these authors also stated that the body temperature of the Turkey Vulture drops at night, sunning in this group is likely to be connected with heat absorption. This may apply as well to the nightjars, which are heterothermic.

THE FUNCTIONS OF SUNBATHING

The widespread occurrence of voluntary sunning among birds indicates that it is probably a basic and phylogenetically old response, common to most or all. As noted above, the risk of predation in this vulnerable posture is likely to be great. If this is so, the likelihood that the behaviour has survival value is increased. It is of course possible that sunning has different functions in different species or several functions in the same species. Its possible significance has been briefly discussed by Harrison (1946), Gibb (1947), Wynne-Edwards (1947), Simmons (1964) and Goodwin (1967a). The suggestions which have been put forward are reviewed below.

(1) *That it is a pleasurable stimulus connected with heat absorption*

A bird undergoing voluntary sunning has, in anthropomorphic terms, the appearance of 'ecstasy', and it is a very reasonable supposition that it seeks out warmth and receives satisfaction from basking in the sun. This view has led some workers to dismiss sunning as a simple temperature response and of no further significance. There is no reason, however, why sunning should not have additional adaptive significance, at least at the 'voluntary' level: indeed, this is likely if the behaviour is old. Most birds are of course strict homiotherms, and therefore sunning as a mechanism of raising body temperature must have far less importance than in reptiles. If other functions of sunning exist, then it is quite possible that selection has increased the level of 'pleasure', with the effect that the behaviour is indulged in frequently. But this is speculation.

(2) *That sunlight increases the mobility of ectoparasites, making easier their removal by subsequent preening*

The only evidence to support this view is the fact that sunning is usually interspersed with, or followed by, preening. No analyses have

been made of the contents of the crops of birds which have been sunbathing, and to determine whether sunlight does have this effect would also necessitate a study of the effectiveness of normal preening. The responses of ectoparasites to sunlight and temperature are unknown; the results of the few studies made on the temperature responses of Mallophaga are ambiguous (Stenram 1956).

(3) *That birds may sunbathe to dry wet plumage*

This is certainly true in some circumstances, but is not of course applicable to all cases. Among the mousebirds (Coliidae), communal sunbathing is most frequent after rain or dew which has caused their soft hair-like plumage to be drenched with moisture (Rowan 1967). Bannerman (1956) recorded that when some Griffon Vultures had been wetted by a heavy shower and the sun then came out, they sat with outspread wings, drying their feathers: he also noted that this species uses the same posture for normal voluntary sunning. New World vultures likewise sit in the sun with outspread wings to dry their plumage —as has been observed in the California Condor and the American Black Vulture (Brown and Amadon 1968)—and this is an interesting case of parallelism. It is, of course, well known that similar behaviour in the cormorants (Phalacrocoracidae) and darters (Anhingidae) is almost certainly connected with plumage-drying (Rijke 1968).

(4) *That sunbathing results in vitamin D production*

It has repeatedly been suggested that sunning results in production of vitamin D from a precursor in the preen gland secretion which has been spread over the surface of the feathers during preening. Indeed, this has even been stated as fact by, for example, Moore (1953), Rothman (1954), Stoves (1957), Simmons (1964) and Prosser and Brown (1965). The evidence is ambiguous, however, and it was briefly reviewed by Kennedy (1968). Hauser (1957) stated: 'When a bird is in the sunbathing position with its back to the sun, the feathers at the rump are raised so high that they fully expose the naked preen gland.' A photograph of a sunning Blackbird by C. W. Teager (plate IV in Rothschild and Clay 1952) illustrates this well: the upper tail-coverts and the feathers of the rump are raised, so that the nipple of the preen gland and most of its outline are clearly visible and exposed to the sun's rays.

Hart *et al.* (1924) showed that, on a ration low in vitamin D, chicks receiving no sunlight were listless and inactive, rough of feather and awkward in gait, and that they died within six weeks, while others given sunlight were alert and active, with almost normal feathering. It is clear that sunlight has an alleviating effect on rickets in hens and turkeys (Reed, Struck and Steck 1939), but whether sunbathing in the wild has the function of producing vitamin D in the way outlined above is debatable. Kelso (1952, 1955), however, did demonstrate that

the Salkowski test for cholesterols gave a strong reaction with feathers previously exposed to sunlight. He also believed that feather-eating by captive Screech Owls *Otus asio* enabled them to procure vitamin D (Kelso 1946). Feather ingestion is well known for grebes (e.g. Nice 1962) and is a pathological condition among some domestic birds—for example, Muscovy Ducks *Cairina moschata* (von Faber 1964)—but in the case of grebes it has been suggested that feathers protect the gut from perforation by fish bones. Some groups—e.g. bustards (Otididae), some parrots (Psittacidae) and some pigeons (Columbidae)—are without preen glands, and these glands are atrophic in others. Do these birds indulge in sunning? The Blue-headed Quail Dove has been recorded sunbathing (Nicolai 1962), although it belongs to the genus *Starnoenas* in which the preen gland is absent (Garrod 1874).

Rickets has apparently never been observed in wild birds, although other avitaminoses have been, such as lack of vitamin A (Notini 1941), so it is difficult to guess at their vitamin D requirements and the sources available to them. It is likely that most of the vitamin comes from the diet, and there are likely to be differences in the amounts needed both by different species and at different times by the same individual. Irradiation of hens' eggs increases hatchability (Reed, Struck and Steck 1939) and this may be because vitamin D is produced. What can be the vitamin D requirement of the developing embryos of hole-nesting species? Is more of the vitamin present in their eggs than in those of open nesters? It is possible that dietary vitamin D might be supplemented in some species with vitamin D formed during sunning, either from the provitamin circulating in the superficial blood of exposed areas of skin such as the legs or beak, or from the provitamin alleged to be present in preen gland secretions.

It is known that the calcium requirements of birds are increased during moulting (e.g. Meister 1951, Simkiss 1967), and Hauser (1957) stated from her experience of several hundred sunning incidents: 'Young birds are seen sunbathing more frequently than adults except during the late summer molting season when many adult birds in all stages of molt may be seen preening and sunning.' Similarly, records of sunning received by Gibb (1947) suggested that juveniles were more prone than adults to sunning, and he noted that the dates showed a tendency to concentrate round times of moult. Extensive field observations are needed to determine if this suggested tendency is a real one: it could simply be that, in general, the timing of moulting, by selection, coincides with sunny spells, since these are usually times when most food is available, and that sunning is indulged in as a natural consequence without adaptive significance to moulting.

(5) *That sunbathing plays a role in moulting*

Harrison (1946) suggested that sunning at the time of moulting might

have an effect unconnected with vitamin D production. He stated: 'It seems most significant that a crepuscular and nocturnal species such as the Tawny Owl should deliberately seek out perches directly exposed to the full influence of solar rays at the season of moult.' He was convinced that sunning had an important role in moulting: 'It seems reasonable to assume that this may operate not only through its local effects in stimulating the feather papillae to develop, but also through the central nervous and endocrine systems.'

(6) *That it increases the flow of the preen gland secretion*

As stated above, the preen gland may be exposed during sunning, and sunning is invariably followed by preening. The role of the preen gland secretion is as yet uncertain (Clark and Kennedy 1968), but it presumably functions in plumage care. Preen glands are homologous with mammalian sebaceous glands, and so it is of interest that sebaceous gland function is markedly dependent on atmospheric temperature (Rothman 1954). It is therefore possible that sunning does increase preen gland secretion, and that the behaviour is thus connected with feather care.

DISCUSSION

The most probable explanation for compulsory sunning is clearly heat dissipation. It is also likely that, in some circumstances, voluntary sunning is done to accumulate warmth. The suggested explanations of plumage care and vitamin D production are as yet speculative and need further evidence. The appendix on pages 256-258 may be more illuminating from the point of families not included, since it is evident that sunning is widespread. It seems clear from this list, however, that herons, birds of prey, rails, doves, larks, swallows, thrushes, finches and buntings are groups which are particularly prone to sunning. The further accumulation of single records of voluntary sunning is of least importance, and attention should now be given to the postures adopted, any associated behaviour and the frequency of occurrence throughout the year, as well as to the functional interpretation. A study of postures adopted may be of use in understanding the derivation of sunning and its connection with other 'comfort movements', as well as (with care) in shedding light on the relationships of different groups.

The sort of evidence which would shed light on, for example, the vitamin D hypothesis would be the incidence of sunning relative to the amount of sun in a temperate species (or population) relative to a tropical one. It would also be of interest to determine the amount of time which individuals of different species spend sunning during the day (which would best be done by colour-ringing) and to compare this with the amount of time spent on such essential activities as feeding.

It is possible that the amount of time spent on the various 'comfort movements' may be greater when more 'free' time is available. If this were the case, it would tend to suggest that such behaviour is of little importance in the lives of birds from the point of view of survival. It seems very likely that all movements concerned with care of the body surface are performed after other needs are satisfied, i.e. they are of secondary importance in the daily schedule and fitted into it as such. Above a certain minimal level, such behaviour may be entirely superfluous.

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SUMMARY

The sunbathing behaviour of birds is described and the very scattered literature reviewed. Various suggested functions are discussed under six appropriate headings on pages 251-254. At this stage it can only be said that the significance of the behaviour is as yet obscure, but it is certainly widespread among birds in many parts of the world. The appendix on pages 256-258 lists over 170 species of 48 families and subfamilies which have been recorded sunbathing. Groups which seem particularly well represented include the herons, birds of prey, rails, doves, larks, swallows, thrushes, finches and buntings.

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Appendix. Species recorded sunbathing

Where a date follows the authority, the relevant publication is listed in the references. Where no authority but a locality is given, the observation is by I. J. Ferguson-Lees. Where an authority but no date is given, the observation was *in litt.* to *British Birds*. It should be noted that this is necessarily a composite list, including both compulsory and voluntary sunning (see page 249).

PODICIPITIDAE
Great Crested Grebe *Podiceps cristatus* (young) (Rankin 1947)

PROCELLARIIDAE
Fulmar *Fulmarus glacialis* (Mason 1950)

SULIDAE
Blue-faced Booby *Sula dactylatra* (Nelson 1967)
Red-footed Booby *Sula sula* (Nelson 1968)
Brown Booby *Sula leucogaster* (Dorward 1962)
Australian Gannet *Sula serrator* (Warham 1958)

ARDEIDAE
Green Heron *Butorides virescens* (Hauser 1957)
Grey Heron *Ardea cinerea* (Boyd 1950, Rooke 1950, Tully 1950, Lowe 1954, Taylor 1957)
Purple Heron *Ardea purpurea* (Gush 1951)
Great Blue Heron *Ardea herodias* (see Tully 1950)
White-necked Heron *Notophoyx pacifica* (Hobbs 1958)
Cattle Egret *Bubulcus ibis* (Gush 1951)
Bittern *Botaurus stellaris* (J. C. Rolls)

CICONIIDAE
Yellow-billed Stork *Ibis ibis* (Taylor 1957)

THRESKIORNITHIDAE
Straw-necked Ibis *Threskiornis spinicollis* (Hobbs 1958)

ANATIDAE
Tufted Duck *Aythya fuligula* (Rogers 1950)
Mute Swan *Cygnus olor* (Hiley 1969)

CATHARTIDAE
Turkey Vulture *Cathartes aura* (Brown and Amadon 1968)
Black Vulture *Coragyps atratus* (Brown and Amadon 1968)
California Condor *Gymnogyps californianus* (Koford 1953, Brown and Amadon 1968)

ACCIPITRIDAE
Griffon Vulture *Gyps fulvus* (Spain)
Bateleur *Terathopius ecaudatus* (Nigeria)
Black Kite *Milvus migrans* (Gibb 1947, Brown and Amadon 1968)
Double-toothed Kite *Harpagus bidentatus* (Brown and Amadon 1968)
Pallen Harrier *Circus cyaneus* (Brown and Amadon 1968)

FALCONIDAE
Peregrine *Falco peregrinus* (Britain)
Eleonora's Falcon *Falco eleonorae* (Vaughan 1961)
Spot-winged Falconet *Spiziapteryx circumcinctus* (Brown and Amadon 1968)

PHASIANIDAE
Red-legged Partridge *Alectoris rufa* (Goodwin 1953)
Pheasant *Phasianus colchicus* (Britain)
Domestic Fowl *Gallus domesticus* (Nice 1962)

RALLIDAE
Virginia Rail *Rallus limicola* (Nice 1962)
King Rail *Rallus elegans* (Nice 1962)
Water Rail *Rallus aquaticus* (Heinroth and Heinroth 1924)
Wyenne Wood Rail *Aramides cajanea* (Nice 1962)
Sora Rail *Porzana carolina* (Nice 1962)
Little Crake *Porzana parva* (Koenig 1943, Bauer 1960)
Corncrake *Crex crex* (Heinroth and Heinroth 1924)
Moorhen *Gallinula chloropus* (Heinroth and Heinroth 1924)
Coot *Fulica atra* (Kornowski 1957)

CHARADRIIDAE
Killdeer *Charadrius vociferus* (Davis 1943)

SCOLOPACIDAE
Snipe *Gallinago gallinago* (Mason 1950)

LARIDAE
Royal Tern *Sterna maxima* (Hauser 1957)
Sooty Tern *Sterna fuscata* (Watson 1908)
Brown Noddy *Anous stolidus* (Watson 1908)
Black Noddy *Anous tenuirostris* (Dorward 1962, Cullen and Ashmole 1963)

COLUMBIDAE
Stock Dove *Columba oenas* (Britain)
Rock Dove *Columba livia* (Nicolai 1962)
Woodpigeon *Columba palumbus* (Gibb 1947)
Turtle Dove *Streptopelia turtur* (Bentham 1957; Britain)
Laughing Dove *Streptopelia senegalensis* (Nigeria)
Collared Dove *Streptopelia decaocto* (Nicolai 1962; Britain)
African Collared Dove *Streptopelia roseogrisea* (Nicolai 1962)
African Mourning Dove *Streptopelia decipiens* (Nigeria)
American Mourning Dove *Zenaidura macroura* (Hauser 1957, Nicolai 1962)
Galápagos Ground Dove *Nesopelia galapagoensis* (Nicolai 1962)
Ground Dove *Columbigallina passerina* (Hauser 1957)
Inca Dove *Scardafella inca* (Johnston 1960)
Blue-headed Quail Dove *Starnoenas cyanocephala* (Nicolai 1962)
Grey-faced Quail Dove *Geotrygon caniceps* (Nicolai 1962)
Ruddy Quail Dove *Geotrygon montana* (Nicolai 1962)
Gold-billed Ground Dove *Columbina talpacoti* (Nicolai 1962)
Plain-breasted Ground Dove *Columbina minuta* (Nicolai 1962)
Bare-faced Ground Dove *Metriopelia ceciliae* (Nicolai 1962)
Luzon Bleeding-Heart *Gallicolumba luzonica* (Nicolai 1962)
Common Bronzewing *Phaps chalcoptera* (Nicolai 1962)
Brush Bonzewing *Phaps elegans* (Nicolai 1962)
Crested Pigeon *Ocyphaps lophotes* (Nicolai 1962, Goodwin 1967a)
Zebra Dove *Geopelia striata* (Nicolai 1962)
Diamond Dove *Geopelia cuneata* (Nicolai 1962)

CUCULIDAE
Yellow-billed Cuckoo *Coccyzus americanus* (Cracraft 1964)
Guira Cuckoo *Guira guira* (Durrell 1956)

TYTONIDAE
Barn Owl *Tyto alba* (Gibb 1947, Bentham 1962)

STRIGIDAE
Little Owl *Athene noctua* (Gibb 1947)
Tawny Owl *Strix aluco* (Harrison 1946, Burton 1959)

CAPRIMULGIDAE
Nightjar *Caprimulgus europaeus* (Gibb 1947)

COLIIDAE
Mousebirds *Colius spp.* (Rowan 1967)

MEROPIDAE
Bee-eater *Merops apiaster* (Jordan)
Blue-cheeked Bee-eater *Merops superciliosus* (Nigeria, Jordan)
Least Bee-eater *Merops pusillus* (Nigeria)

UPUPIDAE
Hoopoe *Upupa epops* (Nigeria)

PICIDAE
Yellow-shafter Flicker *Colaptes auratus* (Hauser 1957)
Red-bellied Woodpecker *Centurus carolinus* (Hauser 1957)
Golden-fronted Woodpecker *Centurus aurifrons* (Hauser 1957)

TYRANNIDAE
Crested Flycatcher *Myiarchus crinitus* (Hauser 1957)
Wood Pewee *Contopus virens* (Hauser 1957)

ALAUDIDAE
Short-toed Lark *Calandrella cinerea* (Spain)
Lesser Short-toed Lark *Calandrella rufescens* (Jordan)
Crested Lark *Galerida cristata* (Harrison 1946; Spain, Nigeria)
Thekla Lark *Galerida theklae* (Portugal)
Dunn's Lark *Eremalauda dunni* (Jordan)
Desert Lark *Ammomanes deserti* (Jordan)
Bar-tailed Desert Lark *Ammomanes cincturus* (Jordan)
Woodlark *Lullula arborea* (Heinroth and Heinroth 1924)
Skylark *Alauda arvensis* (Harrison 1946, Delius 1969; Britain)
Desert Horned Lark *Eremophila bilopha* (Jordan)

HIRUNDINIDAE
Cliff Swallow *Petrochelidon pyrrhonota* (Barlow, Klaas and Lenz 1963)
Swallow *Hirundo rustica* (Heinroth and Heinroth 1924, Gibb 1947)
Purple Martin *Progne subis* (Johnston and Hardy 1962)
House Martin *Delichon urbica* (J. C. Rolls)
Sand Martin *Riparia riparia* (Heinroth and Heinroth 1924, Barlow, Klaas and Lenz 1963, B. King)

CORVIDAE
Jackdaw *Corvus monedula* (Rollin 1948)
Blue Jay *Cyanocitta cristata* (Hauser 1957)

AEGITHALIDAE
Long-tailed Tit *Aegithalos caudatus* (Colyer 1946)

PARIDAE
Tufted Tit *Parus bicolor* (Hauser 1957)
Great Tit *Parus major* (Williams 1946)

CERTHIIDAE
Treecreeper *Certhia familiaris* (Buxton 1950; Britain)

TROGLODYTIDAE
Carolina Wren *Thryothorus ludovicianus* (Hauser 1957)
Wren *Troglodytes troglodytes* (Gibb 1947, Armstrong, 1955)

MIMIDAE
Mockingbird *Mimus polyglottus* (Hauser 1957)
Catbird *Dumetella carolinensis* (Hauser 1957)
Brown Thrasher *Toxostoma rufum* (Hauser 1957)

TURDINAE
Song Thrush *Turdus philomelos* (Gibb 1947; Britain)
Kurrichane Thrush *Turdus libyonanus* (Nigeria)
Blackbird *Turdus merula* (Harrison 1946, Gibb 1947, Teager 1967; Britain)
American Robin *Turdus migratorius* (Hauser 1957)
Wood Thrush *Catharus mustelinus* (Dilger 1959)
Veery *Catharus fuscescens* (Dilger 1959)
Hermit Thrush *Catharus guttatus* (Dilger 1959)
Olive-backed Thrush *Catharus ustulatus* (Dilger 1959)
Black Wheatear *Oenanthe leucura* (Spain)
Desert Wheatear *Oenanthe deserti* (B. King)
Ant Chat *Myrmecocichla aethiops* (Nigeria)
Black Bush Chat *Cercotrichas podobe* (Nigeria)
Rufous Bush Chat *Cercotrichas galactotes* (Jordan, Nigeria)
Black Redstart *Phoenicurus ochruros* (Heinroth and Heinroth 1924)
Bluethroat *Luscinia svecica* (Heinroth and Heinroth 1924)
Robin *Erithacus rubecula* (Gibb 1947, Teager 1967, A. P. Radford)

SYLVIINAE
Olivaceous Warbler *Hippolais pallida* (Nigeria)
Willow Warbler *Phylloscopus trochilus* (Harrison 1946)
Chiffchaff *Phylloscopus collybita* (B. King)
Bonelli's Warbler *Phylloscopus bonelli* (B. King)
Blue Wrens *Malurus spp.* (Goodwin 1967a)
Goldcrest *Regulus regulus* (Gibb 1947)

MUSCICAPINAE
Pied Flycatcher *Ficedula hypoleuca* (Heinroth and Heinrot 1924)

PRUNELLIDAE
Dunnock *Prunella modularis* (Beven 1946, Teager 1967; Britain

LANIIDAE
Masked Shrike *Lanius nubicus* (Jordan)
Red-backed Shrike *Lanius collurio* (Gibb 1947)

STURNIDAE
Starling *Sturnus vulgaris* (Gibb 1947, Hauser 1957, Teag 1967)

VIREONIDAE
Red-eyed Vireo *Vireo olivaceus* (Hauser 1957)

PARULIDAE
Orange-crowned Warbler *Vermivora celata* (Hauser 1957
Myrtle Warbler *Dendroica coronata* (Hauser 1957)
Yellow Warbler *Dendroica petechia* (Hauser 1957)
Ovenbird *Seiurus aurocapillus* (Hauser 1957)
American Redstart *Setophaga ruticilla* (Hauser 1957)

ICTERIDAE
Bronzed Grackle *Quiscalus versicolor* (Hauser 1957)

THRAUPIDAE
Summer Tanager *Piranga rubra* (Hauser 1957)

FRINGILLIDAE
Hawfinch *Coccothraustes coccothraustes* (Heinroth and Heinrot 1924, Mountfort 1957)
Greenfinch *Carduelis chloris* (Gibb 1947)
Goldfinch *Carduelis carduelis* (Gibb 1947)
Bullfinch *Pyrrhula pyrrhula* (Gibb 1947)
Chaffinch *Fringilla coelebs* (Gibb 1947, Rollin 1948)
House Finch *Carpodacus mexicanus* (Hauser 1957)
Purple Finch *Carpodacus purpureus* (Hauser 1957)
Cardinal *Richmondena cardinalis* (Hauser 1957)
Rose-breasted Grosbeak *Pheucticus ludovicianus* (Dunham 1966
Rufous-sided Towhee *Pipilo erythrophthalmus* (Hauser 1957)
American Goldfinch *Spinus tristis* (Hauser 1957)

ESTRILDIDAE
Zebra Finch *Taeniopygia castonota* (Goodwin 1967a)

EMBERIZIDAE
Yellowhammer *Emberiza citrinella* (Andrew 1956)
Corn Bunting *Emberiza calandra* (Andrew 1956)
Black-headed Bunting *Emberiza melanocephala* (Bulgaria)
Reed Bunting *Emberiza schoeniclus* (Andrew 1956)
African Rock Bunting *Emberiza tahapisi* (Andrew 1956)
Slate-coloured Junco *Junco hyemalis* (Hauser 1957)
White-throated Sparrow *Zonotrichia albicollis* (Hauser 1957)
Chipping Sparrow *Spizella passerina* (Hauser 1957)

PLOCEIDAE
House Sparrow *Passer domesticus* (Gibb 1947, Hauser 195 Summers-Smith 1963)
Snow Finch *Montifringilla nivalis* (Heinroth and Heinro 1924)

Black-tailed Godwits, Ruffs and Black Terns breeding on the Ouse Washes

E. J. Cottier and David Lea

Plates 45-52

INTRODUCTION

The gradual establishment of a regular breeding colony of Black-tailed Godwits *Limosa limosa* at an undisclosed locality in Britain since 1952 was first put on record six years later (Anon 1958, Editors 1958). The colony has continued to increase and in 1964 the Royal Society for the Protection of Birds began to buy land in this area, as did the Cambridgeshire and Isle of Ely Naturalists' Trust in 1965 and the Wildfowl Trust in 1966. At the present time these three nature conservation bodies, with a total of some 1,150 acres, together hold far more land than any other single owner in the area. In 1968 the R.S.P.B. appointed a full-time warden and in 1969 decided that sufficient protection was available for controlled visiting to be allowed. It has therefore now been revealed that the locality is the Ouse Washes in Cambridgeshire and Norfolk. In 1963 the first proof of nesting there by Ruffs *Philomachus pugnax* was obtained and this species has bred in each of the succeeding years (though no nest was actually found in 1967). In 1966 and 1969 Black Terns *Chlidonias niger* also bred successfully.

This paper describes the area in some detail, gives both the early and the recent history of the above three rare breeding species in the British Isles, and attempts to identify the special characteristics of the habitat which have led to these remarkable recolonisations. It also touches on the other nesting birds of the area and the wintering wildfowl, as well as setting out some of the future aims and policies of conservation in this important wetland site.

THE OUSE WASHES

In the early part of the 17th century the Earl of Bedford engaged Cornelius Vermuyden to undertake a major improvement in the drainage of the Fens. The first reclamation had been made by the Romans and various other minor schemes had been started during the Middle Ages. These, however, had only a limited effect on the water regime; the area still consisted of huge areas of marsh and fen containing large numbers of wildfowl and waders, especially Lapwings *Vanellus vanellus* which were one of the main sources of income for the inhabitants of the neighbouring villages. The principal task undertaken by Vermuyden was the construction of the Old Bedford River, a

straight dyke running 20 miles north-east from Earith in Huntingdonshire to Denver in Norfolk. Both these places are on the Great Ouse and the aim was thus to divert some of the water of the river by a direct route to the sea. It was found, however, to be insufficient to cope adequately with the water at times of flood and so a parallel dyke, the New Bedford River, was constructed half a mile to the south-east some 20 years later. The land between these two great dykes was used to store surplus water at times of flood and is described as washland. This usage has continued to the present day, creating conditions which have always been especially attractive to waders and wildfowl. Until quite recently some of the local people still earned their living from trapping Lapwings and shooting ducks.

Never more than half a mile wide, the area is subdivided by drainage ditches. Water taken from the New Bedford River is maintained in these ditches by an ingenious system of dams and sluices so that they form stock-proof boundaries; from about April to October grazing is provided principally for cattle, but also for some sheep and a few horses. A relatively small area is mown for hay each year.

The amount and time of flooding is extremely variable. It takes place virtually every winter, usually at least from December to March, and cattle cannot normally be put on until April or even May. In addition, a period of heavy rain at any season can cause the River Authority to put water on to the washes: in the unusually wet conditions of 1968-69 flood water was present from July through at least to June. When the flood situation has passed, the water is led off through an internal drainage channel called the River Delph.

SCIENTIFIC IMPORTANCE

The whole area of the Ouse Washes is of the greatest importance in that it forms by far the biggest block of regularly flooded fresh grazing marshland in England and Wales. Formerly there were large stretches of such land, but now, owing to improved drainage leading to arable cultivation or to reseeded and sprayed grassland, little remains and what there is tends to be in small isolated areas. The Ouse Washes contain five principal habitats:

(1) The ditches, which are cleared out periodically by drag-line and in which a high water-level is maintained (plate 50b). These include a range of aquatic zones from open water to completely overgrown with vegetation. The most noticeable features of this vegetation are the various pondweeds *Potamogeton* and several species of duckweeds *Lemna* which proliferate until they almost block undredged ditches.

(2) The margins of the ditches, and of the River Delph and the Old Bedford River, where an aquatic transition zone exists and in which a tall herb community develops. Most of the ditches are fringed with reed sweet-grass *Glyceria maxima*.

(3) The banks formed by the dredgings, and the banks of the Old and New Bedford Rivers, on which are found plants of arable fields and dry grassland. The dredgings from the ditches, where piled up, lead to colonisation by docks, especially the curled dock *Rumex crispus*. On some of the larger heaps of dredgings the stinging nettle *Urtica dioica* and the creeping thistle *Cirsium arvense* are co-dominant and there are also wild teasels *Dipsacus sylvestris*.

(4) The grazing fields, or washes, which are a form of water meadow. These usually have a rich vegetation of rough grasses. *Glyceria maxima* predominates on the damper, lower parts and tufted hair-grass *Deschampsia caespitosa* on the higher parts. Some washes are covered with more typical meadow-grasses of a dozen or more species which are most readily grazed by the cattle. Common spikegrass *Eleocharis palustris* and amphibious bistort *Polygonum amphibium* are also widespread. Typical washes at various seasons and different stages of flooding and vegetation are shown on plates 48 and 50.

(5) The osier beds lying mainly along the River Delph, some of which are still cut on a three-year rotation though others have been left uncut and have grown into mature willow stands (plate 50c).

Over 260 plant species have been recorded from the Ouse Washes; this represents a high proportion of the flora of the Fens and compares with about 160 species in a typical 10 km square in the arable areas. Both the meadows and the ditches are of considerable botanical interest and, with the increasing use of herbicides to control vegetation in the waterways of the Fens as a whole, the ditches of the Ouse Washes are likely to become increasingly important as a reservoir for such species in the region.

BLACK-TAILED GODWITS

Until the early part of the 19th century Black-tailed Godwits used to breed, apparently quite commonly, in the marshy areas of Suffolk and Norfolk and in the fenlands of Huntingdonshire, Cambridgeshire and Lincolnshire, as well as on Hatfield Moor in Yorkshire and probably in the carrs of the East Riding (Yarrell 1856, Nelson 1907, Witherby *et al.* 1938-41). Drainage of their breeding habitats and persecution by shooting, netting and egg-collecting reduced the population drastically and 1829 is generally regarded as the year in which they ceased to nest regularly, although Stevenson and Southwell (1866-90) considered that they may have hung on until 1835. In the next 100 years or more up to 1940 there were only six to eight inconclusive or unsuccessful records of nesting (Witherby *et al.* 1938-41, Editors 1958).

From at least 1945, and perhaps earlier in the 1939-45 war, a remarkable increase occurred in the number of Black-tailed Godwits recorded in Britain and Ireland both on passage and in winter (Morley and Price

1956), this possibly being linked with the steady growth of their breeding population in the Netherlands and Iceland during 1920-50. Since 1940, too, there have been rather more nesting records in Britain, quite apart from the population on the Ouse Washes. Single pairs bred in the fens of south Lincolnshire in 1940 and 1941 (Gunton 1940, 1941), almost certainly in west Suffolk in 1947 and 1949 (Payn 1962), and in Somerset in 1963 (Paull and Young 1965); a pair was seen in a suitable breeding locality in Wiltshire in 1967 (Webber 1969) and there have been one or two unpublished records elsewhere in England. In Scotland, meanwhile, a pair nested in Caithness in 1946 (Pilkington 1947) and since 1948 or 1949 one or two pairs have bred in several years in Shetland (Venables and Venables 1955, Parslow 1967), while a pair also nested in Orkney in 1956 (Balfour 1968); another pair bred at an undisclosed locality in south-east Scotland in 1964, 1965 and 1966 and then possibly two pairs there in 1967 (Macmillan 1965, Slater 1965-67). The English and Scottish records are kept separate here because of the possibility that different races are involved (see below).

The early history of the colonisation of the Ouse Washes by the Black-tailed Godwits has been described in various places (Conder 1962, also Anon 1958, Editors 1958) and needs only to be summarised here. In the spring of 1952 E.J.C. saw three godwits and suspected breeding. On 11th May he found a nest with four eggs; these disappeared later in the month, probably taken by Carrion Crows *Corvus corone,* but the

Table 1. Nesting populations of Black-tailed Godwits *Limosa limosa* recorded on the Ouse Washes (Cambridgeshire and Norfolk) during 1952-69

There is some doubt about the figures in brackets: 1966 was exceptionally wet and many pairs nested in the surrounding land, with the result that accurate recording was impossible; 1969 was also exceptionally wet and over half of the first nests were flooded out in May, but others had already hatched by this time and some pairs which had lost their clutches later renested, with the result that the picture became confused. It may be noticed that the data for 1953 and 1956-58 differ somewhat from those previously published by the Editors (1958) and Bannerman (1961): this is because the earlier figures were based on the information available to the R.S.P.B. at the time, whereas the present data are from the detailed notes in the diary of E.J.C.

Year	Total pairs	Pairs hatching	Year	Total pairs	Pairs hatching
1952	1	1	1961	12	11
1953	4	1	1962	14	10
1954	3	2	1963	18	17
1955	4	4	1964	24	20
1956	9	3	1965	26	18
1957	10	8	1966	(?)	(2)
1958	10	9	1967	29	19
1959	11	9	1968	34	30
1960	13	13	1969	41	(24)

pair nested again and on 6th July young were seen. The species has bred on the Ouse Washes every year since and the gradual build-up of the population is given in table 1. Until 1968 protection of the godwits and the detailed recording of their numbers and success were organised by E.J.C., assisted by a very small group of local people, including the shepherds or marshmen. Adult godwits at the nest, and eggs and young, photographed by M. D. England on the Ouse Washes in 1969 are shown on plates 45-47 and the series of this species is completed with two pictures from the Netherlands on plate 51.

As will be seen from table 1, the total of successful nests has varied considerably from year to year. The actual number of *un*successful nests has also been greater than is apparent here, because many pairs have relaid after the loss of a first clutch. These losses have been due to various causes, the most common being predation by Carrion Crows, Jackdaws *C. monedula,* Brown Rats *Rattus norvegicus*, Stoats *Mustela erminea* and possibly Moorhens *Gallinula chloropus*, trampling by grazing cattle, and flooding. The results of further research now being undertaken by the R.S.P.B. are needed before it will be possible to assess the effects of each of these factors on the success and build-up of the population. Flooding probably cannot be controlled by the naturalists' organisations, although it may be possible to mitigate its effects. On the other hand, the timing of grazing, which may be important, can be controlled, as could the predators to some extent if that seemed desirable.

The godwits nearly always nest in fields which have been mown for hay or grazed in the previous season (plate 48a). Owing to changes in agricultural practice, the demand for grazing of this kind has become less in recent years and not all the washes are grazed annually. Ungrazed washes become covered with a dense mat of taller grasses, especially *Glyceria maxima*, and are then unsuitable for nesting godwits. An important part of conservation management here is the maintenance of a mowing or grazing regime.

The onset of nesting is to some extent controlled by the water level, but generally the first eggs are laid in mid-April with new clutches continuing up to mid-May. Exceptionally early nestings were shown by the finding of newly hatched young on 21st April 1961 (a laying date of about 28th March) and newly fledged young on 21st May 1969 (a laying date of about 20th March). The Black-tailed Godwit's normal clutch is four eggs, but nests containing three and five eggs have been found. Immediately after hatching, the young are often moved considerable distances by their parents, which take them to damp areas where the mud is presumably soft enough to allow probing. In the Netherlands, on the other hand, the chicks are 'led to hayfields, where they can find good shelter against predators' (Dr H. van Balen in Bannerman 1961). Almost as soon as the young are able to fly, they

and their parents leave the Ouse Washes and observations suggest that many may go to Wisbech sewage-farm, some 20 miles away on the border of Norfolk and Lincolnshire.

The typical race of the Black-tailed Godwit breeds locally in France and Belgium and more commonly from the Netherlands, Denmark, Germany, Czechoslovakia and Poland north to the extreme south of Sweden and the Baltic States and south to Austria and Hungary, thence across central Russia to western Siberia and Kazakhstan; another race is found in eastern Asia. There is also a distinct race *L. l. islandica* in Iceland and Williamson (1958) suggested that the breeding records in north Scotland referred to this form. Consequently, there was some speculation whether the godwits in the Ouse Washes might also be of the Icelandic race, although it seemed more likely that they would be the typical form found on the Continent. Then in 1966 a recently dead female was discovered on a nest containing four newly hatched young; the corpse was sent to Dr James M. Harrison who confirmed (*in litt.*) that it was of the typical race.

Voous (1960) noted that in many places in central Europe the Black-tailed Godwit had seriously diminished as a result of cultivation and modern mowing methods; he commented on the slight northward extension of breeding range in the present century, including the increase in Iceland since about 1920, and suggested that this was related to the increase in the mean annual temperature. Over the range of the species there is some variety in the nesting habitat, but the Ouse Washes godwits have remained within the confines of the Bedford Rivers, except in 1966 when the water level was exceptionally high and several pairs nested in the surrounding fields. The Somerset pair of 1963 and probably most of the other English records have been in habitats rather similar to that of the Ouse Washes.

RUFFS

At one time the Ruff probably nested in many suitable places from Northumberland to the south-west, though ornithological history records its disappearance only from its later breeding areas in such counties as Durham, Yorkshire, Lincolnshire, Huntingdonshire, Cambridgeshire, Norfolk and Suffolk. Thus its decline in the 18th and 19th centuries was comparable to that of the Black-tailed Godwit, although it did not finally cease to nest regularly until rather later, continuing in Norfolk until 1871, also in 1878 and for seven consecutive years in 1884-90 (Witherby *et al.* 1938-41, Bannerman 1961). Since that time the only authenticated breeding records have been in Norfolk again, in 1907 and at Cley in 1922 (Turner 1907, Boyd 1922); and in Co. Durham, at Teesmouth in 1902 (two broods) and possibly also in 1901 and 1903 (Nelson 1906, Bannerman 1961), but not apparently in 1904 as suggested in *The Handbook*. In addition, the species

Table 2. Nesting populations of Ruffs *Philomachus pugnax* recorded on the Ouse Washes (Cambridgeshire and Norfolk) during 1963-69

Reeves and their nests are not easy to locate and these figures are essentially minimum ones, particularly those in brackets. Numbers of males at the lek have been very much higher

Year	Total nests	Nests hatched	Year	Total nests	Nests hatched
1963	1	—	1967	—	—
1964	(1)	—	1968	2	2
1965	2	2	1969	5	(1)
1966	2	—			

probably bred in Suffolk in 1898 and eggs were said to have been taken in Lancashire in 1910.

In the last 20 years Ruffs have been recorded well into the spring and early summer in various places. In view of the secretive nature of the Reeve when nesting, the species is much more likely to be overlooked than, for example, the Black-tailed Godwit and many more instances of breeding may have been missed. The fact remains, however, that the nests found on the Ouse Washes are the first authenticated since 1922.

For a number of years parties of Ruffs were recorded on the Ouse Washes and lekking was watched on several occasions. E.J.C. suspected that nesting was taking place, but it was not until 1963 that the first eggs were found. The very slow build-up of the proved breeding population is given in table 2. It is perhaps too early to say that the Ruff is firmly established, but the seven years in which it has now bred, or probably bred, form the longest continuous record of nesting in one place in Britain since 1890 and it may well be that there have been more nests than those found. In mid-April 1969, as an indication, there were 103 males in the vicinity of the main lek, but these dispersed when the floods came in early May. A Reeve at a nest in Denmark is shown on plate 52a.

The Ruff has a more northerly breeding distribution than the Black-tailed Godwit, extending from Fenno-Scandia right across northern Asia, but in Europe it also nests in small numbers in France and Belgium, more numerously in the Netherlands and through Germany, Czechoslovakia and Poland into the Baltic States and Russia.

BLACK TERNS

The loss of the Black Tern as a breeding species in Britain appears to be less well documented than that of the Black-tailed Godwit or the Ruff, but it formerly nested in various parts, chiefly in Kent (Romney Marsh), Suffolk, Norfolk, Cambridgeshire, Lincolnshire and Yorkshire (Witherby *et al.* 1938-41), and it is interesting to note the broad

similarity in the former ranges of the three species which have now returned to breed on the Ouse Washes. Black Terns had ceased to nest regularly before the middle of the 19th century, but some bred in Norfolk after floods in 1853 and 1858 (Riviere 1930) and in Romney Marsh to about 1885 (Witherby *et al.* 1938-41); there were also uncertain reports in Cumberland in 1855 and Suffolk in 1875. In the 20th century the only authenticated instances—now that those at Pett Level, Sussex, in 1941 and 1942 have been questioned (des Forges and Harber 1963)—have been on the Ouse Washes in 1966 and 1969 and, most unexpectedly, in Ireland in 1967, when a pair reared one young, the first record for that country (Ruttledge 1968).

Black Terns are commonly seen on spring passage through the Ouse Washes and unusually large numbers were recorded in 1966. In that year an exceptionally severe flood about 21st April destroyed the eggs of most ground-nesting species and, as the water gradually receded, several Black Terns built nests but failed to lay. Most then moved on, but a few remained and two nests with eggs were found on 18th May. The field concerned had not been grazed in the previous two years and was covered with a relatively dense growth of *Glyceria maxima*. About two feet of water still remained there, and on some of the other lowest washes, so that much of this vegetation formed dense mats floating on the surface with small areas of open water in between. The two nests were about 15 feet apart, on the edge of open water and constructed of dead *Glyceria* stems. The eggs hatched on 5th June and three young were successfully reared.

The following year, 1967, an attempt was made to reproduce similar conditions by embanking the area and pumping water on from the River Delph; there was, however, only a very small passage of Black Terns that spring and none remained to breed. When there was no attempt at nesting in 1968 either, it was concluded that the 1966 breeding was simply accidental. Then, however, in the wet spring of 1969 a total of seven nests was found. Two in one area had a single egg each when discovered, but the water receded and no more were laid. Later a third nest was found not far away on land owned by the R.S.P.B. and from the three eggs laid one young fledged; it may be that this nest was built by one of the earlier pairs. In another part of the washes, some three miles to the north on land owned by the Wildfowl Trust, four more nests were found. All of these hatched young, but no proof was obtained that any fledged. It thus seems likely that six pairs in all were involved in 1969. Most of the seven nests were built on floating mats of a filamentous green alga, although one was on exposed bare mud close to water.

The nesting of this species on the Ouse Washes seems to a large extent dependent on the availability of floating vegetation on water-covered areas of a suitable depth. It is not yet possible to assess these

requirements accurately, but a high priority aim of the management programme being devised will be to provide these conditions annually. Until this has been done, the Black Tern cannot yet be regarded as a regular British breeding species again. A floating Dutch nest is shown on plate 52b.

This tern has a wider breeding distribution in Europe than either of the two waders, extending from Denmark, southern Sweden and the Baltic States south to southern Iberia, northern Italy, the northern Balkans and south Russia. It also nests in western Asia east to the upper Yenisei and south to Kazakhstan, and in North America from Canada south to California and the central United States.

OTHER BIRDS IN SUMMER AND WINTER

While the main purpose of this paper is to describe the nesting of the Black-tailed Godwits, Ruffs and Black Terns, a summary of some of the other breeding birds of the Ouse Washes may be of interest. Table 3 lists a selection of the wetland and other open country species and the numbers of pairs of each estimated in 1968 in a stretch six miles long, which includes the sections owned by the Cambridgeshire and Isle of Ely Naturalists' Trust and the R.S.P.B. This area was then and still is intensively studied by the R.S.P.B. warden, Jeremy Sorensen, and we are grateful to him for these figures. In all, over 60 species of birds have been recorded nesting on the Ouse Washes, including ten species of ducks (the eight listed in table 3 and also Wigeon *Anas penelope* and Pochard *Aythya ferina*).

Table 3. Estimated populations of wetland and open country birds nesting on a six-mile stretch of the Ouse Washes (Cambridgeshire and Norfolk) in 1968

A number of pairs of hedgerow and garden species also breed on this stretch—including in 1968, for example, Turtle Dove *Streptopelia turtur* (15), Collared Dove *S. decaocto* (6), Song Thrush *Turdus philomelos* (18) and Blackbird *T. merula* (20)—but these are omitted as being of lesser relevance. Black Terns *Chlidonias niger* did not nest on the Ouse Washes in 1968

Species	Pairs	Species	Pairs
Great Crested Grebe *Podiceps cristatus*	few	Coot *Fulica atra*	150
Mallard *Anas platyrhynchos*	many	Lapwing *Vanellus vanellus*	150
Teal *Anas crecca*	10	Snipe *Gallinago gallinago*	400
Garganey *Anas querquedula*	20	Black-tailed Godwit *Limosa limosa*	34
Gadwall *Anas strepera*	8	Redshank *Tringa totanus*	60
Pintail *Anas acuta*	2	Ruff *Philomachus pugnax*	few
Shoveler *Anas clypeata*	100	Black-headed Gull *Larus ridibundus*	12
Tufted Duck *Aythya fuligula*	10	Reed Warbler *Acrocephalus scirpaceus*	20
Shelduck *Tadorna tadorna*	1	Sedge Warbler *Acrocephalus schoenobaenus*	750
Mute Swan *Cygnus olor*	4	Meadow Pipit *Anthus pratensis*	150
Red-legged Partridge *Alectoris rufa*	15	Yellow Wagtail *Motacilla flava*	25
Partridge *Perdix perdix*	few	Reed Bunting *Emberiza schoeniclus*	500
Moorhen *Gallinula chloropus*	100		

Table 4. Wildfowl numbers recorded on the Ouse Washes (Cambridgeshire and Norfolk) in the winter of 1968/69

These figures are the highest noted during the monthly wildfowl counts organised by the Wildfowl Trust and are not necessarily the maxima for the whole winter; it should also be borne in mind that they do refer to the one winter only and that many of the totals have been surpassed at one time or another in previous years

Species	Number	Species	Number
Mallard *Anas platyrhynchos*	3,350	Velvet Scoter *Melanitta fusca*	2
Teal *Anas crecca*	2,208	Goosander *Mergus merganser*	5
Gadwall *Anas strepera*	60	Shelduck *Tadorna tadorna*	12
Wigeon *Anas penelope*	13,000	Grey Lag Goose *Anser anser*	1
Pintail *Anas acuta*	1,300	White-fronted Goose *Anser albifrons*	2
Shoveler *Anas clypeata*	1,200	Pink-footed Goose *Anser fabalis brachyrhynchus*	1
Scaup *Aythya marila*	7	Mute Swan *Cygnus olor*	344
Tufted Duck *Aythya fuligula*	900	Whooper Swan *Cygnus cygnus*	20
Pochard *Aythya ferina*	3,250	Bewick's Swan *Cygnus bewickii*	676
Goldeneye *Bucephala clangula*	48		

The Ouse Washes have for long also been recognised as one of the most important wintering grounds for ducks, geese and swans in the British Isles (Atkinson-Willes 1963). Table 4 lists the peak wildfowl counts during the winter of 1968/69. The concentration of Bewick's Swans *Cygnus bewickii* is the largest anywhere in the country (Nisbet 1955, *Cambridge Bird Club Reports*, Ogilvie in press).

FUTURE CONSERVATION

The continuance of the ornithological and other scientific importance of the Ouse Washes depends basically upon the maintenance of the present water and grazing or mowing regime: any significant change in these could destroy the present interest. From time to time various proposals are made and considered. Many of the landowners, understandably, would like to see the area drained sufficiently to allow arable cultivation: if such drainage were to come about, their income from the land would be increased and the capital value of their holding would be multiplied eight or ten times. Alternatively, the possibility of turning the whole area into a freshwater reservoir has been considered.

So far as one can tell, neither of these changes is likely to come about at present. The whole drainage system of the Fens depends for its continuing efficiency on the ability of the River Authority to put surplus water on to the Ouse Washes at times of heavy rain. Drainage or flooding would make this impossible. Looking further into the future, however, the situation gives some cause for concern. Already large quantities of water are taken from the River Ouse for the ever-thirsty and expanding human population east of Cambridge, Luton and London. New schemes for water extraction are proposed and the possibility of building a barrage across the Wash is now being studied.

Changing agricultural practice in East Anglia has meant that the demand for summer grazing has decreased and every year a sizeable proportion of the Ouse Washes is left ungrazed. It is not possible to forecast trends in agriculture sufficiently to say whether this decline in demand will continue, but, as already emphasised, the annual removal of much of the vegetation is essential for the Black-tailed Godwits and Ruffs.

Wildfowling is an increasingly important use of the area in winter. The Ouse Washes provide some of the best shooting in the southern half of England and some land is now being acquired by private individuals whose primary interest is wildfowling. Provided the activity is carried out in a responsible fashion and adequate refuge areas are established, the ornithological interest will not suffer.

The biggest single safeguard for the future would seem to be for as much as possible of the land to be acquired by conservation organisations and this could include wildfowlers as their broad interests in the future land use of the area are basically similar to those of the naturalists. If some statutory status, such as that of a National Nature Reserve, could be obtained for at least a part, this would be a considerable advantage,

Finally, a soundly-based reserve management programme can improve the area still further for birds and people. Already hides have been built by the Cambridge and Isle of Ely Naturalists' Trust and the R.S.P.B. (plates 48c and 49), which provide superb views without disturbance, and simple management on the lower parts of a few of the washes owned by the R.S.P.B. has enabled water to be maintained or released at will. Once further progress has been made with the research programme, more ambitious projects will be able to be started and there seems little doubt, provided the future of the land use is secured, that the Ouse Washes will become ranked as one of Europe's finest and most important wetland habitats.

SUMMARY

It has now been revealed that the undisclosed locality where Black-tailed Godwits *Limosa limosa* have been breeding regularly for the last 18 years is the Ouse Washes in Cambridgeshire and Norfolk. The colony has built up from a single pair in 1952 to no less than 43 pairs in 1969. In addition, Ruffs *Philomachus pugnax* have nested annually since 1963 and Black Terns *Chlidonias niger* bred successfully in 1966 and 1969. This paper gives details of the numbers and habitats of all three species in the area and also summarises their former history as British breeding birds: apart from isolated records, mainly at long intervals, all three had ceased to nest regularly by some time in the 19th century.

The history of the Ouse Washes is summarised and the main habitats are described. They form the largest block of regularly flooded freshwater marsh in England and Wales, and are also important for breeding and wintering wildfowl. The purchase of land by three separate nature conservation bodies has gone some way to safeguard the area, although difficulties still remain. The future aims of conservation management are outlined.

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New Palearctic bird sound recordings during 1968

Jeffery Boswall

Seventeen discs or sets of discs, which were published in 1968 or first came to my notice during that year, are covered by this further paper in the series (see also Boswall 1964, 1966, 1969). Particular attention is drawn to *A Sound-Guide to the Birds of North-West Africa* by Jean-Claude Roché (**115**) and two discs concerned with Baillon's Crake *Porzana pusilla*, a German one by Dr P. Feindt (**120**) and a Swedish one by Sten Wahlström (**121**).

In 1969 a new department of the British Institute of Recorded Sound was opened. It is called the British Library of Wildlife Sounds and, to mark the occasion, a special 72-page issue of the Institute's journal *Recorded Sound* was devoted to bio-acoustics. Many of the papers are concerned with birds and the techniques of recording them. There is an up-to-date discography of British wildlife sound, and a global bibliography of wildlife sound recording. Patrick Sellar, whose idea the new library was, describes exactly how recordists can contribute tape material and how ornithologists and other scientists can use it. Particular emphasis is being placed on vocabularies of the birds of the western Palearctic. The issue, price 12s 6d, can be obtained from the Director, B.I.R.S., 29 Exhibition Road, London SW7.

EUROPEAN SPECIES

Since the last paper, five more regular nesting species have been taped in Europe, leaving just 16 of which there is as yet no known European recording. In May 1967 Claude Chappuis taped the Dalmatian Pelican *Pelecanus crispus* in Bulgaria, and the Pygmy Cormorant *Phalacrocorax pygmaeus* and Great White Heron *Egretta alba* in Romania; and in March 1969 he taped the Chukar *Alectoris chukar* in a feral population in France. In June 1968 Birger Hörnfeldt and Gunnar Alenius separately recorded the songs of two different Red-flanked Bluetails *Tarsiger cynanurus* in Finland.

CORRECTIONS

Palmér (1969) has now revealed that the first five disc numbers under **16** in the original discography (Boswall 1964) were also used, and records produced and sold, and he has listed the species. Also in the original discography, Wyring, Allen and Kellogg on page 2 and in the references should read Eyring, etc.

FURTHER ADDITIONS TO THE DISCOGRAPHY

105. TAKOZO, TAKANO. 1957. *Song of the Roller Canary* (Japanese). One 7-inch, 45 rpm, VS22. HMV, Victor Company of Japan, 1-1, 4 chome, Nihonbashi-Honcyo, Chuo-ku, Tokyo, Japan.

Songs from captive birds.

106. NAKANISHI, GODO. 1963. *Japanese Bird Songs.* Four 7-inch, 33.3 rpm, FS6286-7 to FS6292-3, and book (48 pages). Victor Publishing Company, 13-2 Misakicho, Kanda, Chiyoda-ku, Tokyo, Japan.

These discs present the voices of 50 species.

107. ANON. 1963. *Vogel-und Tierstimmen aus Wald und Flur.* One 10-inch, 33.3 rpm. Gong-Schallplatten Arno Graul, 713 Mühlacker, Baron-Müller-Weg 14, West Germany.

A popular selection of 'Bird and animal voices from forest and meadow'. There are about 40 birds, a couple of amphibians, and a mammal. The sounds are pleasingly arranged as a montage and not individually identified on the disc.

108. ANON. 1964. *Vogelstimmen aus Moor und See.* One 7-inch 33.3 rpm. Gong-Schallplatten Arno Graul, 713 Mühlacker, Baron-Müller-Weg 14, West Germany.

Twenty birds of marsh and lake, including the rarely taped flight call of the Night Heron *Nycticorax nycticorax.*

109. ANON. 1965. . . . *und die ganze Vogelschaar.* One 12-inch, 33.3 rpm. Gong-Schallplatten Arno Graul, 713 Mühlacker, Baron-Muller-Weg 14 West Germany.

'. . . and the whole host of birds' including a few not commonly recorded: Kite *Milvus milvus,* Grey-headed Woodpecker *Picus canus* and Lesser Spotted Woodpecker *Dendrocopos minor.*

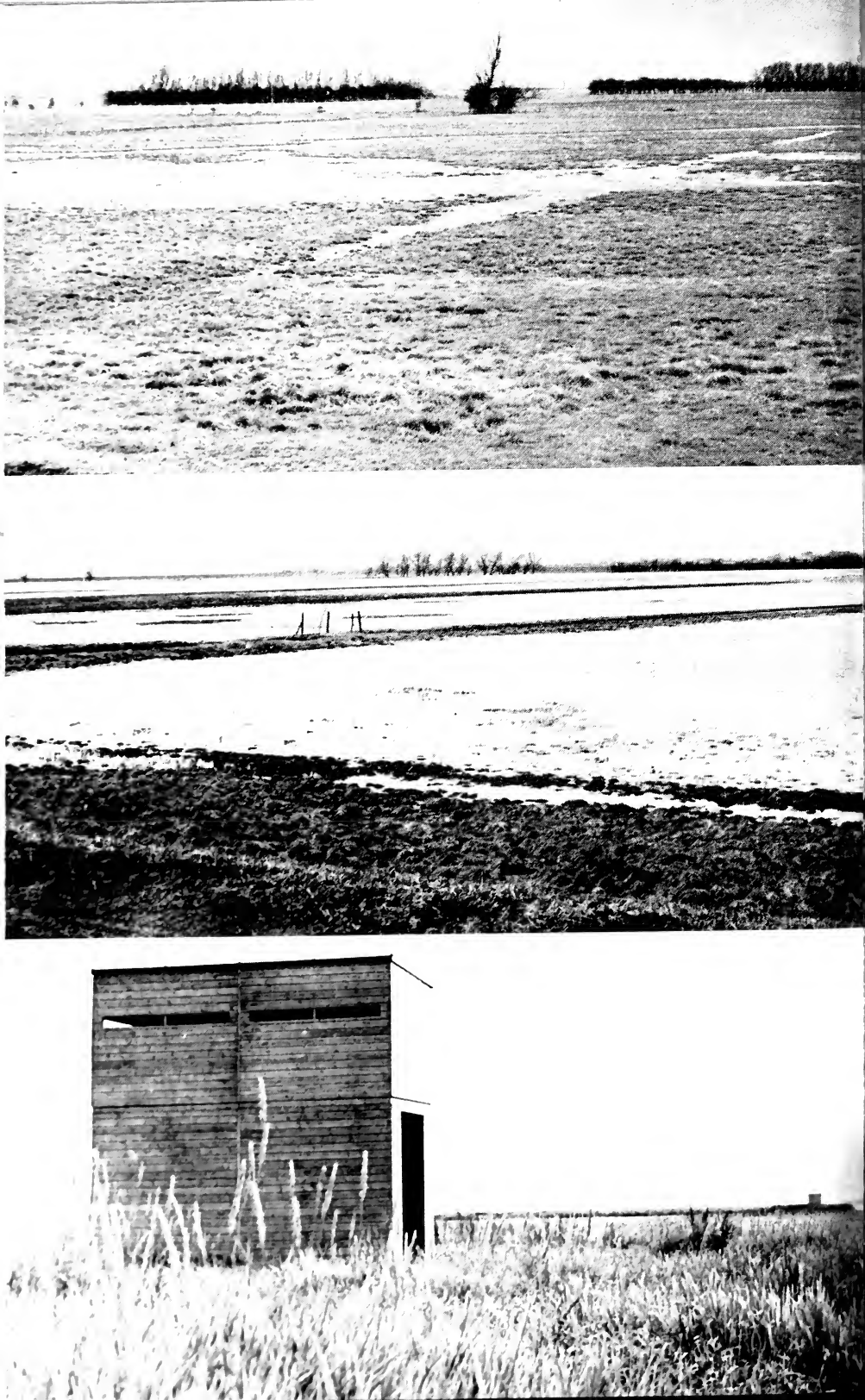
110. LINDBLAT, JAN. 1966. *In Owl Country* (Swedish). One 7-inch 45 rpm, STP101, and book (196 pages). Bonniers, Stockholm, Sweden.

The author's 'programme notes' to explain his disc occupy pages 195-198 of the book and run to about 1,300 words. A translation into English by Camilla Lindblat has been deposited in the Alexander Library of the Edward Grey Institute at Oxford. It is most regrettable that space prevents a detailed account from being given here, for owl vocabularies are interesting biologically and of particular significance in field identification. The following highly condensed list is included only with reluctance, since it could be misleading and does scant justice to the author's apparent grasp of his subject. For example, he defines eleven different functions for owl calls and includes differences of sex and age.

PLATE 45. Black-tailed Godwit *Limosa limosa* by nest with four eggs, Ouse Washes, May 1969. After some 120 years with only isolated records of nesting in England, the species started to colonise this unique habitat in the Fens in 1952 and the population had built up to 41 pairs by 1969 (pages 261-264) (*photo: M. D. England*)

PLATE 46. Two nests of Black-tailed Godwit *Limosa limosa*, Ouse Washes, May 1969. Four is the normal clutch. In 1969 only about 24 of the 41 pairs succeeded in hatching and some of those only at the second attempt: over half the first nests were flooded out after exceptional rains in May (page 262) (*photos: M. D. England*)

PLATE 47. The adults at the nest on plate 46a; both the sexes incubate. Note the 'tidemark' on the bill of the one below, showing the depth to which it had been probing in the mud. Apart from flooding, some nests are trampled by grazing cows or destroyed by crows, rats and other predators (page 263) (*photos: M. D. England*)



PLATES 48 and 49. Above, one of the R.S.P.B. hides on the Ouse Washes, and the warden, Jeremy Sorensen, July 1969. Left, the hides (the other seen in the distance) stand by the River Delph and look out over the open washes: visitors are conveyed to them by boat. Top left, a typical April scene over a wash which has been grazed the previous year and so is ideal for breeding godwits and other waders. Centre left, these shallow flood areas in winter support numerous ducks and swans (page 268) (*photos: R.S.P.B.*)

PLATE 50. Above, summer flooding on the Ouse Washes, July 1968; below, looking over the River Delph as the water drops in April 1969: note the osiers and the winter flood debris in the foreground (*photos: R.S.P.B.*). Left, the internal ditches have periodically to be cleared out, but they quickly fill again with vegetation, providing food and nest-sites on the banks for ducks (*photo: D. A. Rook*)

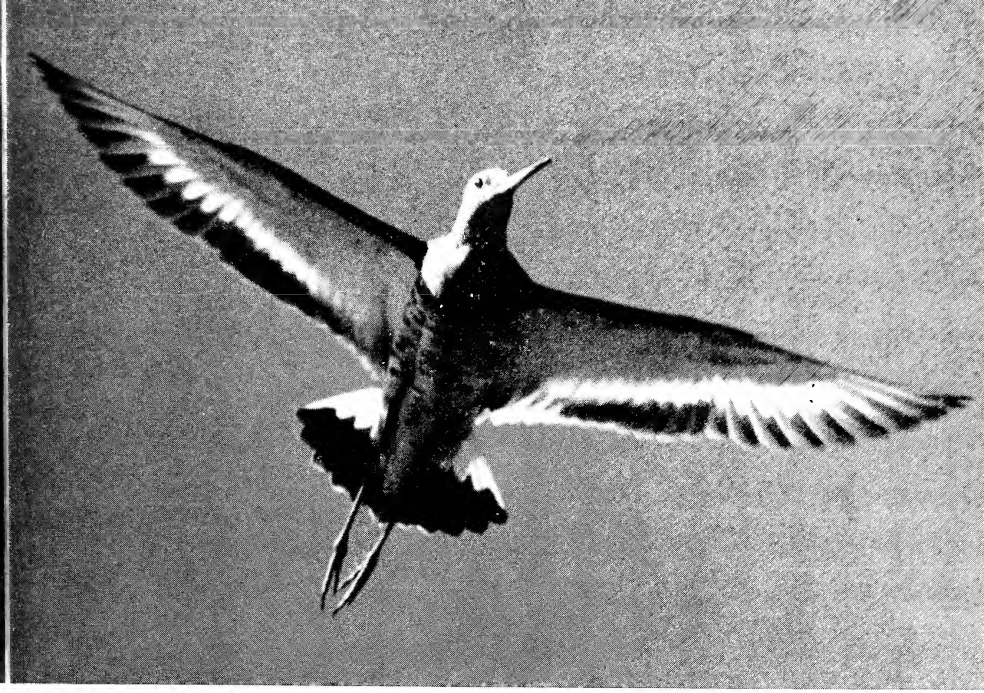


PLATE 51. Black-tailed Godwits *Limosa limosa* in the Netherlands: the expansion of the Dutch population during 1920-50 may well have led to the colonisation of the Ouse Washes. Above, in flight, showing the distinctive tail pattern, June 1952 (*photo: Eric Hosking*). Below, walking to nest, May 1968 (*photo: Sidney J. Clarke*)

PLATE 52. Reeve *Philomachus pugnax* and eggs. Denmark, June 1958: this species has nested upon the Ouse Washes since 1963 (page 265) (*photo: Harold R. Lowes*). Below, Black Tern *Chlidonias niger* on floating nest, Netherlands, June 1952: young were fledged on the Ouse Washes in 1966 and 1969 (page 266) (*photo: Eric Hosking*)

SIDE A

(1) Tawny Owl *Strix aluco,* hooting, and *kewick* and other calls (2) Ural Owl *S. uralensis,* hooting and other calls (3) Tengmalm's Owl *Aegolius funereus,* song and other calls (4) Pygmy Owl *Glaucidium passerinum,* song and other calls (5) Great Grey Owl *S. nebulosa,* song, calls, and bill-snapping

SIDE B

(6) Eagle Owl *Bubo bubo,* song, calls and bill-snapping (7) Snowy Owl *Nyctea scandiaca,* calls; and Long-eared Owl *Asio otus,* calls and song (8) Young Long-eared, Ural, Tawny and Tengmalm's Owls (9) Short-eared Owl *Asio flammeus,* calls; Hawk Owl *Surnia ulula,* calls (10) Young Barn Owls *Tyto alba*

111. NAKATSUBO, R. 1966. *Birds of North and South: the State Birds of Japan* (Japanese). One 12-inch, 33.3 rpm, LE1024. HMV, Victor Company of Japan, 1-1, 4 chome, Nihonbashi-Honcyo, Chuo-ku, Tokyo, Japan.

Twenty-nine species, each apparently the nominated bird of the state or prefecture.

112. BONDESEN, POUL. 1967. *Bird Song: A World of Music* (Danish). One 10-inch, 33.3 rpm, BJ139, and book (148 pages). Rhodos, International Science Publishers, Strandegarde 36, Niels Brocks-Gaard, Copenhagen K, Denmark.

An entirely new version of the work earlier reviewed as **39**. All the recordings were made by Dr Bondesen himself, except for two by Carl Weismann. The text is in Danish, but 13 pages of duplicated foolscap in English provided separately by the publisher go some way towards explaining the area covered by the publication. The translation gives a contents list, explanations of the sound spectrograms, a 'Key to the motif-songs of Danish passerine birds' and 'An index to records of the voices of 35 Danish song-birds'.

The first purpose of the book is to assist in field identification by sound; the second is to make a contribution to the scientific analysis and description of vocalisation. The author has evolved a system by which bird songs may be classified according to their character and composition. Basically he maintains that bird songs fall under one of three character groups: the Starling Group in which the songs, typified in the Starling, are non-rhythmic and lacking a definite structure; the Chaffinch Group in which the song, although in short phrases, has definite pattern and rhythm; and the Skylark Group, with continuous outpouring.

To judge from the translation and from the drawings, spectrograms and coloured photographs—to say nothing of Dr Bondesen's other work in bio-acoustics—it is clear that this is a publication of some considerable interest and importance. It is also beautifully produced.

113. REISINGER, H. 1967. *Vogelconcert am Morgen.* One 7-inch, 45 rpm, 75.0939.5. Kosmos, Pfizerstrasse 5-7, 7 Stuttgart 1, West Germany.

Good quality recordings of a dozen or so species on each side have

been assembled and then 'mixed' to produce a pleasing if, strictly, unnatural sound montage. One of the very few attempts at a semi-artistic use of bird sound recordings. The idea is worth fuller investigation. Side 1 deals with birds of the open moorland at dawn; side 2 with birds of woodland and scrub.

114. KNECHT, S., SCHEER, U., and LECHNER, H. 1967. *Kanarienvogel.* One 7-inch, 45 rpm, 75.0930.5. Kosmos, Pfizerstrasse 5-7, 7 Stuttgart 1, West Germany.

Side A is six minutes of apparently continuous recordings made in the Azores in 1964. In the wild, the Canary *Serinus canarius* most frequently sings in flight, though it will also utter from the top of a lone tree. Often it will sing for half-an hour or longer, but it does not start in the morning until well after the sun has risen and the dawn chorus of the Blackbird *Turdus merula* is beginning to fade. Although the song is varied, most phrases are very reminiscent of the Tree Pipit *Anthus trivialis*. Often, however, in between these trills, briefer, sweeter, quieter and much more varied phrases are used. At four places on this disc—at 03′10″, 03′43″, 04′19″ and 05′28″—a call-note *kwang* (written *co-eng* in the German) is uttered by two birds: this is a social call, male and female answering one another. A call which is heard only once—at 04′29″—was uttered just before the bird flew off the nest. The high, feeble copulation call of the female, *si-si-si-si-si*, also occurs once, almost at the end of the side. The crowing of a rooster *Gallus gallus* and the song of the Quail *Coturnix coturnix* are both heard, but otherwise the side is remarkably free from extraneous sounds.

Side B presents the voices of various domesticated canaries.

115. ROCHÉ, JEAN-CLAUDE. 1968. *Maghreb (complement d'Europe-Sud): Tome II, Guide Sonore des Oiseaux d'Europe.* Five 7-inch, 33.3 rpm, 1-5, and booklet (16 pages). Institut ECHO, 04-Aubenas-les-Alpes, Basses-Alpes, France. Obtainable with English translation of the booklet by E. D. H. Johnson.

This is an important sound document, presenting for the first time the voices of North African birds. The recordings are described on the cover of the English booklet as 'A Sound Guide to the birds of North-West Africa ("The Maghreb"—a Supplement to Volume 2 of "A Sound Guide to the Birds of Europe")'. The so-called 'ornithological reasons' for this arrangement simply do not make zoogeographical sense. One can at once accept that the Maghreb is part of the Palearctic, and allow this to override the fact that north-west Africa is not part of Europe, *except* that it would surely have been better to enlarge the set and call it 'A Sound Guide to the Birds of North Africa, Volume1: North-West Africa.' Practical reasons for making north-west Africa part of Europe are referred to, but not given.

The 43 species on the five records represent, we are told, 'a mere fraction' of those nesting in north-west Africa. Eight which show 'an interesting and truly characteristic local dialect' overlap with those on earlier discs in this series (100, 102). Otherwise, species are not repeated, a more sensible arrangement than that in the first part of volume 2 which repeated 48 species from volume 1 (see 102). The birds said to have a north-west African dialect include Seebohm's Wheatear, but with the surprising comment that 'Its voice is little different from that of the Common Wheatear'. The others, which do in fact show regional variation, are the Tawny Owl, Magpie, Raven, Rufous Bush Chat, Blue Tit, Short-toed Treecreeper and Chaffinch, to which should perhaps be added a ninth bird, Levaillant's Woodpecker, which, although treated as a separate species in the booklet is more generally regarded as conspecific with the Green Woodpecker. Of the remaining 34, twelve are on the European list (five as nesters, seven as accidentals), and 22 are non-European. The five European nesters are the Long-legged Buzzard, Lanner, Andalusian Hemipode, Palm Dove and Shore Lark.

All the recordings were made in either Morocco or Algeria, except the Long-legged Buzzard which was taped in Greece. Three of the recordings are attributed to Hélène Roché, one to Adam Schmedes, one to E. D. H. Johnson and the rest to J.-C. Roché. It is surprising and regrettable that greater use was not made of the Johnson collection from North Africa. In the excellent little booklet each recording is treated as 'a specimen', and is 'labelled' with date, locality, collector and other relevant data. Not all interpretations of the sounds ring true (see Thorpe 1969), but nevertheless this is a most valuable little publication. It breaks such new ground that the species are worth listing in full. Some of the English names below have been changed from those used in the booklet to accord with what is believed to be the most general practice; the booklet also gives trinomials throughout, but here they are included only for the 'dialect' birds:

DISC 1

Long-legged Buzzard *Buteo rufinus*
Lanner *Falco biarmicus*
Double-spurred Francolin *Francolinus bicalcaratus*
Andalusian Hemipode *Turnix sylvatica*
Coronetted Sandgrouse *Pterocles coronatus*
Spotted Sandgrouse *P. senegallus*
Palm or Laughing Dove *Streptopelia senegalensis*
Marsh Owl *Asio capensis*
Tawny Owl *Strix aluco mauritanica*

DISC 2

Egyptian Nightjar *Caprimulgus aegyptius*
Little (formerly White-rumped) Swift *Apus affinis*
Desert Lark *Ammomanes deserti*
Bar-tailed Desert Lark *A. cincturus*
Thick-billed Lark *Rhamphocorys clot-bey*
Bifasciated or Hoopoe Lark *Alaemon alaudipes*
Dupont's Lark *Chersophilus duponti*
Desert Horned Lark *Eremophila bilopha*
Shore Lark *E. alpestris*

DISC 3

Blue-cheeked Bee-eater *Merops superciliosus*
Levaillant's Woodpecker *Picus viridis vaillantii*

Magpie *Pica pica mauritanica*
Raven *Corvus corax tingitanus*
Brown-necked Raven *C. ruficollis*
Rufous Bush Chat *Cercotrichas galactotes galactotes*
Blue Tit *Parus caeruleus ultramarinus*
Short-toed Treecreeper *Certhia brachydactyla mauritanica*
Bulbul *Pycnonotus barbatus*
Bush Shrike *Tchagra senegala*

DISC 4

White-rumped Black Wheatear *Oenanthe leucopyga*
Mourning Wheatear *O. lugens*
Red-rumped or Grey-headed Wheatear *O. moesta*
Seebohm's Wheatear *O. oenanthe seebohmi*
Desert Wheatear *O. deserti*
Fulvous Babbler *Turdoides fulvus*
Moussier's Redstart *Phoenicurus moussieri*

DISC 5

Desert Warbler *Sylvia nana*
Tristram's Warbler *S. deserticola*
Streaked Scrub Warbler *Scotocerca inquieta*
Trumpeter Finch *Rhodopechys githaginea*
Crimson-winged Finch R. *sanguinea*
Chaffinch *Fringilla coelebs africana*
Desert Sparrow *Passer simplex*
House Bunting *Emberiza striolata*

116. ROCHÉ, J.-C. 1968. *Oiseaux de Mer et d'Étangs*. One 12-inch, 33.3 rpm. J.-C. Roché et Cie, 04-Aubenas-les-Alpes, Basses-Alpes, France.

The sleeve notes are printed in French, German and English. Eight seabirds (if one includes the Oystercatcher *Haematopus ostralegus*) can be heard on side 1; and 17 birds of inland water on side 2.

117. WAHLSTRÖM, STEN. 1968. *Birds of the Archipelago* (Swedish). One 7-inch, 45 rpm, SWAB-1. Obtainable from Sten Wahlström, Meteorvägen 11C, Skälby, Sweden.

This disc, which features 16 species, was produced to coincide with the Second International Conference of Institute ECHO at Trosa, Sweden, in September 1968. The co-ordinates of latitude and longitude and the date and the hour of day are given for each recording, as well as the scientific names of the species.

118. WAHLSTRÖM, STEN. 1968. *Bird Song Record* (Swedish). One 7-inch, 45 rpm, STOF-1. Obtainable from Stockholms Ornithologiska Forening, Ostermalmsgatan 65, Stockholm ö, Sweden.

An excellent little disc produced by the Stockholm branch of the Swedish Ornithological Club (and given free to existing members who recruited two new members). Thirteen species, including Blyth's Reed Warbler *Acrocephalus dumetorum*.

119. TEMBROCK, G., and SCHUBERT, M. 1968. *Stimmen der Vögel Mitteleuropas*. One 12-inch, 33.3 rpm, Eterna 820.674 Veb Deutsche Schallplatten, 108 Berlin, Reichstagufer 4/5, West Germany.

A 'plain man's guide' to the more typical woodland birds of central Europe, with commentary by Professor Tembrock. Rarely recorded species are Lesser Spotted Woodpecker *Dendrocopos minor*, Nutcracker *Nucifraga caryocatactes* and Crossbill *Loxia curvirostra*.

120. FEINDT, PAUL. 1968 (September). *Vier europäische Rallenarten.* One 7-inch, 45 rpm, OV1. Obtainable only from P. Feindt, 32 Hildersheim, Wallmodenweg 7, West Germany.

The existence of this disc was briefly mentioned in my last paper (Boswall 1969: 51). Its main significance is that it presents the first recordings made of Baillon's Crake *Porzana pusilla.* An earlier recording supposedly of this species (and published as such on **16, 33, 34,** and **100**), is now known to be of a female Little Crake *P. parva.* Dr Feindt first expressed his doubts about that particular identification in 1961 to a meeting of the Deutsche Ornithologen-Gesellschaft. He published a note on the voices of the two species two years later (Feindt 1963) and he now presents tape evidence recorded by himself and H. Lütgens. (For further work on this problem, see **121** in this paper.)

Not only are the 'display calls' of Baillon's Crake, Little Crake, Spotted Crake *P. porzana,* and Water Rail *Rallus aquaticus* presented on this disc, but also their alarm notes, various sounds at the nest, and the calls of the nestlings. Because of the importance of these recordings for field identification, a translation by Sten Wahlström and Peter Tate (checked by Dr Feindt himself) of the species notes from the back of the sleeve is printed below:

Water Rail The grunting, 'inflating' and purring sounds of the Water Rail can be heard all the year in central Europe where this species sometimes winters. They can be produced simultaneously by two or three birds. Of the different display calls we reproduce typical examples from three different individuals. A series of *tjick* notes without an ending trill; a series of *tjick* notes with an ending trill, in which, despite the frog concert in the background, one can hear other individuals making the same sounds; and a trill without the opening staccato phrase. The *biit* sounds at the nest (accompanied by a Turtle Dove *Streptopelia turtur*) come from the two adults. The weak drumming, heard at the same time as the long *e* from the nestlings, is also produced by the adults.

Spotted Crake The typical display calls from this species are produced in normal tempo. The sounds of an adult near and on the nest with eggs have the same timbre as the display call, but are much weaker and softer. In the alarm calls of the adults on the breeding ground, the sharp *hewitt* of the display call changes to a hard, pressed *eh.* At the same time, the voices of the nestlings are heard (together with a Reed Bunting *Emberiza schoeniclus* in the background). It is possible to separate the nestlings of the different species by their voices from the first day.

Little Crake Of the displaying males, the note of the first is normal; the other two start with a lower-pitched and softer 'pre-note'. (In the background, Spotted Crake, Curlew *Numenius arquata* and Black-tailed Godwit *Limosa limosa* can be heard.) Afterwards follows the excited response of a male to the play-back of his own display calls. The wrong assumption that the call of the female Little Crake is the display call of Baillon's Crake was corrected by us at Lake Dümmer in May and June 1964. We reproduce the original sound recording from this occasion. It gives the play-back of the male Little Crake's display call, and the spontaneous reaction from the female. The visual proof followed after a short time.

Baillon's Crake The correct display call of Baillon's Crake—proved by direct observation, capture, and finding of nests—is a series of vowel-less hard and creaking sounds. Within a phrase they can have a small alteration in pitch, as in the first

example. They can get a deeper pitch, as in the second example, which might lead to the thought that two different individuals are heard. The sound can also have the same constant pitch, as in the third example (but be warned that confusion with the Edible Frog *Rana esculenta* is possible at a greater distance). The warning calls from Baillon's Crake and the Little Crake have almost the same rhythm, but can be clearly separated on their pitch. The excited sounds from the male Baillon's Crake can sometimes be elicited by disturbances on the breeding ground as well as by play-back of the display calls of the species.

The display calls of the Water Rail, Spotted Crake and Little Crake can be heard over a distance of 400-500 metres. Those of Baillon's Crake can be heard only over half this distance. The warning calls, which are of special importance as they indicate breeding, can be heard only up to 30 metres.

The disc itself includes over 25 separate recordings. In the following 'programme notes', which I have prepared with the help of Sten Wahlström and which will be essential to the understanding of the disc by those who do not speak German, precise timings are given:

SIDE 1

(1) **Water Rail** [(00′00″) speech]; (00′04″) grunting, 'inflating' and purring sounds of adults; [(00′41″) speech]; (00′46″) display calls of male, first individual; [(01′07″) pause]; (01′08″) ditto, second individual; [no pause]; (01′48″) ditto, third individual; [(02′01″) speech] (02′10″) adult and chicks at nest: alarm calls of adults, calls of chicks, and weak drumming of adult male and female (2) **Spotted Crake:** [(03′29″) speech]; (03′36″) display calls of adults; [(04′06″) speech]; (04′13″) female returning to nest to continue incubation; [(04′42″) speech]; (04′47″) alarm calls of adults, calls of chicks; [(05′20″) speech]; (05′23″) single chick; [(05′53″) speech]; (05′57″) calls from single chick being fed

SIDE 2

(3) **Little Crake:** [(00′00″) speech]; (00′06″) display calls of male, first individual; [(00′22″) pause]; (00′23″) ditto, second individual; [(00′48″) pause]; (00′49″) ditto, third individual; [(01′17″) speech]; (01′20″) excited calls of male responding to play-back of own voice; [(01′31″) speech]; (01′34″) weak calls of adults at nest; [(02′07″) speech]; (02′10″) calls of adults, calls of chicks; [(02′33″) speech]; (02′37″) alarm calls of adults in territory; [(02′57″) speech]; (03′05″) calls of unpaired female (formerly ascribed to Baillon's Crake in error); [(03′28″) speech]; (03′37″) display calls of male being played back, reaction from female (4) **Baillon's Crake:** [(04′27″) speech]; (04′33″) display calls of male, first individual; [no pause]; (04′50″) ditto, second individual; [(05′09″) pause]; (05′10″) ditto, third individual; [(05′35″) speech]; (05′40″) alarm calls of adults in territory; [(05′59″) speech]; (06′02″) calls of chicks; [(06′20″) speech]; (06′22″) excited calls of male

121. WAHLSTRÖM, STEN. 1968 (December), *The Mysterious Calls* (Swedish). One 7-inch, 45 rpm, SWPAB-2. Obtainable from Naturhistoriska Riksmuseet, S-104 05, Stockholm 50, Sweden.

This disc was issued to coincide with a paper by the same author (Wahlström 1968b). The main purpose of both is to explain and illustrate the difference between the voices of Baillon's Crake *Porzana pusilla* and Little Crake *P. parva,* and in particular to establish that the recording made by Sveriges Radio in Sweden in 1948 (published on **16, 33, 34** and 100) and originally labelled Baillon's Crake is, in fact, a female Little Crake (see also Wahlström 1968a). (The recording on **100**

sounds as if it were different because the background is quite unlike that of the other reproductions, but technical analysis has shown that the calls have their origin in the same 1948 recording.) In the area where the recording was made, a bird seen 'during some seconds' was identified as a Baillon's Crake (Lundquist 1950). Furthermore, a copy of the recording, along with an earlier one of a Little Crake, were sent to Charles Chessex in Switzerland. Part of his reply, dated 18th December 1949, reads as follows:

'*Porzana parva* and *Porzana pusilla intermedia* are very rare birds in this country and it took me quite some time until I could find people who really knew these birds . . . I submitted your records to two different men. One of them is a very famous ornithologist, Dr Hans Noll, from Basle; he knows *Porzana pusilla intermedia* very well, as this species was nesting in a marsh where he studied bird life for a very long time. And he also had a captive one at home for quite a long period. The other is a young friend of mine, who discovered and studied a nest of *Porzana parva* last summer (in fact, this was the first nest of this species recorded for Switzerland); he knows this bird's voice quite well. Now Dr Noll says the no. 2 record is the voice of *Porzana pusilla intermedia* and my friend Ivan Chmetz declares that no. 1 is the voice of *Porzana parva*; they are both very positive about it.'

It is thus clear that all reasonable steps to ensure the correct identification of the sound were taken at Sveriges Radio before the recording was published as a Baillon's Crake.

In May 1968, however, Mr Wahlström trapped a female Little Crake in the act of uttering a similar call which was actually being taped at the same time, and analysis of this in comparison with the 1948 recording established the correct identity of the latter.* Further work has shown that there is a sexual difference in the calls of this species. Because of its value in aiding future field identification of this little known family, one text-figure from Mr Wahlström's paper is reproduced here as fig. 1. It presents schematic spectrograms of the calls of a Spotted Crake *P. porzana,* two male and two female Little Crakes, and a Baillon's Crake. The voices of one male and five female Little Crakes appear on the disc as well as that of one male Baillon's Crake from Dr P. Feindt's disc (120) and other recordings of the Spotted Crake, Sora Rail *P. carolina* and Water Rail *Rallus aquaticus.* The disc being linked with the published paper, the first band consists of five sounds chosen to show how notes are represented on sound spectrograms. In the summary overleaf of the scope of the disc, the names of the recordists are given in brackets and it should be added that all the calls, except that of the Baillon's Crake, were recorded in Sweden.

*By an extraordinary coincidence, the solution to a similar problem among American rails was also published at the end of 1968. A recording originally published as a Yellow Rail *Coturnicops noveboracensis* (Kellogg and Allen 1959) was proved by the taping and simultaneous capture of another bird making the same call to refer to a male Virginia Rail *Rallus limicola* (Reynard and Harty 1968).

SIDE 1

(1) **Introductory sounds:** pure continuous note, complex note, Cuckoo *Cuculus canorus,* Tree Sparrow *Passer montanus,* Black-throated Diver *Gavia arctica* (2) **Spotted Crake** (S. Wahlström) (3) **Little Crake,** male (S. Wahlström); five different females (first three S. Wahlström, others I. Holmasen, R. Franzen) (4) **Baillon's Crake,** male (P. Feindt, Germany, the same as the third individual under 120) (5) **Sora Rail,** vagrant in Sweden (S.-E. Andersson and L. Fritzen) (6) **Water Rail** (S. Wahlström)

SIDE 2

Interview in Swedish with Erik Rosenberg describing how he had already met the problem of possible confusion between the voices of Baillon's and female Little Crakes. In 1953 he heard a call identified as Baillon's and a few minutes later saw a female Little

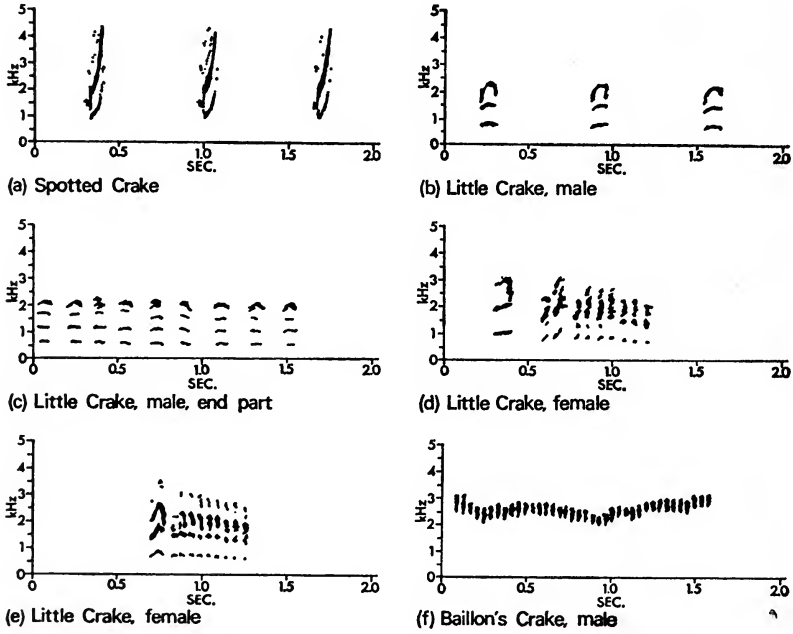


Fig. 1. Schematic spectrograms of the voices of (a) Spotted Crake *Porzana porzana,* (b) to (e) Little Crake *P. parva,* and (f) Baillon's Crake *P. pusilla*; the individual calls which these illustrate actually appear on the disc, the two female Little Crakes being the second and fourth examples. The term kHz (kilo-Hertz) has been adopted as part of the process of metrication in place of the unit formerly known as kc/s (kilocycles per second); the horizontal axis in each case shows the time in seconds (*redrawn by Robin J. Prytherch from* Fauna och Flora, 63: 238, *with permission of both author and editor*)

ACKNOWLEDGEMENTS

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Arno Graul, Bryan Wheeler-Holohan, and Leslie B. MacPherson. Mrs Audrey Ludvik's careful and perceptive work on the manuscript is also gratefully acknowledged, while Robin J. Prytherch kindly redrew the spectrograms and helped to check the proofs.

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Natural History Unit, British Broadcasting Corporation, Whiteladies Road, Bristol BS8 2LR

Letters

Mass behaviour of Shovelers At 18.50 GMT on 3rd March 1968, at Blagdon Reservoir, Somerset, we came upon a fairly close-packed assembly of 142 Shovelers *Anas clypeata,* of which at least 98 were drakes, dabbling about between ten and 40 yards offshore. As we watched, the group began to divide into three approximately equal clusters, which became more and more tightly packed and in each of which a small number of ducks was encircled by drakes swimming two to four deep. The females were so crowded that it was difficult to see whether they formed any pattern, but the rings of drakes swam bill to tail around them in an anti-clockwise direction. All the Shovelers kept their heads low throughout this sequence and soft call-notes were frequently uttered. The behaviour continued for about three

minutes, during which the three clusters drifted out into deeper water. Then they all rapidly dispersed, though smaller groups of two to four continued swimming in close circles and with frequent interchange between the groups. Rotational swimming by small parties of Shovelers is well-known, but we cannot find any reference to such apparently sexual behaviour by gatherings of these dimensions as distinct from communal feeding concentrations.

CLIVE BAGSHAW and PETER CURRY
c/o 83 Earlham Grove, Weston-super-Mare, Somerset

The Wildfowl Trust has been unable to interpret this observation and we should be interested in details of any comparable records. In the section on the Shoveler in his 'Comparative studies on the behaviour of the Anatinae' (1952, *Avic. Mag.*, 58: 86-89) Professor Dr Konrad Lorenz wrote that 'the Shoveler is not supposed to have a social courtship display as do all other surface-feeding ducks. However . . . I still suspect, in view of the unusually highly developed breeding plumage of the species, that they might possess a form of display as yet unknown to us which, for some reason, they never show in captivity.' K. E. L. Simmons suggests that, while the observation described above could possibly be this display, the only reasons for interpreting the incident as display at all seem to be (1) the division of the parties into definite male and female units and (2) the utterance of soft calls. There seem to have been no clear-cut display postures (though the known repertoire of the male Shoveler appears to be very poor) and it may be that the behaviour was no more than a form of highly co-operative feeding with the females stirring up the food in the centre and the males 'cropping' it around them. EDS

Black Terns feeding after ploughs On 24th May 1968, near Culiacán, Sinaloa, Mexico, I found several flocks of Black Terns *Chlidonias niger* following ploughs. They behaved much like Black-headed Gulls *Larus ridibundus* in similar circumstances, flying not more than two or three feet up and continuously settling to grab food. I saw several flocks, totalling perhaps 300, behaving in this way within a few miles. The Black Tern does not breed in Mexico, but is a common migrant; the natural marshy habitat in the region near Culiacán has been much diminished by drainage in recent years.

A. D. BREWER
P.O. Box 1315, Fergus, Ontario, Canada

Juvenile Swallow in Jersey in mid-May On the afternoon and evening of 17th May 1969, at Grouville Marsh (49°12'N, 2°03'W), Jersey, I was mist-netting hirundines and caught a total of 49 Swallows *Hirundo rustica*. The nets were set beneath a row of oaks which gave considerable protection from a force 5-6 south-westerly wind with

low cloud and occasional heavy showers. One of the Swallows, caught at 19.45 hours BST, came as a considerable surprise because it was clearly a juvenile from the paleness of its forehead patch, the lack of metallic blue on its back and rump, and the shortness of its outer tail-feathers (only 18 mm between the longest and the shortest); its wing was 121 mm and its weight 17.0 grams. It did not appear to be newly fledged and flew strongly when released.

Swallows had been present in small numbers in Jersey since the beginning of April, but that would still not have given time for this juvenile to have been reared there by 17th May and the first locally bred ones are not usually seen before the end of June. In any case, many Swallows were passing through Jersey at the time and at Grouville Marsh that afternoon there had been a fall of several hundreds. Confirmation that these were still on passage is provided by the later trapping at a nest at Ballycommon, Co. Tipperary, on 8th June 1969 of an adult male which I had ringed only five minutes before the juvenile.

J. C. M. Robertson

4 Gorey Hill, Jersey, Channel Islands

Apparent juvenile Swallow in Yorkshire in mid-May At about 17.15 hours BST on 17th May 1969, at Aughton, on the River Derwent in the East Riding of Yorkshire about ten miles south-east of York, Miss A. Coulthard, my husband B. L. Hancock and I saw what appeared to be a juvenile Swallow *Hirundo rustica* facing us on a low wire fence, with an adult Swallow perched on either side and some six to eight feet from it. We first noticed this bird when we were about 25 yards away and even momentarily took it to be a Sand Martin *Riparia riparia*, a few of which were flying low over an adjacent marsh with Swallows. It not only had too dark a breast-band, however, but unlike a Sand Martin it also had a sandy-brown or tawny chin and forehead. After a few minutes we moved closer and the two adults flew off, but the juvenile remained unperturbed and eventually my husband got to within five yards of it before it took wing.

In good light, although not sunny, we noted the following description: chin and forehead sandy-brown or tawny, clearly defined; breast-band dark brown or somewhat blackish-brown; under-parts (when perched facing us) creamy-white; mantle and wing-coverts dark blue with some gloss, but much less than on the extremely shiny adults; rest of upper-parts (when flying away) blackish-blue; flight feathers apparently blackish-brown, tail about the same length as wings and without any streamers. The possibility of its being a faded adult crossed my mind, but was immediately discarded. This Swallow was neither faded nor tired in appearance: its plumage was immaculate and the colours fresh. Its attitude was bright and alert and its behaviour in allowing a close approach was not one of listlessness, but similar to

that which I have often seen in young 'innocent' birds which have not yet developed an excessive wariness of human beings. In fact, it was exactly similar to the juvenile Swallows which perch on the wires a few feet from our windows in July and August. MARY HANCOCK
7 Park Terrace, New Earswick, York YO3 8DA

Neither we nor Robert Spencer and the other members of the staff of the Ringing Office of the British Trust for Ornithology know of any parallel to these two extremely interesting observations which, it will be noted, occurred on exactly the same date, though some 330 miles apart. The only possible explanations for a Swallow in juvenile plumage in north Europe in mid-May appear to be (a) that it was in a state of arrested moult from the previous autumn; (b) that it had been bred in South Africa where the nesting of this species has long been suspected but never proved; and (c) that it had been bred in the south of Spain or north Africa in spring 1969 and then been 'caught up' in a flock of migrants heading north, thus travelling far beyond its normal range. Of these suggestions the first is hardly tenable, since both Swallows were apparently in fresh plumage, and the third really seems much the most likely. Allowing a minimum of seven weeks for building, laying, incubation and fledging and another two weeks to arrive at a stage of development in which the young 'did not appear to be newly fledged', the parents of these juveniles would have had to have started nesting in mid-March, but that is not unknown in the Mediterranean area. Had there been only the sight record in Yorkshire, then the possibility of a dowdy female could perhaps not be ruled out, but it seems certain that the one in Jersey was a juvenile. EDS

Robin apparently anting while holding worm-like creatures On 6th May 1969, in our garden at Brading, Isle of Wight, my husband and I saw a Robin *Erithacus rubecula* apparently anting while holding what looked like a thin red worm about one and a quarter inches long in its bill. It first rubbed the worm on the ground and then put it under one wing eight or nine times in succession. The 'worm' was seen to curl round the bird's bill as it held it. The next day I saw the same Robin (it had rather a pale breast) again behaving in the same way, only this time while holding a shorter, thicker, dark brown creature, possibly a wireworm. On neither occasion was the bird seen to pick up any ants though I had been turning over the soil and had disturbed several nests of ants which were running about all over the place where the Robin was. I wondered whether, by rubbing the 'worms' on the ground, the bird had transferred ants to its plumage. V. H. GOODLIFFE
Landour, High Street, Brading, Isle of Wight

There have been no previous published records of any British bird

apparently anting with 'substitute' objects of this kind, though several years ago, after the publication of my review of anting (*Brit. Birds,* 50: 401-424), I recall that C. C. E. Douglas told me he had seen a Blackbird *Turdus merula* anting with a worm in his garden at Tilehurst, Reading, Berkshire. He was, however, unable later to trace this record in his notes. Assuming that Mrs Goodliffe's Robin and this Blackbird were really anting—and not, for example, rubbing the head against the shoulder because of irritation from the 'worm'—then I think it more likely either (1) that they were indeed using ants themselves (held unseen in the bill or adhering to the other creature) or (2) that they had had their anting responses initiated by the sight of the ants, or by their acid, while holding the other object which they then used instead. If such were the case, then the response was primarily to the ants and the holding of the 'worm' merely incidental.

As for Mrs. Goodliffe's suggestion that the Robin may have transferred ants to its plumage, it should be made quite clear that such a habit is quite unknown, although it is often mentioned as a fact in the popular literature. Anting birds either rub ants directly on their plumage with the bill or permit live, swarming ants to crawl up on to them—but they never place live or dead ants among their feathers (see K. E. L. Simmons, 1966, *J. Zool., Lond.,* 149: 145-162, for a recent survey of anting). The Robin, along with the majority of passerines that ant, simply rubs ants in its bill on the underside of one wing and, unlike the larger thrushes of the genus *Turdus*, does not permit ants to infest its feathers.

K. E. L. Simmons

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House Martins mating on the wing In mid-afternoon on 3rd June 1969, at Languedoc between Pradelles and Prévenchères on the north side of the Cévennes highlands, in the south of France, I saw a number of House Martins *Delichon urbica* hawking over a hillside. Two of these began flying more dashingly and excitedly than the others, keeping close all the time, and suddenly one of them 'alighted' on the back of the other. The lower bird, presumed to be a female, ceased to flap and glided on bowed wings, while the upper, presumed to be a male, kept an almost vertical position on her back with wings aloft and gently fluttering as he curved his tail down beside and beneath hers with every appearance of effecting coition. They dropped gradually but noticeably in the air during the few seconds that they were together. In the end he flew off slightly upwards, while she turned her glide into a swoop as though to gain momentum, shook herself and resumed normal flight. I have, of course, heard of Swifts *Apus apus* mating in flight, but I do not recollect any previous record of this behaviour by House Martins.

Mary Hancock

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Reviews

Peregrine Falcon Populations: Their Biology and Decline. Proceedings of an International Conference sponsored by the University of Wisconsin in 1965. Edited by Joseph J. Hickey. University of Wisconsin Press, Madison, Milwaukee and London, 1969. 596 pages; 61 black-and-white plates. 95s.

It was by a curious chance that the Peregrine became the main focus of the pesticide-wildlife debate. In 1960, when the pigeon-fanciers complained that an increase in Peregrine numbers was causing heavy losses among their racing birds, the Nature Conservancy asked the British Trust for Ornithology to carry out a national census to see if the facts justified control measures. The results, published in 1963 by the organiser, D. A. Ratcliffe, revealed that, far from increasing, Peregrines had declined to about half the pre-war total and that only a quarter of the survivors were breeding successfully. He argued that strong circumstantial evidence implicated the persistent organochlorine pesticides in the decline. This conclusion played an important part in further restrictions on the uses of aldrin and dieldrin, which operated from 1965. Not everyone, however, was convinced. The leading manufacturers maintained (and have continued to do so) that the case was not proven, and some biologists, especially in the United States, considered it desirable to establish a more direct link between increased pesticide use and the widespread declines of the Peregrine and some other raptors.

This was the genesis of the conference of international experts sponsored by the University of Wisconsin in the autumn of 1965 and organised by Professor Hickey. Its purpose was to review the evidence and assess the various explanations of what he describes as 'one of the most remarkable recent events in environmental biology'. The Proceedings run to almost 600 pages, a record for a volume devoted largely to a single avian species. They open with a fascinating account of the history and habits of the Peregrine and then there follow the experts' contributions and discussion summaries arranged under a number of main headings: Peregrine populations, giving detailed accounts of the declines in many areas (in the eastern United States the 1964 enquiry failed to locate any active eyries); population trends in other raptorial birds, including the Osprey, Sparrowhawk, Golden Eagle, Bald Eagle and White-tailed Eagle; behaviour and general ecology; and population factors, from predation, pathogens, shooting and egg-collecting to sonic booms. The final section covers population dynamics and the significance of the trends established, and here the discussion is of absorbing interest. The case for linking pesticides with the widespread declines in various raptors was put by Dr Ratcliffe and

Ian Prestt of the Nature Conservancy, whose detailed researches provided some of the most convincing evidence. They, and others, stressed the close correlations, geographically and in time, between the increasing use of the persistent organochlorines and the population declines. They pointed to the novel and sinister sequence so often revealed, of egg-breakage, hatching failure, death of young and failure of adults to lay, all suggestive of the sub-lethal effects of pesticides. They established that throughout its history, before the advent of synthetic agricultural chemicals, the Peregrine had a remarkable resilience to other possible mortality factors, such as persecution and disease.

Many, but not all, of those present at the conference in 1965 seem to have been convinced by this weight of evidence. Some remained unhappy that it was then not possible to determine the precise mechanism by which the persistent chemicals acted to produce such widespread effects. The long delay in publishing the Proceedings has had the fortunate effect of enabling Professor Hickey and James E. Roelle to add an account of the results of later research and so, as in the classic detective novel, to reveal the exact details of the crime in their three final pages.

Appropriately, it was Dr Ratcliffe who took the first decisive step, when he showed that egg-shells of Peregrines, Golden Eagles and Sparrowhawks (all species where the phenomenon of egg-breaking and eating had been observed) had declined markedly and abruptly in thickness after 1946, coinciding with the general introduction of the first major organochlorine, DDT. Similar changes were then found in North American raptors, including Peregrines, Bald Eagles and Ospreys. The second discovery was made by D. B. Peakall, a British scientist working in the United States, who demonstrated that organochlorine compounds can affect the hormones which regulate the mobilisation of calcium in the reproductive cycle of birds. Professor Hickey and Dr Roelle conclude, therefore, that 'the ecological case against the chlorinated hydrocarbon insecticides as the pervasive factor in these phenomena is essentially complete'.

It has taken almost a decade of intensive international research in the field and laboratory to obtain this certainty. The pollutants involved are varied: dieldrin, DDE (a metabolite of DDT which has taken on an increasing significance), possibly the polychlorobiphenyls (widely used in industry) and, in Sweden at least, mercury. It is surely time that we in Britain joined other countries in controlling the use of DDT; indeed, one may hope that steps will now be taken throughout the world, not only to save the remnants of a superb group of birds, but to guard against other ecological effects, equally difficult to foresee and unravel, of widespread pollution on the living cargo of this planet.

STANLEY CRAMP

Avifaune de Belgique. By La Commission pour l'Avifaune Belge. Institut Royale des Sciences Naturelles de Belgique, Brussels, 1967. 108 pages; 2 maps. Belgian francs 100. (Also published simultaneously in *Le Gerfaut*, 57: 365-465.)

Clearly much care and effort have been devoted to the production of this check-list of the birds of Belgium, which is the work of a distinguished committee of 18 members under R. F. Verheyen. Moreover, it is proposed that it shall be kept up to date by the publication of annual supplements.

The systematic list contains 337 species, with their scientific, French and Dutch names. Families are arranged in the sequence recommended by the XIth International Ornithological Congress at Basel in 1954, which for the non-passerines follows J. L. Peters's *Check-List of Birds of the World* (1931-48) and A. Wetmore's 'A revised classification for the birds of the world' (1951, *Smithsonian Misc. Coll.*, 117 (4): 1-22), and for the passerines follows the list published by Ernst Mayr and J. C. Greenway Jr (1956, *Breviora*, 58: 1-11); this sequence, with a few very minor variations, will be familiar to all users of the revised edition of *A Field Guide to the Birds of Britain and Europe* (1966). Each species is dealt with concisely, but in some detail, with notes on status, distribution and migration, and for many of the larger birds an attempt has been made to estimate populations; individual records of casual visitors recorded less than 13 times since 1900 are also given. Two appendices respectively list seven species which have been introduced to Belgium or adjacent regions and ten species which, as apparent accidentals, could have originated in escapes from captivity.

A 15-page introduction describes in a concise and very readable manner the country's geography, topography, climate and vegetation. These are further summarised for each of twelve main geographical regions, with the help of tables and two very clear maps. The British reader should not be deterred by the fact that the main text is in French, since the introduction is translated very fully into good English and the terms used in the systematic list are again defined in a glossary whose presentation can only be described as exemplary. E. D. H. JOHNSON

Letters

Birds taking 'nectar' The note by Miss Eileen A. Soper (*Brit. Birds*, 62: 200-201) is of interest, among other reasons, because her experiences are in accord with those of some aviculturists. I have found through the years, rather to my surprise, that many birds of widely differing families drink with obvious relish the 'nectar' which is intended for such species as hummingbirds (Trochilidae), sugar-birds

(Coerebinae) and lorikeets (Psittacidae). I have seen it enjoyed by nuthatches *Sitta spp.*, redstarts *Phoenicurus spp.*, warblers (Sylviinae), Rufous Bush Chats *Cercotrichas galactotes*, woodpeckers (Picidae), many seed-eating birds from finches (Fringillidae) to parrots (Psittacidae) and even shrikes *Lanius spp.* The last is particularly interesting because it is my experience that shrikes are not great drinkers; indeed, my pair of Great Grey Shrikes *L. excubitor* have never been seen to drink anything at all.

Apart from the proprietary nectars which are available, many aviculturists make their own, ranging from the simple glucose in water to quite elaborate formulae involving the boiling of grapes and currants and the adding of honey to the filtrate. The nectar-drinking habit is useful as an easy means of adding vitamins and minerals (and, of course, drugs) to the diet of birds which might otherwise resist them. M. D. ENGLAND

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Female shrikes impaling prey Almost immediately after the publication of the paper by Dr Geoffrey Beven and myself on 'The impaling of prey by shrikes' (*Brit. Birds*, 62: 192-199), the females of the single pairs of Rufous-backed Shrikes *Lanius schach* and Great Grey Shrikes *L. excubitor* in my aviaries at Neatishead, Norfolk, started impaling and wedging prey. The statement (p. 196) that only males were seen to do this is therefore no longer valid. In each case, the habit began only when the female left the nest to collect food for the young. Neither had ever been seen to do it before and, since nesting, only the Rufous-backed has continued. M. D. ENGLAND

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Reassessment of rejected rarities The important criticisms of the Rarities Committee raised by P. J. Oliver are not answered by the accompanying editorial comment (*Brit. Birds*, 62: 43-44); in some ways, indeed, the latter even makes the criteria for the Committee's decisions more obviously unsatisfactory. The assessment of sight records is always a difficult task and one of the main functions of the Rarities Committee should be to maintain a uniform standard of assessment. Sight records of rare birds are not divisible into a dichotomy of completely unacceptable submissions and accurate and convincing records. They probably include all degrees of likelihood and somewhere this continuum has to be arbitrarily divided into acceptable records and rejections. The Editors' statement that 'acceptance denotes full satisfaction with the proof offered' does not fit the facts in the case of the Pallas's Sandgrouse *Syrrhaptes paradoxus* in Kent. How can there be 'full satisfaction' with a record if it is originally rejected and, without further evidence, later accepted? Like Mr Oliver I do not claim to

judge the acceptability of this record which the editors state was originally rejected on the grounds of 'inherent improbability' (as the species had hardly been recorded in western Europe since 1908-09) and because the bird was seen only on the wing. Incidentally, *British Birds* should not disparage such a view as its own Red Grouse has now taken to flight!

I agree that without objective evidence, such as photographs, tape recordings or measurements of birds examined in the hand, acceptance becomes a matter of assessment. Where I believe that the editors are scientifically in error is in their admission that recording committees should take into account in their assessment the existing pattern of records. This seems likely to introduce considerable bias. The 'Editorial' in the same issue (*Brit. Birds*, 62: 1-3) refers to the scientific uses of these rarity records and to the 'interesting patterns' at present emerging. Yet later the same editors say that the 'existing pattern of records' is one of the considerations taken into account when vetting new records!

The effect of this bias will become evident in such factors as the seasonal incidence of records. An examination of accepted records may, for example, show that half the observations of a particular vagrant occur in a certain month. This may simply be the result of rejecting records in other months that are otherwise just as likely as those that are readily accepted because they fit the existing pattern. It is not possible to investigate seasonal variation (or geographical variation) of records if the season (or place) is itself a factor in the acceptance of the report. Again, to consider one of the editors' own examples, if it is harder to get a Willow Warbler *Phylloscopus trochilus* than a Chiffchaff *P. collybita* accepted in January, then the ratio of Chiffchaffs to Willow Warblers actually present will not be the same as the statistics of the scrutinisers. Finally, the editors state that 'subsequent good evidence', in the form of data making a record fit better into a pattern, can carry a record across the threshold of qualifying for acceptance. If this is so, does the Rarities Committee also review all accepted records to see if subsequent evidence of a similar circumstantial nature may make an existing record rather less likely and hence cause it to be rejected?

What is required is for more consideration to be given to the purposes of the Rarities Committee in the light of analyses likely to be made from these records. What is disquieting is the apparent lack of awareness of the unscientific nature of the present criteria for assessing records. I hope that P. J. Oliver's letter will stimulate further discussion of this important subject and that this will quickly lead to a change in policy on the part of the Rarities Committee.

ESTLIN WATERS

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News and comment *Robert Hudson*

Reserve news The Nature Conservancy has declared a new National Nature Reserve in Wales and the extension of two others. The new reserve consists of 3,525 acres (apparently extensions are in the offing) of unspoilt foreshore and saltmarsh of the Dovey estuary on the Cardiganshire/Merionethshire border. This estuary is one of the most important winter wildfowl resorts in the Principality and the eastern part of the reserve has, with the help of local wildfowlers and naturalists, been made a wildfowl refuge; wildfowling under permit will continue outside the refuge area. In north Wales, 100 acres have been added to Coed Camlyn N.N.R. and 16 acres to Coed y Rhygen N.N.R., both oak woodland areas of Merionethshire and within the Snowdonia National Park.

Markedly different is a new reserve on the Durham side of the Tees estuary, where the Royal Society for the Protection of Birds has leased (from I.C.I.) 160 acres of Cowpen Marsh, the only remaining stretch of salt and fresh marsh of significant size between Holy Island and the Humber. This new reserve adjoins 643 acres of mud flats known as Seal Sands, the latter being a scheduled Site of Special Scientific Interest. These sites together form a natural oasis in a largely industrial area; surrounding industrialists and local authorities are co-operating to prevent effluents from polluting the estuary, which consequently has increased in importance as a winter resort for wildfowl and waders. The R.S.P.B. intends that Cowpen Marsh Reserve shall be put to educational use, possibly by establishing a day field centre there; a warden is to be appointed.

Transferring eagle eggs In Czechoslovakia the Lesser Spotted Eagle lays two eggs, but normally rears only one young; successful results have been obtained by transferring one egg per nest into nests of the locally common Black Kite, which has proved a capable foster parent (*Berliner Naturschutzblätter,* no. 36). Now a comparable state of affairs exists with our Golden Eagle, which normally rears only one young per nest; would it not be worthwhile transferring single eggs from multiple clutches into nests of Buzzards? At least it should be ascertained whether Buzzards can successfully rear Golden Eagle chicks and, if possible, whether imprinting would affect the future breeding behaviour of the young eagles concerned.

Forest of Dean booklet On the west bank of the Severn estuary lies an important area of natural woodland, the Forest of Dean. In former times this forest stretched from the confluence of the rivers Severn and Wye almost to the Malvern hills, but now it is reduced to an area of 28,000 acres. Though originally oak woodland, in recent years the softwood mania of the Forestry Commission has resulted in 60% of present-day trees being coniferous. Hitherto there has been a tendency for bird-watchers to concentrate on the southern bank of the Severn, at Slimbridge, to the neglect of the Dean shore. Possibly the balance will be corrected by a new booklet, *Birds of the Dean Forest Park* by J. R. A. Niles and S. Cooper. These authors include the adjacent part of the estuary (apparently the section between Sedbury and Awre is a notable resting place for migrant waders) and peripheral farmland, but it is the woodlands which command attention. Especially important is the nest-box population of Pied Flycatchers, which has been the subject of extensive study, especially by Dr Bruce Campbell, since 1947. The first half of this 52-page booklet is an ecological survey of the area and the second half contains a systematic list of the 156 species recorded: not a large total perhaps, but a respectable one for a predominantly wooded area. Buzzards, Dippers and Ravens breed in small numbers; Nightjars and Woodlarks still nest there (they have decreased or even disappeared in some parts of southern England), but the Red-backed Shrike has all but gone. Little Owls and Nightingales

are rather scarce so far west, but there are goodly numbers of Wood Warblers. Surprisingly, no Redpolls are known to breed in the Forest of Dean. At 7s 6d (plus postage) this useful booklet is a good buy; it may be obtained from S. Cooper, 10 Cannop Villas, Coleford, Gloucestershire.

New library of wildlife sounds On 2nd July the British Library of Wildlife Sounds (B.L.O.W.S.) was officially inaugurated as a new department of the British Institute of Recorded Sound, at 29 Exhibition Road, London SW7. The purpose of this Library is to satisfy the scientific and cultural need for a national repository of zoological recordings, and contributary material will be welcomed. Amateur wildlife recordists are invited to submit copies of any properly documented tapes they may have. Professional zoologists who use the tape-recorder in their research will, it is hoped, deposit copies of recordings, particularly those illustrated by sound spectrograms in their published papers. The ambitious aim of the tape section of the Library is eventually to build up complete vocabularies of all sound-producing animals of Britain and the western Palearctic; but wider horizons are set, and already there is a special interest in Antarctic birds and mammals. A commercial disc section is global in outlook, and covers amphibians, insects, birds, mammals, and other sound-producing classes. The Library will normally be open on Mondays to Fridays from 10 a.m. to 6 p.m.

A special 72-page issue of the Institute's quarterly journal *Recorded Sound,* entirely devoted to wildlife sound recording, was published in April. Articles most likely to interest readers of *British Birds* are 'Commercial gramophone records of wildlife sound' by Jeffery Boswall, 'Wildlife recordings in the BBC Sound Archives' by John Burton, 'Bird sound recording in South Africa' by June Stannard, and 'A sound recording project for African birds 1950-65' by the late Myles North. This issue of *Recorded Sound* can be obtained at a price of 12s 6d from the B.I.R.S. at the address given in the previous paragraph.

U.S. Nest-Record Program The British Trust for Ornithology pioneered the development of nest recording, and its own Nest Record Scheme now has an annual intake of about 20,000 cards. Of recent years the idea has been introduced successfully into a number of overseas countries, but nowhere has it succeeded so well as in the United States, where the programme is managed by the Cornell Laboratory of Ornithology. A note in their Newsletter no. 52 revealed that they too received 20,000 cards during 1968; these, and a backlog of 75,000 cards, are now being transferred to IBM cards for computer analysis. Computer programmes for breeding season and clutch size analyses have already been written and tested.

What price ECY 70? Robert Boote, Deputy Director (Conservation and Management) of the Nature Conservancy, has been newly appointed British Chairman for the Council of Europe's Committee for the Conservation of Nature and Natural Resources; he has special responsibility for the organisation of European Conservation Year 1970 (about which see 'News and comment' in September 1968). This appointment is most apt, for it was he who initiated ECY 70, by interesting the Council of Europe in promoting a European-scale equivalent to the British Countryside in 1970 Conference. Yet it must be reported that, so far, the British contribution towards ECY 70 promises to fall short of that by other European countries; this fact was stressed by Jon Tinker in *The New Scientist* for 3rd July, where the Countryside Commission (which agreed to act as British information centre) was attacked for its incompetence and lack of central initiative in this matter. At present there are no plans for any Europe-oriented national event. In France, Malta and Norway, ECY 70 plans are chaired by cabinet ministers; the Norwegian Government has allocated a million kroner, and that of Greece a million drachma. Yet the British Government has offered a mere £2,000 to the Nature Conservancy to organise a third Countryside

in 1970 Conference, the practical value of which may be doubted. Probably county conservation trusts and other voluntary bodies will do their inevitably parochial best; but unless an adequate information service is provided (preferably outside the Countryside Commission), and Government funds injected into publicity, then the British message of ECY 70 will be preached only to the converted.

Coto Doñana biological station Those who have read Guy Mountfort's book *Portrait of a Wilderness* (1958) will not need to be reminded of the importance of Spain's Coto Doñana as a wetland reserve. Since that book was first written, threats of development to the Coto have led to a large section of the marismas (26 square miles) being purchased by the World Wildlife Fund. This internationally important reserve is now a Spanish National Park, in part managed by the Estacion Biologica de Doñana, whose Director, Dr José A. Valverde, is looking for an ornithologist to work on the Coto from October 1969 to September 1970. The successful applicant will be required to keep an ornithological diary, to study specific nests, to conduct a ringing programme, and to look after his assigned horse! Accommodation will be provided at the Palacio, though staff will do catering and laundry. A young person of independent means would be preferred, but the Estacion could offer a monthly salary of 6,000 pesetas if necessary. Applications to Dr Valverde, Estacion Biologica de Doñana, Paraguay 1, Sevilla, Spain.

New life for a forgotten reserve In 1932 the late H. F. Witherby purchased Gracious Pond Farm, Chobham, Surrey, and made 30 acres of woodland there into a private nature sanctuary. This flourished for twelve years, but, following the death of its founder, and in wartime too, it fell into disrepair. Now two local naturalists, Frank V. Blackburn and Victor Lewis, have obtained permission from the present owner of Gracious Pond Farm to resuscitate the sanctuary; fencing is being renewed and nest-boxes erected, and they hope eventually to convert an adjacent 15 acres of swampland into a lake.

The future of Foulness Once the Roskill Commission had announced its short list of possible sites for the proposed third London Airport, as reported in April 'News, and comment', it became possible for interested parties to assess the effects of each, and opportunities to make views known are currently being provided during the local hearings of stage 2 of the enquiry. That for Foulness was held in Southend-on-Sea in May, and Dr W. R. P. Bourne has kindly provided these notes.

The main written evidence submitted to the enquiry was circulated beforehand and contained three major contributions of interest to ornithologists: (1) a statement from the Nature Conservancy, containing a detailed account of the area and its wildlife, and stressing that the island and offshore Maplin Sands have long been listed as coastal habitats of international importance; (2) a statement from the Royal Society for the Protection of Birds, representing 13 national and local voluntary naturalists' organisations, stressing especially the importance of the area for Brent Geese and migrating shorebirds, and also drawing attention to the possible hazards to aircraft from bird-strikes; and (3) a statement prepared for Essex County Council by Dr G. W. Schaefer, arguing that the bird-strike hazard at Foulness would be no greater than at Heathrow, and that at least some of the Brent Geese and other shore-birds could find alternative feeding-grounds elsewhere or that these could be created for them.

When Dr Schaefer was cross-examined by David Lea for the R.S.P.B. about the likely bird-strike hazard, it became clear that there was a serious divergence of opinion, especially regarding the situation in September. Dr Schaefer's arguments included the interpolation of a figure of 70,000 gulls flighting over Heathrow in that month, whereas an actual count had, in fact, revealed no more than 6,500 for the whole area and this at a season when 180,000 birds are regularly flighting over

Foulness. Dr Schaefer further suggested that shore and water birds which occur in large numbers at Foulness, but not at Heathrow, could be ignored as presenting no hazard to modern aircraft, despite the fact that it is impossible to predict how any of these birds will behave, at least until more details of the design of the airport are known. Subsequently, two witnesses for the R.S.P.B., Dr G. V. T. Matthews and Dr P. Rudge, quoted extensive research demonstrating that it was unlikely that *Zostera*, the main food plant of the Brent Geese, could be grown elsewhere, or that the other shorebirds could be induced to leave Foulness. The presiding Roskill Commissioner, A. J. Hunt, has stated that the Commission will now carry out its own special investigation of bird-strike hazards during stage 3 of the enquiry.

Perhaps the most interesting information revealed was that Foulness is measurably sinking and has been completely flooded three times in the last 80 years, most recently in 1953. If the Roskill Commission, and ultimately the Government of the day, cannot be persuaded that Foulness is not a good place for an airport, the designers of the Concorde had better make it resistant to intermittent submersion in salt water.

Bird-strike at Heathrow On 22nd July 1969 an Alitalia DC8 carrying 131 people suffered a bird-strike on its number 3 engine while taking off from Heathrow for New York. A fire developed which threatened to spread along the wing, but the pilot was able to extinguish it, although he had to circle for an hour jettisoning fuel before he could return to land the aircraft. It will be recalled that in April 1968 a similar accident, though due to a compressor failure, resulted in an uncontrollable fire and the total loss of a Boeing 707 with the death of five passengers.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

J. T. R. Sharrock and I. J. Ferguson-Lees

These are largely unchecked reports, not authenticated records

This summary is concerned mainly with May 1969 and, unless otherwise stated, all dates refer to that month. We have come to expect an array of exotic vagrants every May and this year was no exception. The peak days for rarities were 2nd-4th, 11th, 17th-18th, 24th-25th and 30th-31st, though it should be pointed out that all these except 2nd and 30th were week-ends. Even so, 4th May stands out and was no doubt associated with events the previous day on Fair Isle.

3RD MAY ON FAIR ISLE

We do not usually devote a whole section to one station or even to one day, but then there is not often a day like 3rd May 1969 at one observatory, even Fair Isle. On 2nd there had been a few interesting birds, such as a **Purple Heron** *Ardea purpurea*, twelve **Ring Ouzels** *Turdus torquatus*, six **Whinchats** *Saxicola rubetra*, a **Great Grey Shrike** *Lanius excubitor* and 35 **Bramblings** *Fringilla montifringilla*, but the following day produced some staggering totals. These included, for example, 45 **Wrynecks** *Jynx torquilla*, 300 **Ring Ouzels**, 130 **Whinchats**, 75 **Redstarts** *Phoenicurus phoenicurus*, 400 **Willow Warblers** *Phylloscopus trochilus*, 25 **Pied Flycatchers** *Ficedula hypoleuca*, 1,500 **Tree Pipits** *Anthus trivialis*, 500 **Bramblings**, 32 **Ortolan Buntings** *Emberiza hortulana* (as many as are usually recorded in the whole of Britain and Ireland in an entire average year) and 80 **Reed Buntings** *E. schoeniclus* (90 on 4th).

HERONS, WADERS, TERNS AND RAPTORS

It was rather a poor month for rare herons and, apart from the **Purple Heron** on Fair Isle (which stayed throughout 2nd-31st), and others at Cley (Norfolk) for two weeks in early May and at Minsmere (Suffolk) from 30th into June, there was only a **Little Bittern** *Ixobrychus minutus* at Birkenhead (Cheshire) on 15th-18th. **Spoonbills** *Platalea leucorodia,* however, were reported from Dorset, Suffolk (three at Minsmere), Norfolk (Cley, Breydon and Holme) and Yorkshire, as well as the first-ever record for Buckinghamshire when one was seen flying north-west over Little Marlow on 11th.

May is the main month for spring records of **Temminck's Stints** *Calidris temminckii* in Britain and this year seven were reported. The favoured counties of Norfolk, Suffolk and Kent each produced one or two as usual—Cley on 27th, Minsmere on 2nd-3rd, Stodmarsh (Kent) from 11th (later joined by a second) and Bough Beech (Kent) on 18th-19th—but there were also others at Wrafton (Devon) on 24th and Breaston (Derbyshire) on 25th-26th. The only other unusual waders were a **Grey Phalarope** *Phalaropus fulicarius* in summer plumage at Minsmere on 2nd, a **Long-billed Dowitcher** *Limnodromus scolopaceus* at Loch Lomond (Dunbartonshire) on the same day, and two **Dotterels** *Eudromias morinellus* at Spurn on 4th. From the records that we have received, **Black Terns** *Chlidonias niger* seem to have been well below average, and not a single **White-winged Black Tern** *C. leucopterus* was reported. Indeed, the only rare tern reported in May was a **Gull-billed Tern** *Gelochelidon nilotica* at Cley on 21st.

On the other hand, it appears to have been a good month for raptors, with **Hobbies** *Falco subbuteo* and **Marsh Harriers** *Circus aeruginosus* quite widespread (though the former seem to have been fewer than in spring 1968). Marsh Harriers (perhaps the same individual) were seen inland at Ecton sewage farm (Northamptonshire) on 12th and at Eye Brook Reservoir (Leicestershire) on 15th, while both species reached as far north as Fair Isle. It was, indeed, Fair Isle's month, for there were **Honey Buzzards** *Pernis apivorus* there on 5th and 27th-29th, a **Rough-legged Buzzard** *Buteo lagopus* on 6th and **Ospreys** *Pandion haliaetus* on 4th-5th and 30th. Other Ospreys appeared at Sevenoaks (Kent) on 3rd-4th, Hartlepool and South Shields (Durham) on 4th, near Darlington (Durham) on 4th, near Dartford (Kent) on 23rd and at Spurn on 26th: this is not unusual at this time of year, however, and there were doubtless others of which we have not heard. Three **Red-footed Falcons** *Falco vespertinus* included one inland at Ogston (Derbyshire) on 3rd and others at Cley on 4th and King's Lynn (also Norfolk) on 7th. **Goshawks** *Accipiter gentilis* are always suspect as possible escapes, but Minsmere's first ever, on 4th, coincided with the peak day for rarities on the east coast.

OTHER SOUTHERN, EASTERN AND SCANDINAVIAN VAGRANTS

There is such a mixture of rarities that it would be difficult (and probably artificial) to split them up into groups based upon hypothetical origins, and so all are dealt with together. **Hoopoes** *Upupa epops* were rather few, with only two in Surrey and singles in Kent, Norfolk, Somerset and Co. Down. So too were **Golden Orioles** *Oriolus oriolus,* with two at Minsmere and singles in Surrey, Yorkshire and Kent, except in the Isles of Scilly where up to three at a time were seen on five of the islands during the early summer. A **Bee-eater** *Merops apiaster* was recorded at Sandwich Bay (Kent) on 25th. An **Alpine Swift** *Apus melba* was seen on Lundy (Devon) and the south-west also produced a **Red-rumped Swallow** *Hirundo daurica* at Marazion Marsh (Cornwall) on 10th.

Potentially very interesting was the identification of two separate **Lesser Short-toed Larks** *Calandrella rufescens* at Holy Island (Northumberland) on 19th and at Donna Nook (Lincolnshire) on 23rd and 28th. If accepted, these would be the first British records, all the previous ones having been in Ireland (over 40 in 1956 and 1958). It should be added, however, that experience with trapped birds on Fair Isle

and in Spain has shown that some Short-toed Larks *C. cinerea* in spring do have streaks on the breast. There was also a much-watched **Short-toed Lark** at Minsmere on 10th-22nd and another in Essex about the same time. Migrant **Woodlarks** *Lullula arborea* (this is now an extremely scarce breeding species in Britain) appeared at Spurn on 17th-18th and on Bardsey Island (Caernarvonshire) on 31st.

Most spring **Icterine Warblers** *Hippolais icterina* occur in Shetland and the only ones this May were on Fair Isle on 28th and 30th. Other rarer warblers were single **Savi's Warblers** *Locustella luscinioides* inland at Knaresborough (Yorkshire) on 14th-15th and at Cley on 16th (as well as at three localities in Kent and at one place in another county); a good crop of **Great Reed Warblers** *Acrocephalus arundinaceus,* at Huttoft (Lincolnshire) on 3rd, Glynne Gap (Sussex) on 11th, Stodmarsh on 24th, Dungeness (Kent) from 31st to 1st June and Chichester gravel pits (Sussex) on 4th June; and **Marsh Warblers** *A. palustris,* at several localities north to Fair Isle (three on 26th). As well as the 32 Ortolan Buntings at Fair Isle, there were others at the same time at Donna Nook on 4th and up to three at Spurn on 4th-6th. Fair Isle had 19 bird-days for **Bluethroats** *Luscinia svecica* during the month and, again, Spurn (24th-25th, 30th, two on 31st) and Donna Nook (31st) were the only other localities to record the species, the males all being of the Red-spotted form *L. s. svecica.* A total of four **Serins** *Serinus serinus* was seen, at Donna Nook on 4th, Hartlepool on 5th, Dungeness on 9th and Ashdown Forest (Sussex) on 26th.

Other rarities included a **Rock Thrush** *Monticola saxatilis* at Salthouse (Norfolk) on 9th; a **Black-eared Wheatear** *Oenanthe hispanica* at the Wicks (Kent) on 4th; a **Red-breasted Flycatcher** *Ficedula parva* on Fair Isle on 29th; a **Collared Flycatcher** *F. albicollis* at Holme on 4th-5th; four **Tawny Pipits** *Anthus campestris,* at Winterton and Horsey (both Norfolk) on 18th, at Beachy Head (Sussex) on 24th and Cliffe (Kent) on 30th; a **Red-throated Pipit** *A. cervinus* on Lundy on 17th; four **Woodchat Shrikes** *Lanius senator,* at Thurlestone (Devon) on 18th, on Cape Clear Island (Co. Cork) on 25th, at Sandwich Bay on 28th and on Unst (Shetland) on 29th; and, finally, two **Lesser Grey Shrikes** *L. minor,* at Burnham Norton (Norfolk) and Beachy Head on 25th.

ODDS AND ENDS

A **Slate-coloured Junco** *Junco hyemalis* on Out Skerries (Shetland) on 7th may have been a genuine transatlantic vagrant, but is perhaps more likely to have been an escape. The several **Red-headed Buntings** *Emberiza bruniceps* now hardly deserve a mention for this reason, but a **Black Stork** *Ciconia nigra* at Brandon (Suffolk) on 26th and a **Ruddy Shelduck** *Tadorna ferruginea* at Egypt Bay (Kent) on 13th are possibly more marginal. Memories of last autumn were kept alive by the continued presence throughout May (and also June) of a **Nutcracker** *Nucifraga caryocatactes* at Bearsted (Kent) and by at least one other staying on near Pickering (Yorkshire) until 4th and perhaps mid-month. Similarly, two **Great Spotted Woodpeckers** *Dendrocopos major* remained at Ballycastle (Co. Antrim) until early May, while others of the Northern race *D. m. major* were trapped at Spurn on 5th and 8th (two).

Lastly, this summary would not be complete without mention of the great dearth of **Whitethroats** *Sylvia communis* which has been remarked upon almost throughout Britain and in most of Ireland. Indeed, the only places where Whitethroats seem not to have been exceptionally scarce are parts of Suffolk and Co. Sligo. The Common Birds Census will show the extent of this dearth in agricultural England, but most of the estimates we have received are in the region of a quarter to a third (in some cases only a tenth) of the normal. Several other summer visitors have also been reported in reduced numbers, notably **Sand Martins** *Riparia riparia* and **Sedge Warblers** *Acrocephalus schoenobaenus,* but also, more locally, **Yellow Wagtails** *Motacilla flava,* **Redstarts, Whinchats, Nightingales** *Luscinia megarhynchos* and male **Pied Flycatchers.** On the other hand, it seems to have been a particularly good year for **Grasshopper Warblers** *Locustella naevia,* at least in some areas.

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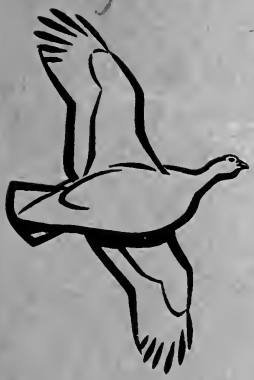

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Field identification of juvenile Common, Arctic and Roseate Terns

P. J. Grant and R. E. Scott

Plate 53

INTRODUCTION

Since 1966 the power station outflow at Dungeness, Kent, has provided excellent opportunities for studying feeding gulls and terns at close quarters. In mid-summer and autumn these include numerous juveniles which can be compared under ideal conditions. During 1966 and 1967 our observations suggested that, of the juvenile terns considered in this paper, only Common *Sterna hirundo* and Arctic *S. paradisaea* were present, although adult Roseate *S. dougallii* were often to be seen in the summer. In July 1968 we spent two days at Rhosneigr, Anglesey, where a mixed colony of all three species enabled us to corroborate our observations and extend them to include juvenile Roseate Terns, also confirming that we had not seen any of the latter at Dungeness.

British identification books provide little information on distinguishing these three species in juvenile plumage. In fact, we believe that they tend to make the task more difficult than it really is and, as a result, most observers bracket them as 'Comic' Terns. More recent publications, such as Hollom (1962) and Peterson *et al.* (1966), refer to the transparency of the wings of the Arctic Tern (Richardson 1953), the relative leg length, the more boldly marked upper-parts of the Roseate, and the more prominent shoulder mark of the Common. The most useful discussion to date is that of Géroudet (1965) who picked out the more buffish appearance of the Common Tern, the grey and white of the Arctic, and the underwing differences of all three species when viewed against the light.

Our field work indicates that, with careful observation under reasonable conditions, the juveniles of all three species may easily be

separated. They are illustrated on plate 53. A recent photograph by J. B. and S. Bottomley (*Brit. Birds,* 61: plate 70b) is also useful since it shows (middle foreground) both juvenile Arctic and Roseate Terns on either side of an adult Roseate. The following descriptions detail the differences, with the more important characters given in italics.

JUVENILE COMMON TERN

More heavily built than the Arctic, with broader wings, *thicker and longer bill* and heavier flight, although without experience these points are obvious only when the two species can be compared side by side. *Basal half of bill pale fleshy,* the remainder black; this feature is usually very obvious at close range or in good light. Legs orange. *Forehead and mantle often with gingery-brown wash,* especially in younger birds, but this is steadily lost through abrasion and is generally lacking by late autumn; young Arctic Terns very rarely have this coloration in sufficient strength for it to be noticeable in the field. *From below the primaries are opaque and a broad, not clear-cut, dusky band at the tips forms a dark trailing edge to the outer part of the wing.* From above there is a broad, pale mid-wing panel between the *grey secondaries and rather extensive, blackish carpal bar.* The grey secondaries have fine white tips forming a terminal band along the trailing edge of the wing. *When the bird is perched, the dark carpal bar is always visible and usually prominent,* whereas the less extensive carpal bar of the Arctic is often concealed by the overlap of the mantle feathers. The rump is not pure white as in the Arctic and Roseate, but very pale grey, especially down the centre, although this is visible only at close ranges in the most favourable lights. The longer legs of the Common are a valid difference from the Arctic, but the practical use of this feature is very rarely possible.

JUVENILE ARCTIC TERN

More lightly built than the Common, with more buoyant flight and *shorter, slenderer bill which appears all black,* although some older individuals actually have at the base of the lower mandible a little red which is rather difficult to see in the field. Legs orange, usually redder-orange than those of the Common, especially in older birds. General plumage coloration is black, grey and white, *lacking buff or brown.* This and its generally slighter build give the juvenile Arctic a rather distinctive 'smart and neat' appearance both in flight and when perched. The mantle lacks any strong scaling and is virtually uniform grey, especially in older individuals. *When on the ground, the less extensive dark carpal bar is usually only just visible on the folded wing* as it is largely hidden by the overlap of the mantle feathers. Except in very newly fledged birds, which retain some feather down, *the forehead is always pure white* and the cap is jet black, even glossy. From below, against the light or in bright sun, *the undersides of the primaries appear very white and trans-*

lucent, and have a thin clear-cut black line along the tips. The secondaries are also translucent with the result that, from a favourable angle, *the underwing pattern is strikingly different from that of the Common.* This distinctive pattern is frequently suggested through the wing from above, when in any case the *secondaries are obviously white,* as is the rump, these points being noticeable at long ranges as the tern flies away.

JUVENILE ROSEATE TERN

Shape and build nearer the Common than the Arctic, *with all-black bill of similar size to that of the former.* The black (actually dark sooty-brown at close range) on the head is more extensive than in the other two species, *extending from eye to bill. Forehead never white and often, especially in younger individuals, only slightly paler than the rest of the head; in such cases it is frequently very inconspicuous and often the head appears all black.* The mantle coloration frequently has some buff, like the Common, *but is coarsely scaled, this being most noticeable on the lower back* where it can appear to be barred black and white; this scaling is obvious at reasonable ranges. From below, the primaries appear rather translucent (though not as prominently so as in the Arctic), *but this species completely lacks any dark line along the trailing edge of the outer wing.* Instead, *a fine white border extends around the wing tips* in a way reminiscent of an adult Little Gull *Larus minutus,* although the remainder of the underwing is of course not so dark as in that species. Secondaries and rump white. *Legs black,* unlike those of the other two species, and this is a surprisingly useful field character in flight as well as on the ground. *The diagnostic harsh 'chuick' note,* like something between the calls of a Sandwich Tern *S. sandvicensis* and a Spotted Redshank *Tringa erythropus,* is often uttered when feeding and serves as a confirmatory character.

SUMMARY

This paper gives descriptions, with specific differences emphasised, and perched and flying sketches (plate 53) of the juveniles of three terns—Common *Sterna hirundo,* Arctic *S. paradisaea* and Roseate *S. dougallii*—based on an intensive study of the first two at Dungeness, Kent, since 1966 and a visit to Anglesey in 1968. Previous literature has exaggerated the difficulty of specific identification of juvenile terns, which is moderately easy in reasonable conditions.

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Scarce migrants in Britain and Ireland during 1958-67

J. T. R. Sharrock

Part 2 Melodious Warbler, Icterine Warbler and Woodchat Shrike

The first part of this paper (*Brit. Birds*, 62: 169-189) consisted of a general introduction and sections on three species with wide breeding distributions in Europe (Hoopoe *Upupa epops*, Golden Oriole *Oriolus oriolus* and Tawny Pipit *Anthus campestris*). This second part deals with three more European birds which are scarce migrants to Britain and Ireland, these being a species pair with almost mutually exclusive breeding ranges (Melodious Warbler *Hippolais polyglotta* and Icterine Warbler *H. icterina*) and an unrelated species with a breeding range comparable to the first of these two (Woodchat Shrike *Lanius senator*).

Melodious Warbler *Hippolais polyglotta*

A total of 646 Melodious or Icterine Warblers was recorded in the ten years and almost 82% of these were specifically identified as one or the other. Melodious Warblers made up 41% of the identified birds, 217 being reported. The vast majority of these were in autumn (August to October) and only eight in spring (mid-May to June). The peak was during 27th August-16th September, with 53% of the autumn records falling within this three-week period (fig. 18).

The majority of the few spring records were from Pembrokeshire, with others in Kent, Lancashire and Shetland. According to *The Handbook*, the breeding season in southern Europe is from the second half of May and in France from the last third of May. The small number (less than one per year) and lateness (more than half in June) of the spring records suggest that these were non-breeding individuals.

The autumn records were entirely in the south and west, with none

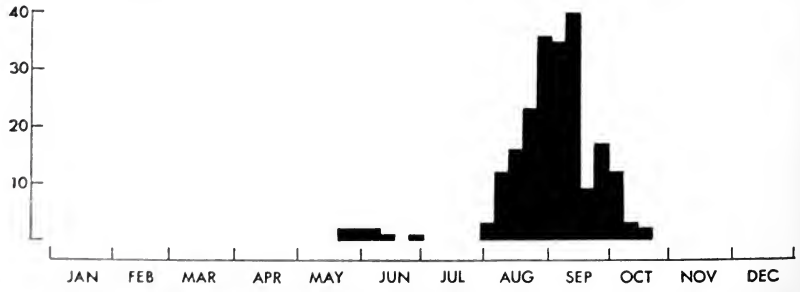


Fig. 18. Seasonal pattern of Melodious Warblers *Hippolais polyglotta* in Britain and Ireland during 1958-67

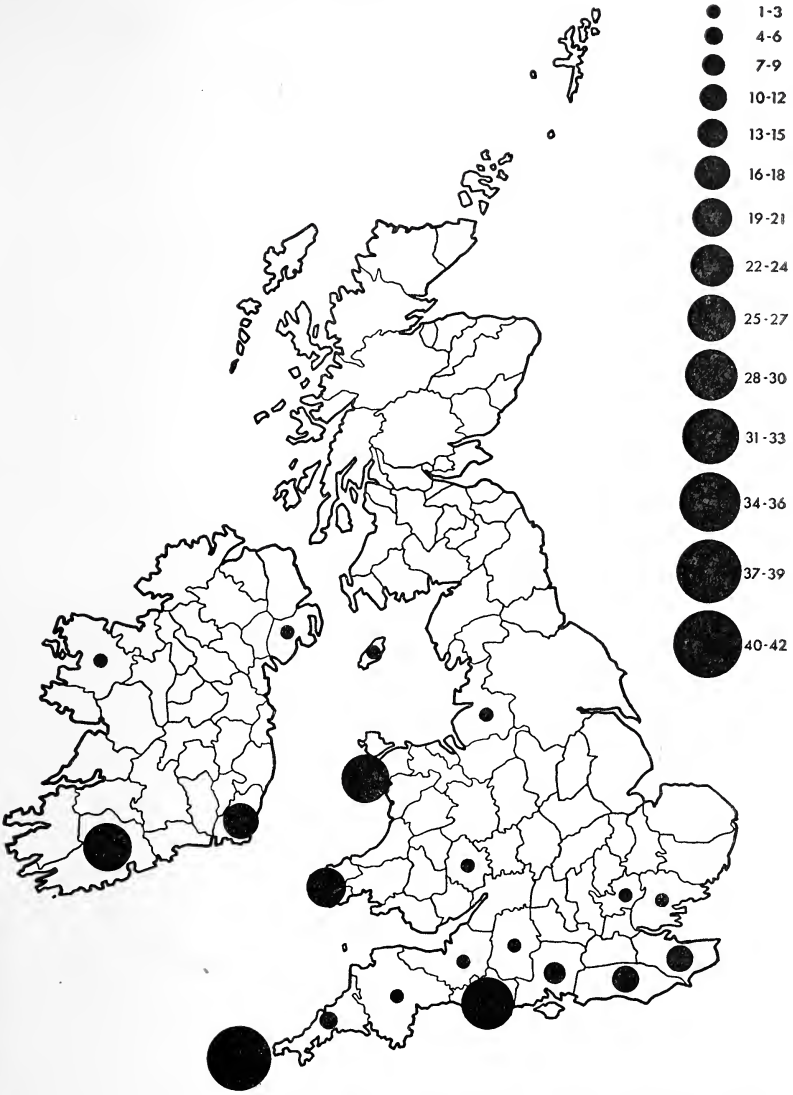


Fig. 19. Distribution by counties of autumn Melodious Warblers *Hippolais polyglotta* in Britain and Ireland during 1958-67

on the English or Scottish east coasts north of Essex (fig. 19). Six western counties (Co. Cork, Co. Wexford, Caernarvonshire, Pembrokeshire, Isles of Scilly and Dorset) accounted for no less than 74% of the autumn records in the ten years. Such a distribution can clearly be linked with the European breeding range of the species (fig. 20) and this was discussed by Williamson (1959), who used the term 'drift-

shadow' to describe it. The occurrence of relatively large numbers of this species, which has a southerly standard direction in autumn, on the south coasts of western England, Wales and Ireland (due north of the breeding range) could be explained by displacement in strong southerly or south-easterly winds, by random post-breeding dispersal or by reverse migration. The experience of observatory workers is, however, that the species is not particularly associated with major falls of night-migrants in south-easterly frontal conditions, but occurs equally in anticyclonic conditions with light winds. The mirroring of the breeding distribution in the pattern of vagrant records could suggest that dispersal is not random and, indeed, accords with the hypothesis that the British and Irish occurrences are largely the result of reverse migration, but this question is discussed further under Icterine Warbler.

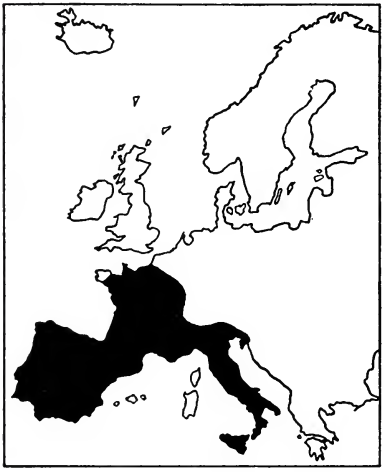


Fig. 20. European distribution of Melodious Warblers *Hippolais polyglotta* with the breeding range of this summer visitor shown in black (reproduced, by permission, from the 1966 edition of the *Field Guide*)

The number of Melodious Warblers recorded each autumn has varied widely, from six in 1959 to 48 in 1962 (fig. 21). At the time of *The Handbook*, only five records could be quoted and two of these are now considered to be dubious (Nicholson and Ferguson-Lees 1962). The increase in recent years has certainly been at least partly due to improved trapping and field-identification methods (Williamson 1959, Ferguson-Lees 1965). Williamson (1963) considered, however, that it might also be a function of population pressure, and particularly suggested that the exceptional number of occurrences in 1962 had the appearance of an irruption following a good breeding season. He argued that birds of similar range (Hoopoe, Aquatic Warbler *Acrocephalus paludicola*, Woodchat Shrike and Tawny Pipit) had all been in fewer numbers than in other recent years, suggesting that an unusual meteorological situation was not the explanation, and he also pointed out that adults as well as young birds were involved. Now that all the

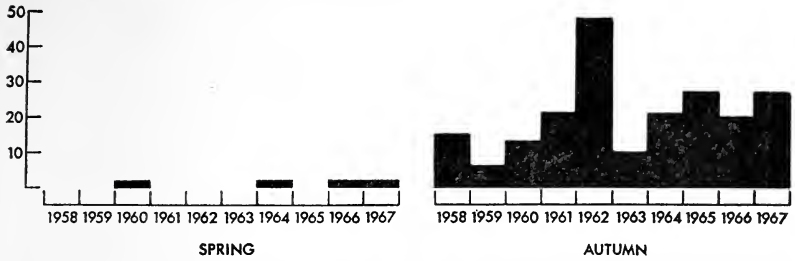


Fig. 21. Annual pattern of Melodious Warblers *Hippolais polyglotta* in Britain and Ireland during 1958-67 with the spring and autumn records shown separately

records have been collated, the comparison with the other four species named by Williamson still holds good (23% of the 1958-67 autumn records of Melodious Warbler were in 1962, compared with only 7% for Tawny Pipit, 5% for both Hoopoe and Aquatic Warbler, and 3% for Woodchat Shrike). It is not possible, however, to confirm the occurrence of adults with first-year birds for, regrettably, county reports seldom record the age data which may be obtained by observatory workers. Indeed, the age is given for only 13% of the Melodious Warblers in the ten years, 89% of them being first-year.

In the ten years the autumn arrival of this species was almost syn-

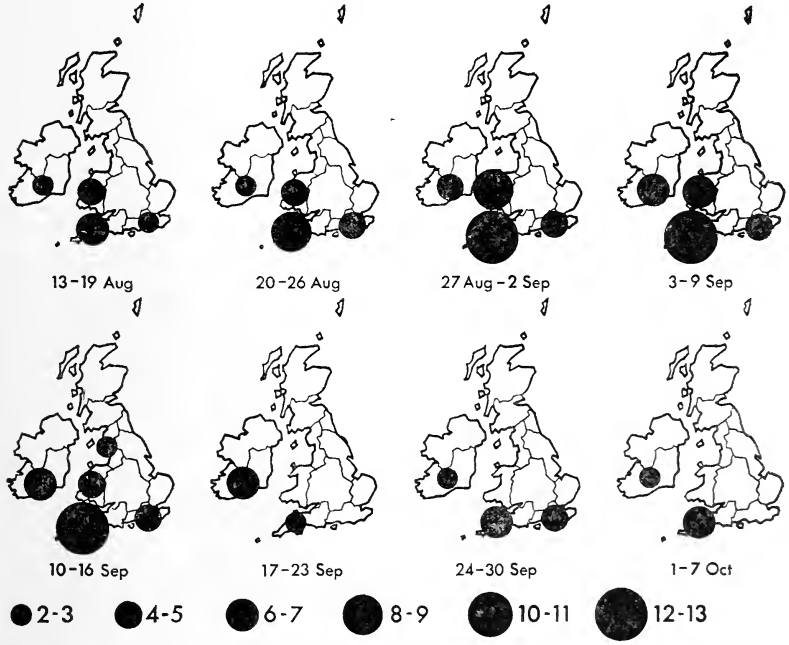


Fig. 22. Regional distribution in eight seven-day periods of autumn Melodious Warblers *Hippolais polyglotta* in Britain and Ireland during 1958-67

chronous throughout the limited area of its vagrancy in Britain and Ireland (fig. 22), although it did seem to be slightly earlier in the east than in the west. The peak in south-east England was 20th August-16th September, in Wales and south-west England 27th August-16th September, and in the south of Ireland 3rd-23rd September.

This species is also discussed in the following section.

Icterine Warbler *Hippolais icterina*

A total of 311 Icterine Warblers was recorded in the ten years, approximately 59% of the Melodious or Icterine Warblers which were specifically identified. As with the Melodious Warblers, by far the majority (85%) were in autumn, but spring records considerably exceeded those of the more westerly species (47, compared with only eight Melodious). Almost half of the spring records occurred in one aberrant year (1967), but there were records annually in autumn (mainly August and September) with a very marked peak (51% of the autumn records) in the fortnight 27th August-9th September (fig. 23).

The spring records were mainly in Shetland (31), with scattered records of one or two in the ten years in Co. Cork, Co. Wexford, Pembrokeshire, Dorset, Sussex, Yorkshire, Fife and Angus, and three in both Caernarvonshire and Norfolk. Most of the Shetland spring records came in 1967 when, from 25th May to 5th June, about 20 Icterine Warblers occurred on Fair Isle (Dennis 1967) and there were three elsewhere at about the same time (Co. Cork, Sussex and Angus). Even disregarding this exceptional influx, however, Shetland still accounted for almost half of the British and Irish spring records. In this connection, note that eleven of the records given for Scotland in

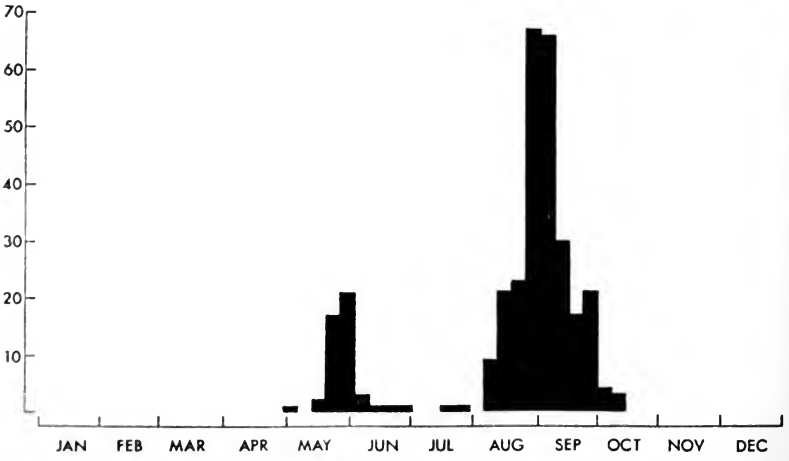


Fig. 23. Seasonal pattern of Icterine Warblers *Hippolais icterina* in Britain and Ireland during 1958-67

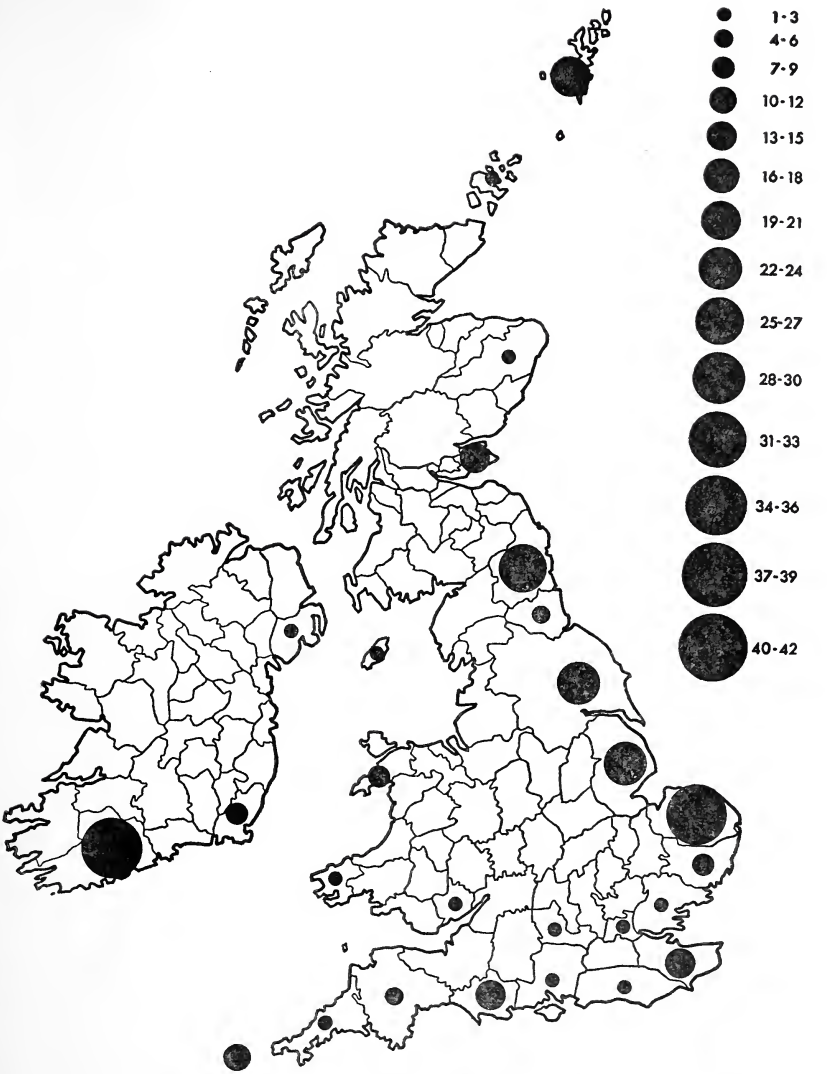


Fig. 24. Distribution by counties of autumn Icterine Warblers *Hippolais icterina* in Britain and Ireland during 1958-67

The Handbook were in spring, compared with only nine in autumn.

The autumn pattern (fig. 24) was very different from that in spring, with most records on the British east coast, especially (in decreasing order) in Norfolk, Northumberland, Lincolnshire, Yorkshire, Shetland and Fife. There were also significant numbers in three south coast counties (Kent, Dorset and Isles of Scilly) and a very striking concen-

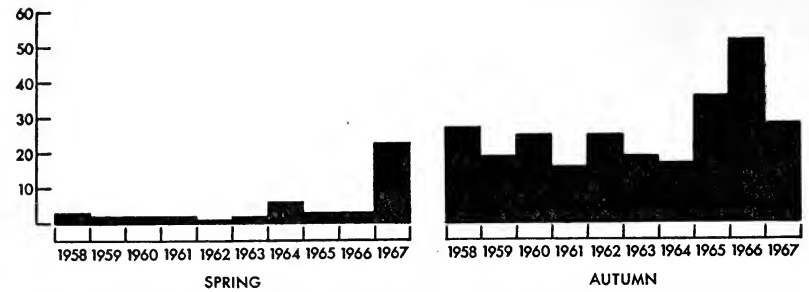


Fig. 25. Annual pattern of Icterine Warblers *Hippolais icterina* in Britain and Ireland during 1958-67 with the spring and autumn records shown separately

tration in Co. Cork, which produced as many as the much more fully covered county of Norfolk (*cf.* fig. 1). This peculiar situation will be discussed later.

The annual totals in spring and autumn are shown in fig. 25. Spring numbers varied from one to three each year, apart from the exceptional number in 1967 already noted and six in 1964. Of these latter, five were in the seven days 28th May-3rd June, in Caernarvonshire, Norfolk, Yorkshire and Shetland (Ferguson-Lees 1964). The autumn totals varied less, with the lowest in 1961 (16) and the highest in 1966 (52).

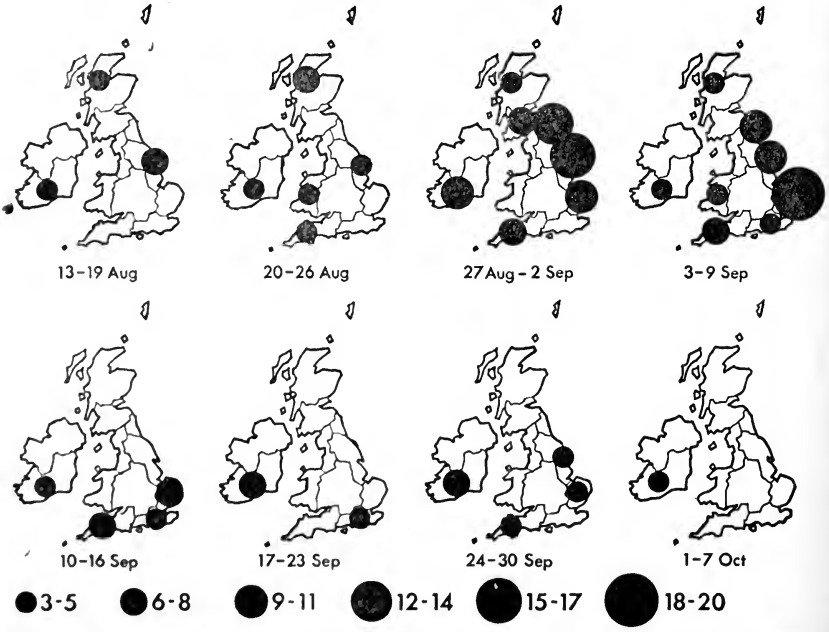


Fig. 26. Regional distribution in eight seven-day periods of autumn Icterine Warblers *Hippolais icterina* in Britain and Ireland during 1958-67

These numbers were considerably more than had been recorded previously, probably due at least in part to the increase in the number of observers, but it is noteworthy that the highest annual total up to 1953 was only eleven in 1951 (Ferguson-Lees 1954), compared with the average of 31 over the ten years.

The region of peak passage on the British east coast became progressively more southerly through the autumn (fig. 26). The first peak was in northern Scotland (20th-26th August), then southern Scotland, north-east England and eastern England (27th August-2nd September), followed by East Anglia (3rd-9th September) and then lastly the small number in south-east England (3rd-23rd September). It should be noted that, whereas almost half of the East Anglian Icterine Warblers were concentrated in a single seven-day period, the exactly equal number recorded in the south of Ireland was spread out relatively evenly over the whole eight weeks (though reaching a peak during 27th August-2nd September).

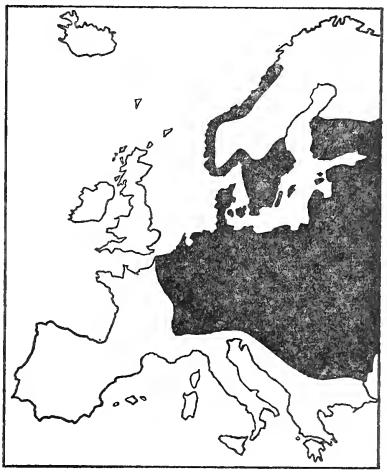


Fig. 27. European distribution of Icterine Warblers *Hippolais icterina* with the breeding range of this summer visitor shown in black (reproduced, by permission, from the 1966 edition of the *Field Guide*)

The European breeding distribution of the Icterine Warbler (fig. 27) helps to explain the pattern of records in Britain and Ireland. The species has a standard direction west of north in spring and east of south in autumn. The concentration of spring records in Shetland (66%, or 46% if the 1967 ones are excluded) suggests that it is largely the Scandinavian or north-east European parts of the population which tend to overshoot in spring. The progressively more southerly peaks down the British east coast in autumn are somewhat reminiscent of the situation in the Barred Warbler *Sylvia nisoria* discussed by Davis (1967) when postulating that vagrancy in that species was directed north-westwards and not at random. The situation is not identical, however, for (unlike Barred Warblers) Icterine Warblers are not concentrated

in Shetland in autumn and numbers do not decrease as one progresses southwards down the east coast. Nevertheless, the phased timing is similar and suggests that a common cause may be responsible. As autumn migration takes place, the bulk of the European population will be at progressively more southerly points and this is likely to be reflected in the pattern of vagrancy to the west (a similar situation has been demonstrated in the spring Hoopoe records—fig. 6—with progressively later peaks northwards up the east coast). During the autumn, the tracks of Atlantic depressions across Britain become progressively more southerly and, since vagrancy of Icterine Warblers on the east coast is closely associated with large arrivals of grounded night migrants of Continental origin, this may also be a contributory cause of the phenomenon. Lack (1960) has shown, however, that many big or moderate arrivals on the east coast occur with neither fog nor total cloud and, therefore, it seems more likely that the simpler explanation (that vagrancy merely mirrors the latitude of the bulk of the population at any particular time) is the one which is largely correct.

Turning now to the west of Britain and Ireland, there is the puzzling situation, already mentioned, that the total of Icterine Warblers in Co. Cork was equal to that in Norfolk (and in the south of Ireland was equal to that in East Anglia). Williamson (1959) drew attention to the drift-shadow pattern in the records of Icterine and Melodious Warblers, reflecting their European breeding distributions, with, for instance, all but two of 'the score or so Icterine Warblers [in 1958] confined to the east coast between Fair Isle and Norfolk, whilst a similar number of Melodious Warblers were confined to the south coast and the Irish Sea basin'. Later, however, the same author (1960, 1963) noted that the drift-shadow situation was departed from in 1960 and subsequently, with as many Icterine as Melodious Warblers at the Irish Sea observatories and, in some years, more Icterine Warblers in the west than on the east coast. He suggested that this change in pattern 'may be another case where we are witnessing the reaction of a successful part of the population, the central and east European, to high atmospheric pressure after the breeding season'. From a consideration of all the records, however, it seems to be far from proven that any change took place in 1960 and subsequently. In 1958-59, 18% of the Icterine Warblers were in south-west England, Wales and the south of Ireland, compared with 26% in these areas in 1960-67. But one station—Cape Clear Island, Co. Cork—was not manned until 1959 and then was responsible for 40% of the Icterine Warbler records in the west: if the records from there are eliminated from the calculations, the pre-1960 and 1960-67 percentages become 13% and 17% respectively, a change which is not significant. Thus, there is virtually no evidence of a change in vagrancy pattern.

Since some 18% of the Icterine and Melodious Warblers seen in Britain and Ireland were not specifically identified, the patterns of the

Table 3. Numbers and proportions of autumn Icterine Warblers *Hippolais icterina* and Melodious Warblers *H. polyglotta* in various areas of Britain and Ireland during 1958-67

	Number of Icterine	Number of Melodious	Number not identified	% Icterine of identified	Possible extreme percentages (see text)
Co. Cork	35	25	11	58%	49-65%
Co. Wexford	9	17	1	35%	33-37%
Caernarvonshire	9	26	5	26%	23-35%
Pembrokeshire	3	21	10	13%	8-38%
Isles of Scilly	11	39	36	22%	13-55%
Cornwall and Devon	5	8	16	38%	17-72%
Dorset	15	28	6	35%	31-43%
Hampshire	1	8	6	11%	7-47%
Sussex	1	11	0	8%	8%
Kent	14	11	1	56%	54-58%
Essex to Shetland	140	1	19	99%	88-99%

two species are best demonstrated by comparison. The proportions of both in the various regions are shown in table 3. On the British east coast, 99% of those specifically identified were Icterine, as were 56% in Kent and 58% in Co. Cork. In all the other counties in the south of Ireland, Wales and southern England, Melodious outnumbered Icterine. The indeterminate records make some of these percentages dubious, but it is possible (by first assuming that the indeterminate birds were all Melodious and then that they were all Icterine) to calculate the maximum range of error. By this means, it can be shown that Icterine Warblers vastly outnumbered Melodious Warblers on the British east coast, were slightly in excess in Kent and were almost certainly in excess in Co. Cork; whereas Melodious Warblers were the more frequent in Co. Wexford, Caernarvonshire, Pembrokeshire, Dorset, Hampshire and Sussex. The situation in the Isles of Scilly, Cornwall and Devon is uncertain, though those specifically identified were mainly Melodious. It should be mentioned that, in areas where the Melodious Warbler is known to occur, the indeterminate records are probably biased towards this species (which is marginally less easy to identify positively in the field); whereas on the British east coast, where

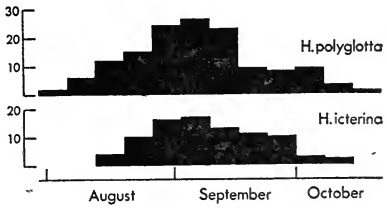


Fig. 28. Pattern in south Ireland, Wales and south-west England of August-October Melodious Warblers *Hippolais polyglotta* and Icterine Warblers *H. icterina* during 1958-67

it is virtually unknown, most indeterminate records are likely to be briefly-glimpsed Icterine Warblers (though there is the possibility that the occasional Melodious may be dismissed by careless observers as 'only another Icterine').

The large number and high proportion of Icterine Warblers in Co. Cork is exceedingly difficult to explain. Icterine and Melodious Warblers have very similar occurrence-patterns in autumn in the western areas (fig. 28) and, indeed, often appear together. Throughout these western areas, both species have prolonged passage periods, unlike the very marked peaks of Icterine Warblers at east coast stations. The pattern of occurrence of the Melodious Warbler accords with what would be expected if the cause were reverse migration in a species with a southerly standard direction (see earlier section), but the pattern of western records of the Icterine Warbler, despite this species' more easterly distribution and standard direction east of south, is remarkably similar. It seems inescapable that the immediate origin of both species is the same and that the Icterine Warblers occurring in the western areas are ones which have moved westwards into northern France before wandering northwards or north-westwards into south-western Britain and the south of Ireland. It may well be, therefore, that the occurrence of both species in these western areas is primarily due to random post-breeding dispersal. Although only 8% of the autumn Icterine Warblers were aged and the information published (one adult and 19 first-year), most were probably first-year and 89% of the aged Melodious Warblers were also first-year. It thus seems likely that both species occur in western areas mainly as a result of random post-juvenile dispersal in anticyclonic conditions, and the same is probably true also of many of the other scarce migrants and vagrants at the western observatories. This does not, however, explain why Co. Cork has received so many more Icterine Warblers than have other western counties and the solution to this discrepancy has yet to be suggested.

Woodchat Shrike *Lanius senator*

A total of 125 Woodchat Shrikes was recorded in Britain and Ireland in the ten years. Unlike the five previous species (Hoopoe, Golden Oriole, Tawny Pipit, Melodious Warbler and Icterine Warbler), there were almost equal numbers at the two seasons, 66 in spring and 57 in autumn. At the time of *The Handbook,* there was a greater discrepancy, with more in spring. Improved field-identification of young birds in autumn has probably resulted in the truer picture evident today.

Spring occurrences were from mid-April to mid-June (mainly May and early June) and autumn ones from late July to early October (mainly late August to early September), with two records in early July (fig. 29). Almost half of those in spring were sexed, resulting in a total of 26 males and only six females. In autumn, of 54 individuals

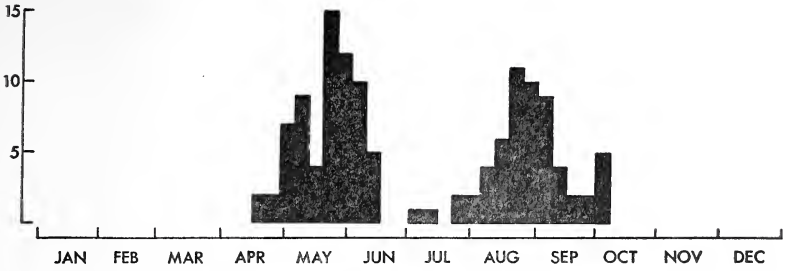


Fig. 29. Seasonal pattern of Woodchat Shrikes *Lanius senator* in Britain and Ireland during 1958-67

which were aged, 42 were first-year and twelve adults (only five of the latter were sexed as three males and two females).

In spring most Woodchat Shrikes were seen in Norfolk, with smaller numbers in Lincolnshire, Pembrokeshire, Co. Wexford, Caernarvonshire, the Isles of Scilly and Shetland, at least one in each English south coast county and several additional east coast counties, and scattered records elsewhere (fig. 30). The Woodchat Shrike's European breeding distribution (fig. 31) is closely similiar to that of the Melodious Warbler (fig. 20), its strongholds being in Iberia, France, Italy, the Mediterranean islands and the western Balkans. Though it additionally extends further east, the populations east from the Low Countries, Germany and Switzerland are rather sparse (Ferguson-Lees 1965). It is, therefore, of interest that 53% of the Woodchat Shrikes occurred in spring, compared with less than 4% of the Melodious Warblers. The spring occurrences are usually attributed (along with records of other southern vagrants) to the overshooting of migrants in fine anticyclonic weather. If this were the simple explanation, however, one would expect most of the spring records to be concentrated in the English south coast counties (leading, perhaps, to a distribution not unlike that of the Hoopoe shown in fig. 4). The relative scarcity of south coast records (only 21% compared with 57% for the Hoopoe) is thus somewhat surprising, as is the concentration in Norfolk, a county north of the species' breeding range and, indeed, with a mainly north-facing coastline (ten of the twelve records were from north-facing parts of the coast). The concentration of spring records in Norfolk may not be regular, however, for *The Handbook* merely noted 'over forty at intervals, mostly in S. and E., as far north as Norfolk' and one in 1955 was the only record in the Cley area before 1958 (Richardson 1962), compared with five in the subsequent ten years.

Autumn Woodchat Shrikes showed a greater bias towards the west and the majority of the records were in four counties—Isles of Scilly, Dorset, Pembrokeshire and Co. Wexford (fig. 32). This is a very similar distribution to that of the Melodious Warbler (fig. 19), though (unlike

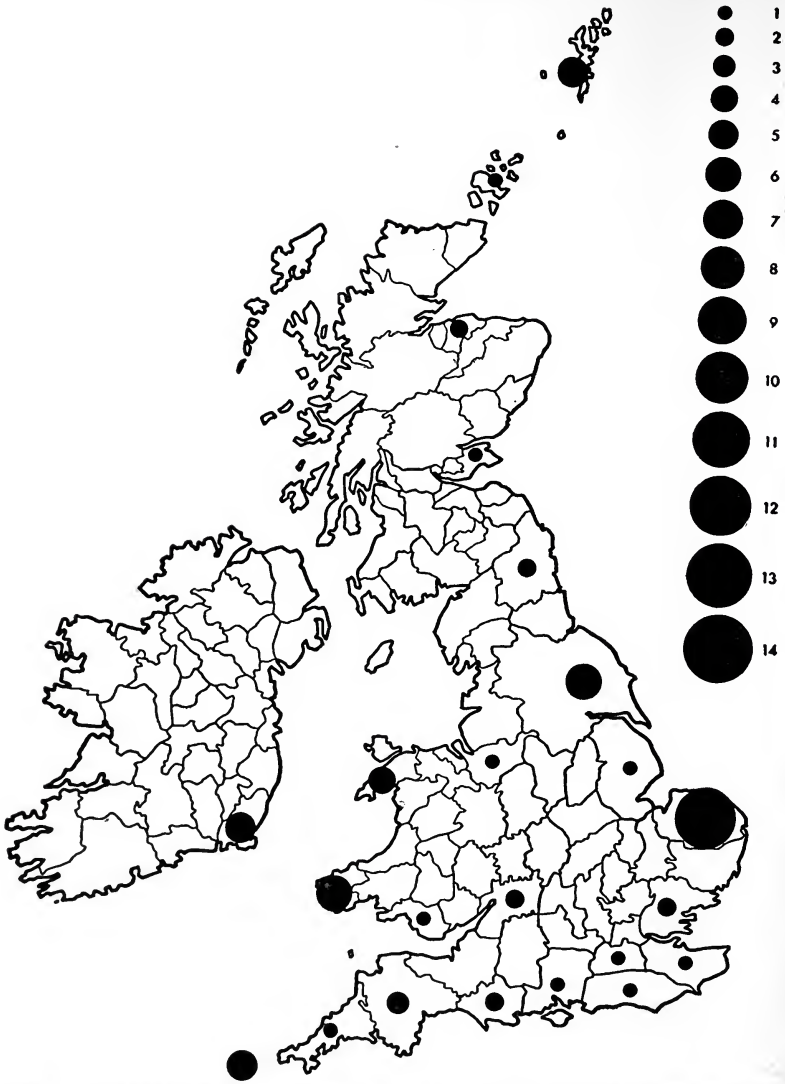


Fig. 30. Distribution by counties of spring Woodchat Shrikes *Lanius senator* in Britain and Ireland during 1958-67

that species) there were a few east coast records—no doubt a reflection of the slightly more easterly extended range of the Woodchat Shrike—and it is, perhaps, surprising that so few were recorded in Co. Cork.

The number of Woodchat Shrikes occurring in Britain and Ireland varied widely over the ten years, from one to 14 in spring and from one to 13 in autumn (fig. 33). The coincident drop in both spring and

autumn in the years 1961-63 called for considerable comment (e.g. Harber *et al.* 1964, Ferguson-Lees 1965). The fall in numbers was particularly noticeable because it came immediately after the exceptional spring of 1960, but nevertheless there was an average of only just over three per year during 1961-63, compared with slightly less than 18 per year in the three previous years and over 15 per year in the four subsequent ones. Other southern vagrants did not show a corresponding decline, so it seems possible that this was a reflection of a low level in the Woodchat population, though there is no direct evidence of this.

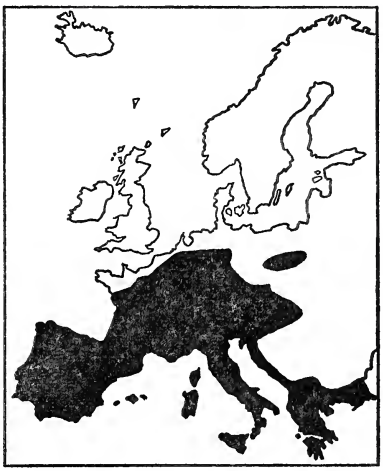


Fig. 31. European distribution of Woodchat Shrikes *Lanius senator* with the breeding range of this summer visitor shown in black (reproduced, by permission, from the 1966 edition of the *Field Guide*)

The breeding season starts in late April in Iberia and towards the end of May in central Europe, so that the spring peak in Britain (the last fortnight in May) is rather late. This, together with the excess of males recorded (26 to only six females), suggests that non-breeding birds are concerned, perhaps ones which have already overshot or wandered north of their European breeding range before crossing the North Sea to the British east coast, and that it is the eastern part of the population which is largely involved at this time. This is confirmed by the timing of passage in the various regions (fig. 34). The distribution of spring records was double-peaked (fig. 29), with a small peak in early May, a lull in mid-May and then the major peak at the end of May. The earliest ones, in April, were in Wales and those in early May mainly in south-west England and south Ireland. The mid-May lull (14th-20th May, not shown in fig. 34) produced only three in East Anglia and one in eastern England. The main peak in the latter part of May was widespread, though most records were in East Anglia, northern Scotland and south-west England. The peak in eastern England was in the last fortnight of the spring passage, when there were further (but fewer) East Anglian records and, surprisingly, a peak in Wales. The

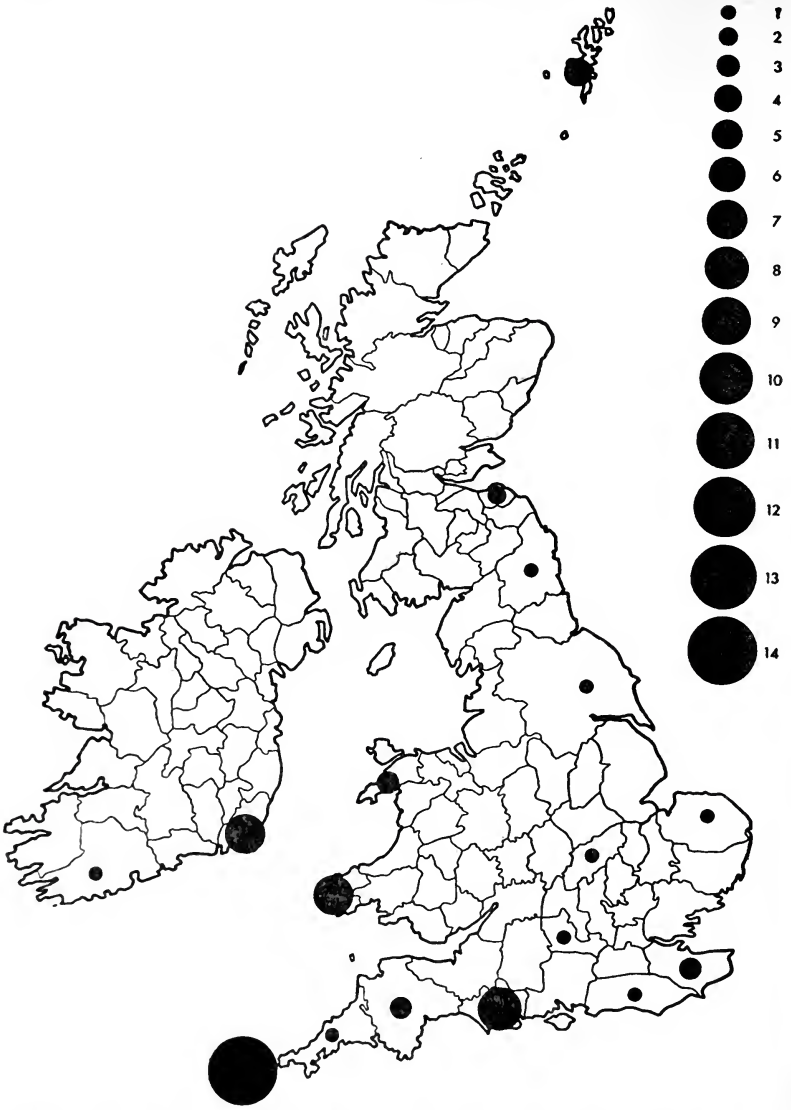


Fig. 32. Distribution by counties of autumn Woodchat Shrikes *Lanius senator* in Britain and Ireland during 1958-67

numbers involved were so small that it would be dangerous to base too much speculation upon them, but it is surely significant that during the first peak (16th April-13th May) 65% of the records were in the west and only 20% in the east, whereas during the second peak (21st May-17th June) 33% were in the west and 52% in the east. This pattern, with an earlier spring peak in the west than in the east, is

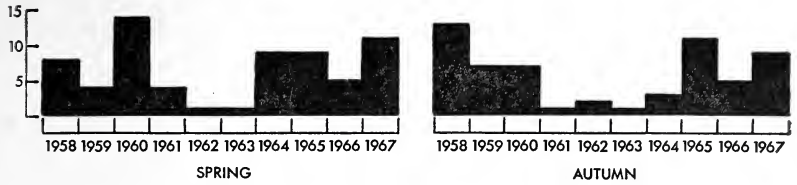


Fig. 33. Annual pattern of Woodchat Shrikes *Lanius senator* in Britain and Ireland during 1958-67 with the spring and autumn records shown separately

similar to that already demonstrated in part 1 of this paper for the Hoopoe and the Golden Oriole. The earlier records are probably the result of overshooting by Iberian birds, whereas those later (mainly in the east) are likely to be of more easterly and northerly origin.

The autumn records were so concentrated in the west (fig. 32) that analysis of periods of passage in the various regions is unrewarding. It may be mentioned, however, that four of the eight east coast records came during 10th September-7th October (after the autumn peak), whereas only eight of the 43 west coast records were at this time. Nevertheless, the numbers are really too small to be significant. The similarity between the breeding ranges and patterns of autumn vagrancy of the Melodious Warbler and the Woodchat Shrike suggests that the occurrences of these species at the westerly stations is due to a common cause. This is all part of a larger problem, however, for the whole question of vagrancy at the Irish Sea stations in autumn is clouded by theory and counter-theory and deserves greater study. Radar evidence, which has helped to elucidate some English east coast problems, is lacking and, in any case, it is not large-scale movements which are puzzling: merely the disproportionate numbers of rare birds.

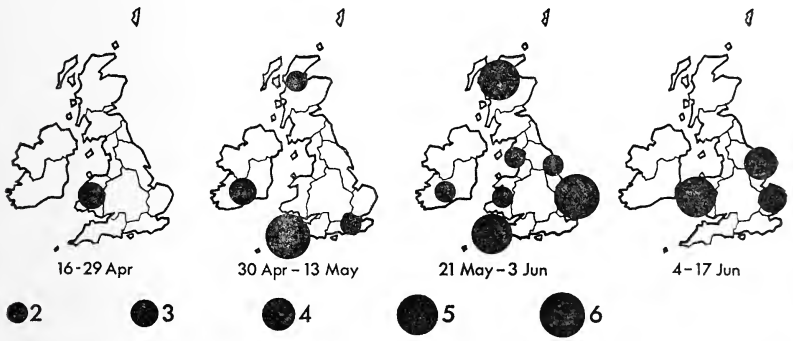


Fig. 34. Regional distribution in four 14-day periods of spring Woodchat Shrikes *Lanius senator* in Britain and Ireland during 1958-67. (Note that a seven-day gap during 14th-20th May is not depicted)

Dr J. T. R. Sharrock, 59 Curlew Crescent, Bedford

Cutaneous diseases of wild birds in Britain

D. K. Blackmore and I. F. Keymer

Plates 54-56

INTRODUCTION

Five years ago we published a brief account of the rather limited information available concerning skin diseases of wild birds (Keymer and Blackmore 1964). It was pointed out that the scattered records of ornithologists suggested that some particularly interesting pathological syndromes might exist in our wild bird population, but hitherto these records had not been correlated, neither had laboratory facilities been available for the examination of specimens. A request was made for future records and specimens to be sent to D.K.B., and more recently to I.F.K., so that the whole problem of skin diseases in wild birds could be examined in greater detail.

The present contribution gives the results of this survey, which includes 153 individual records. These records appear to reveal some information of considerable interest concerning avian comparative pathology and also indicate that a much more detailed study, particularly of specific syndromes, would be valuable. Table 1 shows the bird species and total records, while table 2 summarises the incidence of the various diseases in the order of the sections which follow.

(1) BACTERIAL INFECTIONS

Tuberculosis

Two cases associated with cutaneous lesions in a Kestrel *Falco tinnunculus* and an immature Herring Gull *Larus argentatus* were diagnosed. The skin overlying the ventral aspect of the right wing of the Kestrel showed multiple round and ovoid tumour-like masses up to 3 cm in diameter (plate 54b). Histological examination revealed typical granulomatous lesions containing acid-fast organisms resembling *Mycobacterium tuberculosis*. The immature Herring Gull had a large ulcerated swelling affecting the carpal joint of the right wing. Numerous acid-fast organisms were demonstrated from this lesion, and on cultural examination they were confirmed to be *M. tuberculosis*. The liver also contained minute miliary tubercular lesions.

Similar skin infections have been reported by others. Although tuberculosis is common in wild birds, the lesions are usually confined to the internal organs. Darkening of the plumage of infected Woodpigeons *Columba palumbus* was first reported by McDiarmid (1948) and later by Harrison and Harrison (1956). Harrison and Hay (1959) also recorded and illustrated loss of toes in a Moorhen *Gallinula chloropus* due to this disease.

Table 1. Number of each species involved in the 153 records of cutaneous diseases of wild birds in Britain

Species	Number	Species	Number
Mallard *Anas platyrhynchos*	1	Blackbird *Turdus merula*	34
Kestrel *Falco tinnunculus*	1	Robin *Erithacus rubecula*	9
Pheasant *Phasianus colchicus*	2	Sedge Warbler *Acrocephalus schoenobaenus*	2
Woodcock *Scolopax rusticola*	1	Blackcap *Sylvia atricapilla*	1
Dunlin *Calidris alpina*	1	Dunnock *Prunella modularis*	10
Herring Gull *Larus argentatus*	3	Meadow Pipit *Anthus pratensis*	1
Common Gull *Larus canus*	1	Pied Wagtail *Motacilla alba*	1
Woodpigeon *Columba palumbus*	2	Starling *Sturnus vulgaris*	38
Skylark *Alauda arvensis*	1	Greenfinch *Carduelis chloris*	1
Great Tit *Parus major*	1	Chaffinch *Fringilla coelebs*	17
Blue Tit *Parus caeruleus*	2	House Sparrow *Passer domesticus*	21
Coal Tit *Parus ater*	1		
Song Thrush *Turdus philomelos*	1		

Other bacterial infections

An unusual example of dermatitis below the mandible of a Robin *Erithacus rubecula,* caused by *Listeria monocytogenes,* was described by Macdonald (1968). Swollen eyelids and sinusitis associated with *Mycoplasma gallisepticum* was first described in Pheasants *Phasianus colchicus*, Partridges *Perdix perdix* and Red-legged Partridges *Alectoris rufa* in this country by Keymer (1961), and later elsewhere in Europe. Judging, however, from the annual reports of the Game Research Association (Jones and Wood 1968), the incidence of this disease appears to have declined in Britain in recent years.

Birds are less susceptible than mammals to secondary infection of wounds by bacteria, but some cases of localised staphylococcal infection were recorded during the course of this survey and are noted in the section on INJURIES AND LOCALISED INFECTIONS (pages 324-325).

(2) VIRUS INFECTIONS

Pox

The carcases of five House Sparrows *Passer domesticus* with cutaneous encrustations around the eyes were received for examination, and the condition diagnosed as pox. One was from Burnley, Lancashire, while the other four were from an area in west London where other House Sparrows had been seen dead or dying. Three were male and one female (the fifth's sex was not recorded). All had encrustations of the skin around the commissures of the beak and the eyes. In one case there were similar lesions on the head, while in another there was involvement of the hard palate and dorsal surface of the tongue. Histological examination of these lesions revealed typical Bollinger bodies, diagnostic of avian pox. Identical lesions were reproduced in experimental House

Table 2. Analysis by conditions and species of the 153 records of cutaneous diseases of wild birds in Britain

Condition and total	Species	Number
BACTERIAL INFECTIONS (2)		
Tuberculosis (2)	Kestrel *Falco tinnunculus*	1
	Herring Gull *Larus argentatus*	1
VIRUS INFECTIONS (30)		
Pox (27)	Dunlin *Calidris alpina*	1
	Blackbird *Turdus merula*	1
	Dunnock *Prunella modularis*	5
	Starling *Sturnus vulgaris*	4
	House Sparrow *Passer domesticus*	16
Puffinosis (3)	Herring Gull	2
	Common Gull *Larus canus*	1
MYCOTIC INFECTIONS (7)		
Mycotic dermatitis (7)	Blue Tit *Parus caeruleus*	1
	Robin *Erithacus rubecula*	2
	Dunnock	2
	House Sparrow	2
PARASITIC INFESTATIONS (5)		
Knemidokoptic mange (4)	Pheasant *Phasianus colchicus*	1
	Skylark *Alauda arvensis*	1
	Sedge Warbler *Acrocephalus schoenobaenus*	2
Ticks (1)	Pheasant	1
NEOPLASIA (20)		
Papillomatosis (16)	Chaffinch *Fringilla coelebs*	16
Other neoplastic conditions (4)	Coal Tit *Parus ater*	1
	Meadow Pipit *Anthus pratensis*	1
	Starling	2
INJURIES AND LOCALISED INFECTIONS (5)	Woodcock *Scolopax rusticola*	1
	Blackbird	1
	Robin	1
	Blackcap *Sylvia atricapilla*	1
	Starling	1
MISCELLANEOUS CONDITIONS OF UNCERTAIN ETIOLOGY (84)		
Alopecia of unknown etiology (74)	Mallard *Anas platyrhynchos*	1
	Great Tit *Parus major*	1
	Blue Tit	1
	Song Thrush *Turdus philomelos*	1
	Blackbird	32
	Robin	6
	Dunnock	3
	Pied Wagtail *Motacilla alba*	1
	Starling	23
	Greenfinch *Carduelis chloris*	1
	Chaffinch	1
	House Sparrow	3
Articular gout (2)	Woodpigeon *Columba palumbus*	2
Claw and bill deformities (8)	Starling	8

Sparrows by the injection of material from Canaries *Serinus canarius* which had died as a result of 'Canary Pox'.

Records were also received of eleven juvenile House Sparrows, ten caught at Morden, Surrey, over a two-year period and one at Northampton, which all showed lesions probably associated with a chronic pox infection. Seven had small 'wart-like' lesions on the feet, three had similar lesions on the head, especially around the eyes and beak, and one had lesions on the flank. Similar lesions were observed on the heads of four Starlings *Sturnus vulgaris* and three Dunnocks *Prunella modularis* from the same area in Surrey. Two other Dunnocks, one from Morden and one from Chippenham, Wiltshire, had similar lesions on the feet.

Histological examinations were carried out from wart-like lesions on the leg of a Dunlin *Calidris alpina* (Green 1969) and from the wing of a Blackbird *Turdus merula*. The appearance of both lesions was strongly suggestive of pox, with intracytoplasmic acidophilic inclusions in the epithelial cells.

It is surprising that during this present survey we have received no reports of pox in Woodpigeons. Whether this means that the disease is less common than previously, or that it has been overlooked, is impossible to say. Certainly the condition appeared to be common in Britain several years ago in the experience of Marriage (1961) and of I.F.K. who carried out a survey of diseases of wild birds from 1st March 1954 to 17th January 1962. During this period 284 Woodpigeons were examined and pox was diagnosed in 17 cases. This figure is low because observers did not shoot every infected pigeon, and usually several in a flock were seen to be affected. Outbreaks were mainly encountered during the winter months in 1954, 1955 (Keymer 1958), 1957, 1959, 1960 and 1961, the disease being reported in Cambridgeshire, Essex, Huntingdonshire, Norfolk, Hampshire and Surrey, although it may well have been more widespread. Murton (1965) thought that the disease was unusually prevalent during the 1955/56 winter, and this also seemed to be the case during the winter of 1960/61.

Both immature and adult Woodpigeons of both sexes are affected. The lesions in the early stages take the form of vesicles or pustules on the skin, especially around the eyelids, near the base of the mandibles and on the feet and legs. Almost any part of the body may be affected. Lesions are not infrequently seen on the wings and around the vent. In chronic infections, the lesions are very firm brownish granulomatous growths, which frequently cause lameness when the feet are involved. Lesions of this type have been illustrated by Keymer and Blackmore (1964). The disease, especially the acute form, can be readily transmitted experimentally to Domestic Pigeons *Columba livia*.

Pox is by far the most common virus causing skin lesions in wild birds and a comprehensive bibliography has been compiled by Kirmse (1967). In all species the lesions consist mainly of wart-like growths

affecting the eyelids and feet. There are at least three avian strains of the virus, mainly affecting birds of three orders: Galliformes, such as Domestic Fowls *Gallus gallus,* Pheasants and probably Partridges; Columbiformes, especially Domestic Pigeons and Woodpigeons; and Passeriformes, such as Canaries. There is an increasing amount of evidence that several other strains exist and, as little is known about these, it is particularly important to attempt isolation of the virus from wild birds.

Pox lesions at the commissures of the beak in Woodpigeons can resemble the lesions produced by the protozoan disease, trichomoniasis, which in the early years of this century was referred to by gamekeepers and others as diphtheria. This parasitic infection also affects birds of prey and has been known for centuries by falconers by the name 'frounce'.

Puffinosis or vesicular dermatitis

Three cases of vesicular lesions of the feet of gulls, possibly initially caused by this virus infection, were reported to us. Two Herring Gulls and one Common Gull *Larus canus* (plate 54a) were affected, but in only two cases were laboratory examinations carried out. The foot of an immature Herring Gull, from Bangor, Caernarvonshire, contained a large vesicle on the ventral surface of the web of the left foot, between the second and third digits. This vesicle had apparently originated within the epithelium, and contained a milky fluid from which a coagulase positive *Staphylococcus* was isolated. The lesion was similar to those recorded in Manx Shearwaters *Puffinus puffinus* affected with puffinosis (Harris 1965).

The whole foot and lower part of the tarso-metatarsus of a Common Gull was grossly swollen, due to subcutaneous inflammatory reaction, from which a mixed growth of organisms was isolated, consisting of species of *Pseudomonas, Proteus* and *Streptococcus.* This bird was from Mousehole, Cornwall, where several other gulls similarly affected had been observed. A juvenile Herring Gull, with apparently the same condition, was observed by D.K.B. in exactly the same area four years later. This bird had a circumscribed large swelling affecting the medial aspect of the base of the foot and lower tarso-metatarsus.

This disease appears to be confined to certain species of seabirds in the orders Procellariiformes, Pelecaniformes and Charadriiformes. A useful review of the recorded host range was published by Macdonald *et al.* (1967).

Other virus infections

There appear to be no other virus diseases recorded in Britain, or indeed in Europe, which are associated with cutaneous lesions in wild birds.

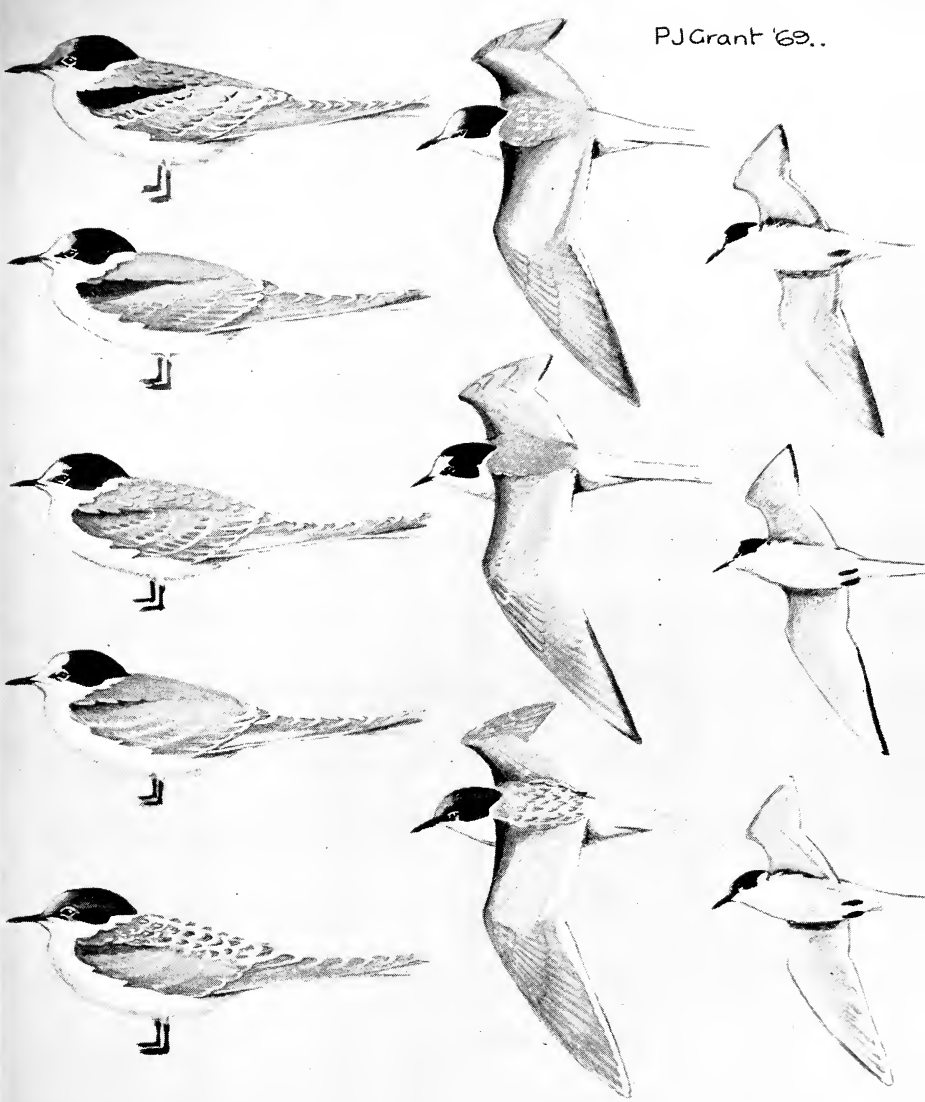


PLATE 53. Plumages of juvenile terns: the top four birds are Common Terns *Sterna hirundo*, the centre four Arctic Terns *S. paradisaea* and the bottom three Roseate Terns *S. dougallii*. In the cases of the Common and Arctic Terns the upper one of the two standing birds illustrates the plumage when just recently fledged and the lower a slightly older individual (pages 297-299) (*from a painting by P. J. Grant*)

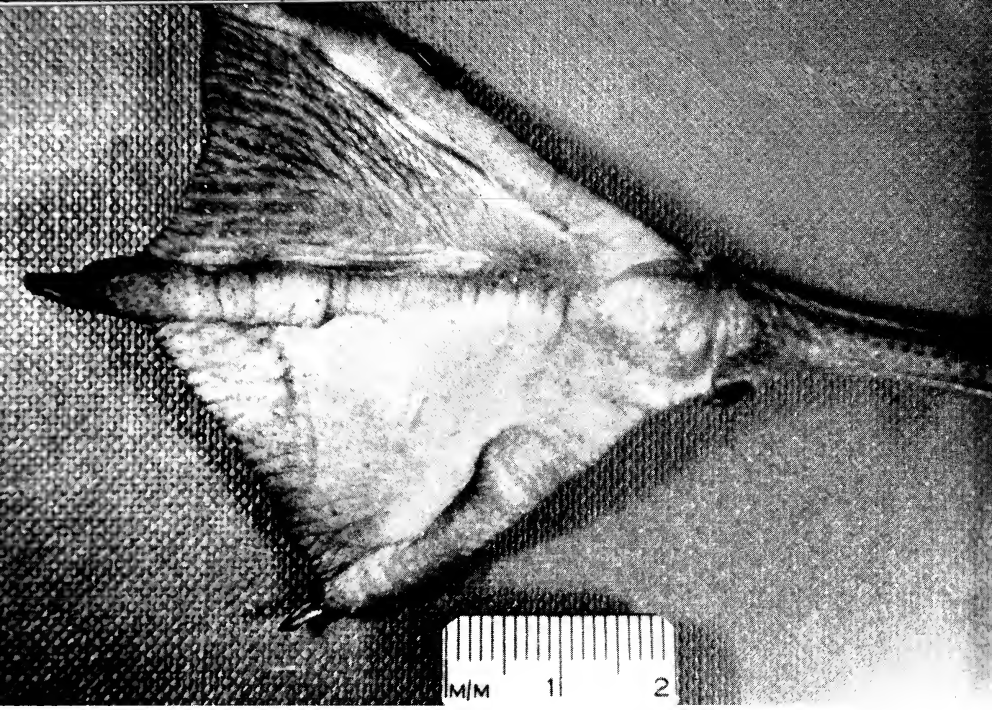


PLATE 54. Above, blister on the web of a Common Gull *Larus canus*, probably caused by puffinosis (page 320). Below, cutaneous tubercular lesions (shown arrowed) on the under surface of the right wing of a Kestrel *Falco tinnunculus*: multiple round and ovoid tumour-like masses up to 3 cm in diameter (page 316) (*photo: P. Hanney*)

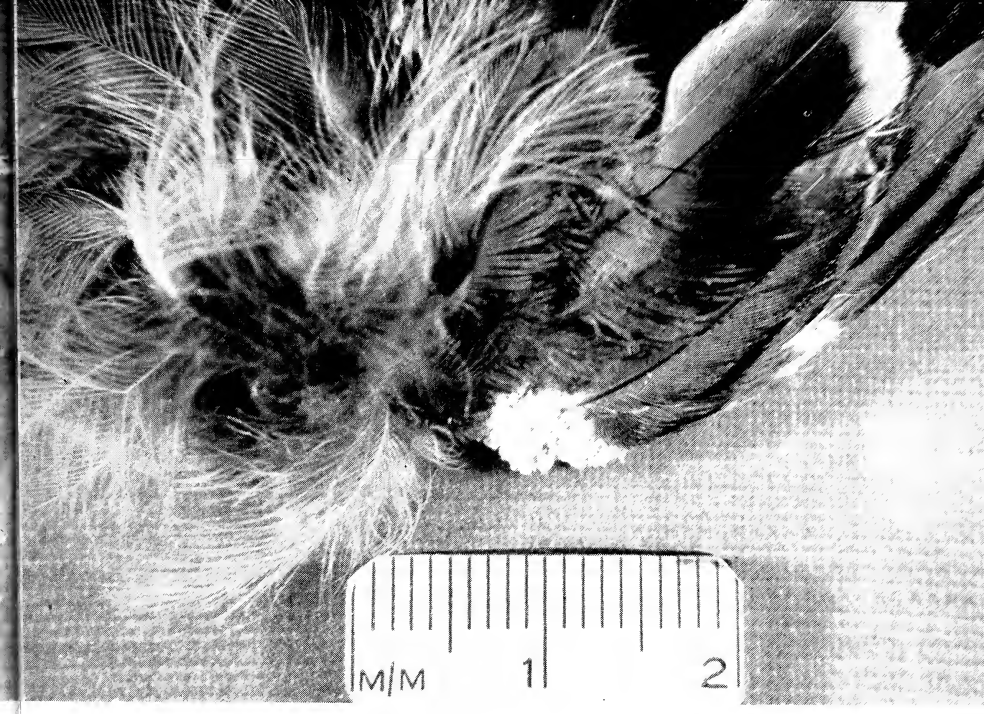


PLATE 55. Above, localised cutaneous fungal infection upon the wing of a captive Bullfinch *Pyrrhula pyrrhula* (page 321). Below, typical 'scaly leg' due to a mite *Knemidokoptes mutans*, affecting both legs of a Pheasant *Phasianus colchicus*: the swollen legs have yellow encrustations, with distortions of the scales (page 322)

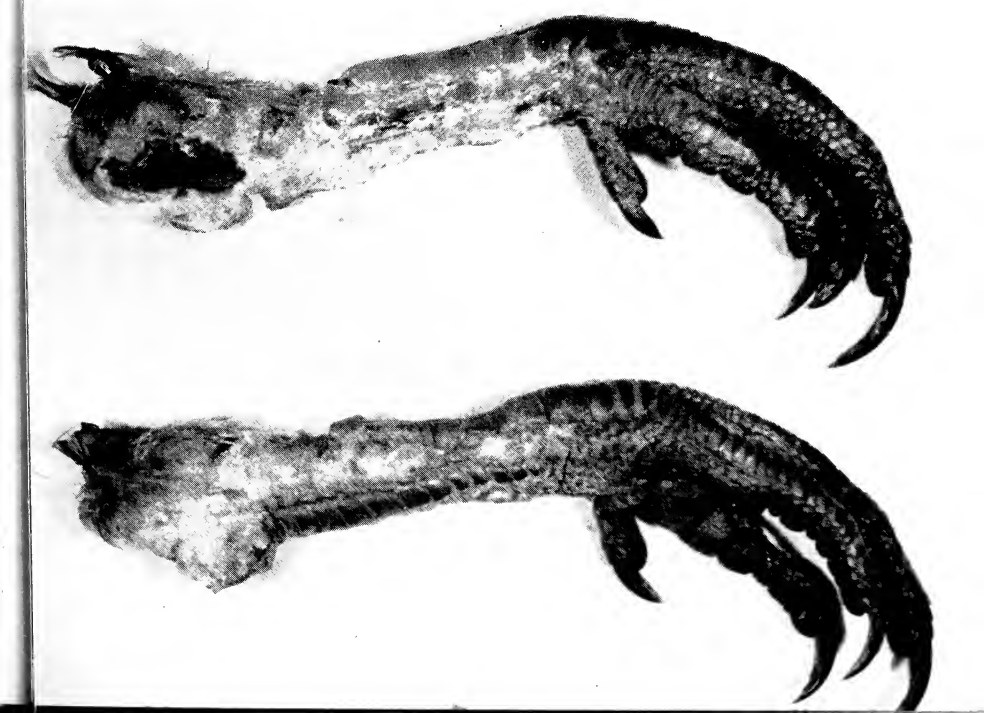
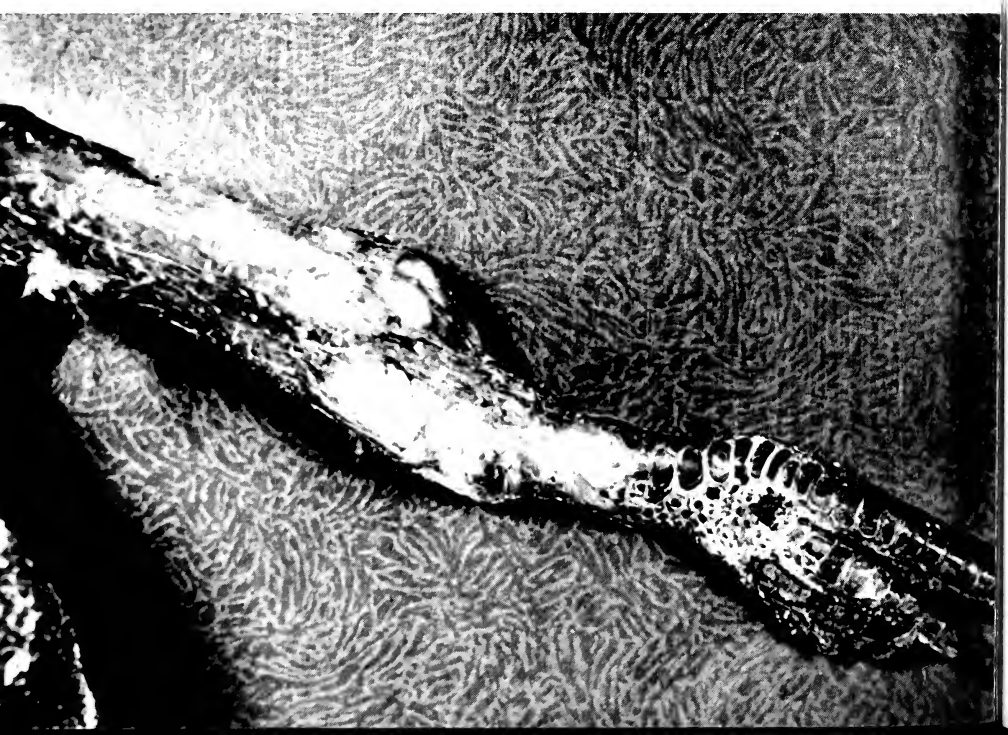


PLATE 56. Above, Pheasant *Phasianus colchicus* with a heavy infestation of ticks around the eyes, looking like warts (page 322) (*photo: P. K. C. Austwick*). Below, leg of Woodpigeon *Columba palumbus* showing lesions of articular gout: urates are deposited under the skin and around the joints, forming white swellings (page 327)



(3) MYCOTIC INFECTIONS

One of the major reasons for carrying out this survey was an attempt to gain more information about fungal infections of the skins of wild birds. Our previous paper (Keymer and Blackmore 1964) reviewed the very limited literature up to that time. Virtually nothing has been published since, but Pepin and Austwick (1967), who have examined some of the birds in the present survey, stated that in eight skin scrapings from wild birds examined by them during 1955-66 no common dermatophytes were isolated. They believed, however, that the isolates were in fact pathogenic, on the basis of the histological lesions and certain cultural characteristics.

Six carcases of wild birds—two Robins, two House Sparrows, a Dunnock and a Blue Tit *Parus caeruleus* sent from Surrey, Somerset, Hertfordshire, Oxfordshire and Yorkshire—showed fungal infections of the skin, with associated loss of feathers, and a similar condition was found in a captive Bullfinch *Pyrrhula pyrrhula* (plate 55a). The head was the most consistently affected area, and in five of these seven birds it was the part most seriously affected, although in one of the House Sparrows the lesions were confined to the ventral surface of the neck, and in the captive Bullfinch to the leading edge of the wings. The other House Sparrow also had lesions on the neck, one wing and the inner aspect of the upper part of one leg, whilst one of the Robins also had extensive lesions on the breast. In all cases, the affected skin showed varying degrees of thickening with yellow or white superficial encrustations and loss of feathers. There was a fairly distinct demarcation between the feathered and denuded areas, giving the birds a very distinctive 'bald-headed' appearance; a typical example of this was illustrated by Soper and Hosking (1961). Histological examination of all seven birds revealed a hyperkeratosis and infiltration of the keratinised layers of the skin and feather follicles with slender fungal hyphae. In most cases, P. K. C. Austwick (*in litt.* 1966), of the Central Veterinary Laboratory of the Ministry of Agriculture, Fisheries and Food at Weybridge, was able to isolate fungi from the lesions, but these isolations either could not be identified or were species, such as *Penicillium,* which are not normally considered to be pathogenic.

Data and material were also received from another Dunnock which had suffered severe loss of feathers from the head, associated with encrustations of the denuded areas of skin (R. H. Poulding *in litt.* 1965). Histological examination revealed infiltration of the skin with fungal hyphae.

(4) PARASITIC INFESTATIONS

Knemidokoptic mange

Skin lesions of parasitic origin are almost entirely caused by arthropods, especially mites of the genus *Knemidokoptes* (=*Cnemidocoptes*). Six

definite or apparent cases involving the legs and feet of wild birds were recorded in this survey (though two of them came from Africa). They concerned a Pheasant, four Sedge Warblers *Acrocephalus schoenobaenus* (two in Nigeria) and a Skylark *Alauda arvensis*.

The Pheasant, which was a free-living individual shot during its first winter at Cranborne, Dorset, was shown to be affected by the mite *K. mutans*. The shanks of both legs were swollen and had marked yellow encrustations, especially on the posterio-lateral aspects, with distortion and raising of the scales of the leg (plate 55b). Numerous mites were isolated, and histological examination revealed marked hyperkeratosis and mites in the *stratum corneum*. The feet and legs of two of the Sedge Warblers, which were trapped in Nottinghamshire, were affected by very similar lesions and, although no laboratory examinations were carried out, the photographs taken strongly indicated a similar parasitic infestation. The two Sedge Warblers in Nigeria had almost identical lesions which proved to be caused by *K. jamaicensis* (Fry *et al.* 1969). The Skylark, trapped in Suffolk, was said to have 'wart-like' growths at the junction between the claw and digit on the external, middle and hind toes of the left foot, and one similar lesion on the hind toe of the right foot; the hind claw of the left foot was completely missing. Very significantly, it was observed that 'the skin of the left leg was dry and flaky' and it is possible that these lesions were also due to a *Knemidokoptes* mite.

It should be added that Kirmse (1966) published an excellent paper on *Knemidokoptes* and other mite infestations of North American birds, and listed several references to occurrences of these mites in Britain and other parts of the world.

Other types of acarine mange

A number of species of mites of the family Epidermoptidae, such as *Microlichus avus*, may produce mange-like lesions as illustrated by Keymer and Blackmore (1964); this family of mites has also been reviewed by Fain (1965). Mites of the genus *Harpyrhynchus* invade the feather quills and follicles and may produce cysts (Macdonald 1965a), whilst those of the genus *Syringophilus* may also, but less frequently, be implicated. Keymer (1969) has recently reviewed the pathogenicity of skin mites and other ectoparasites of birds.

Other parasitic conditions affecting the skin

Occasionally tick infestations may be so heavy that, when viewed from a distance, they can be confused with warts. I.F.K. encountered such a case at Weeting, Norfolk: a hen Pheasant had the parasites *Ixodes ricinus* clustered around both eyes (plate 56a). A Blackbird affected by a very heavy louse infestation is recorded under *Alopecia of unknown etiology* (page 325).

Although trichomoniasis does not cause skin lesions, heavy infections of the buccal cavity may occasionally cause deformities of the mandibles in Woodpigeons, and these may be confused with pox, as already stated.

(5) NEOPLASIA

Squamous papilloma of the feet of Chaffinches

Neoplastic conditions or tumours are uncommon in wild birds, with the notable exception of this disease of Chaffinches *Fringilla coelebs*. The first record in Britain appears to have been that of Jennings (1959) who briefly referred to 'papilloma of claw' of a Chaffinch. The first record of the condition in this survey was by Washington (1964), and the nature of the lesions was later confirmed (Keymer and Blackmore 1964). The condition appears to be specific to Chaffinches. Records of 16 further cases have been received and, although only eight of these were actually examined histologically, the other diagnoses of this very characteristic disease appear to have been correct. Of the 16 cases, eleven were of free-living wild birds and five of aviary-kept birds. There appears to be no sex susceptibility, six of the affected birds being males, nine females and one of unrecorded sex. In only two cases were the ages known, but it is interesting to note that in both these the affected individuals were under two years old. In twelve cases only one foot was affected, but in the other four the lesions were bilateral.

The lesions have already been described by Keymer and Blackmore (1964) and illustrated by Washington (1964). The whole of the diseased foot and lower part of the tarso-metatarsus is usually affected by a highly keratinised papillomatous lesion, which often obscures the individual digits and results in considerable overgrowth and distortion of the claws. Histologically, the lesions are typical papillomas exhibiting marked acanthosis and hyperkeratosis with comparatively little fibrous supporting tissue. A record was also received of a flock of about 20 Chaffinches, predominantly males, approximately 50% of which were affected by a scaly wart-like growth of the legs and toes. Unfortunately, none of these was subjected to a laboratory examination.

This papillomatous condition of the feet of Chaffinches is apparently a relatively common disease, although its exact incidence is unknown. D. Washington (*in litt.* 1968) reported that four out of 244 (1.6%) free-living wild Chaffinches handled by him were affected. The condition has also been recorded in Britain by Macdonald (1965b) and in Germany by Groth and Abs (1967). The latter described it in 19 Chaffinches and considered that it was probably of viral origin, although they failed to demonstrate the presence of a virus.

Other neoplastic conditions

Apart from the Chaffinches with papillomatosis, only four other records

of birds affected by possible neoplasms have been received. Both a Coal Tit *Parus ater* and a female Starling were observed to have a single smooth wart-like lesion on one eyelid. The lesions may have been sebaceous cysts or due to a chronic pox infection. A captured male Starling was noticed to have a small haemorrhagic wart-like lesion near the base of the upper mandible. A record was also received of a Meadow Pipit *Anthus pratensis* with a dark grey neoplastic-like mass at the back of its mouth, extending into the lores and preventing complete closure of the beak in a manner similar to that described in a Starling by Park (1959). In both cases it is possible that the lesions were caused by a chronic pox infection.

Wart-like growths involving the skin and other external surfaces have been reported in a number of species, but cannot be differentiated from such virus infections as pox without microscopical examination of the affected tissue. What appear, however, to be authentic records of neoplasms affecting the feet and legs of wild birds in Germany have included papillomas on Starlings (Heller 1910); a probable epithelioma affecting a crow *Corvus sp.* (Joest and Ernesti 1916); and a type of carcinoma involving the tibio-tarsal tarso-metatarsal joint of a Lapwing *Vanellus vanellus* (Schlegel 1916).

(6) INJURIES AND LOCALISED INFECTIONS

There is little doubt that the vast majority of lesions affecting the mandibles or feet and legs are traumatic in origin and several specimens received have revealed some interesting abnormalities.

An adult female Starling found in a collapsed state in Burnley, Lancashire, subsequently died and was sent for examination. The direct cause of death appeared to be associated with a very heavy tapeworm and roundworm infestation. It was noted, however, that almost all the primaries and secondaries of the left wing were badly singed, and that the epidermal scales overlying the left digital tarso-metatarsal joint, the dorsal surface of the left foot and the medial aspect of the right foot were absent. The skin concerned showed a low-grade inflammatory reaction and degenerative change of the epidermis. It is tentatively suggested that these lesions may have been caused by the bird indulging in so-called smoke-bathing (see Simmons 1964); this behaviour has been previously recorded in different species of birds and is probably related to anting.

Staphylococcal arthritis in Pheasants was described by Hole and Purchase (1931), who thought that the organisms entered the skin and joints through scratches inflicted by thistles. Macdonald (1965a) also reported a similar condition in gulls and a staphylococcal dermatitis in a Peregrine *Falco peregrinus*. The feet of a Woodcock *Scolopax rusticola* shot at Cranborne, Dorset, were received for examination: the left foot had a large swelling approximately 1 cm in diameter in the inter-

digital region on the ventral surface. The lesion had a necrotic granulomatous core, from which a coagulase positive *Staphylococcus* was recovered, and it was identical to the condition known as 'bumble foot', a staphylococcal arthritis of domestic poultry. The second digit of the right foot was fixed, due to an old fracture involving the joint between the first and second digital bones. Details were also received of a first-year female Robin affected by 'bumble foot': the base of the right foot was affected by a typical abscess approximately 6 mm in diameter from which, on histological examination, organisms resembling *Staphylococci* were demonstrated; a similar, but smaller, lesion affected the hind toe of the left foot. In addition, photographs of a female Blackcap *Sylvia atricapilla* caught at Wilton, Wiltshire, were examined: both feet were swollen on their ventral surface, with apparent involvement of the tarso-metatarsal digital joints; the claws were grossly overgrown, and the swellings, which resembled those associated with 'bumble foot', were approximately 5 mm in diameter.

A juvenile female Blackbird was observed to have a swollen joint on the mid-digit of the right foot, with fixation of the joint; it is considered that this lesion was associated with a directly traumatic factor. Distortions of the tarso-metatarsal bones due to healing fractures were also noted in a captured adult Blackbird and a Starling.

(7) MISCELLANEOUS CONDITIONS OF UNCERTAIN ETIOLOGY

Three main conditions can be placed under this heading, namely certain types of alopecia or baldness, articular gout, so-called congenital abnormalities, and certain types of claw and bill deformities.

Alopecia of unknown etiology

Seventy-four specific records concerning alopecia, especially of the head, comprised 32 Blackbirds, 23 Starlings, six Robins, three House Sparrows, three Dunnocks and one each of Blue Tit, Great Tit *Parus major*, Chaffinch, Pied Wagtail *Motacilla alba*, Greenfinch *Carduelis chloris*, Song Thrush *Turdus philomelos* and Mallard *Anas platyrhynchos*.

Of the 32 Blackbirds, only one was received for laboratory examination. This showed a loss of feathers from the dorsal surface of the neck, the shoulders and under each wing. The denuded skin appeared to be inflamed and the bird carried a very heavy unidentified louse infestation. which was probably the primary cause of the condition. Four other Blackbirds, which were recorded as having lost feathers from the head, neck and back, had also been observed to exhibit signs of intense skin irritation. It is suggested that these may also have been suffering from a severe ectoparasite burden. Two of these birds grew normal feathers again the next autumn. Two more Blackbirds, apart from losing almost all the feathers from the head, developed a thickened skin which had a white scaly appearance similar to that of birds confirmed to be suffering

from a cutaneous mycotic infection. A hand-reared Blackbird, after losing its juvenile feathers, never grew adult plumage on the head; this condition may have been in some way associated with its artificial environment or nutrition. Of the 24 remaining Blackbirds, all showed loss of head feathers, five an associated loss of neck feathers, two of back feathers and one of breast feathers. Of those whose sex was recorded, 14 were males and five females.

Seven Blackbirds, including two of those which were thought to be affected by ectoparasites, were noted to re-grow feathers in the autumn (October-November), but then three of them were observed to lose feathers again within a few months: two in early spring (February and March) and one in December. Dr Geoffrey Beven (*in litt.* 1968), who has observed Blackbirds affected by this type of affliction, believes it to be most common during the late summer months, and this opinion is shared by Stanley Cramp (verbally 1964) and by I.F.K. from observations in the field. The condition, however, of one bald Blackbird remained completely unchanged for at least two years. Another interesting observation concerned a pair of breeding Blackbirds which both lost their head feathers, but the female did not become affected until she had paired with the already affected male.

All 23 Starlings showing loss of head feathers were observed by Dr Beven while trapping birds in the Esher and Morden areas of Surrey. These observations are therefore highly selective and may suggest an unrealistic incidence of this condition in Starlings. All simply lost head feathers and showed no obvious deformity of the exposed skin (although in two cases the remaining plumage was noted to be in rather poor condition) and in ten cases the loss of feathers was confined to the base of the bill. There was no obvious sex, age or seasonal incidence amongst the affected birds.

Four of the Robins had varying degrees of loss of feathers upon the head and one also exhibited loss of neck feathers. One observed by I.F.K. had lost only the feathers from around both eyes, and the alopecia was associated with irritation of the affected skin. Another observer recorded that for three consecutive years one young Robin from each brood of a particular pair became bald when two or three months old.

Two of the House Sparrows showed loss of head feathers only, whilst the skin of the head of the third had a white scaly appearance with similar lesions on both wings rather suggestive of a cutaneous mycosis. The Chaffinch, which was observed for four months, developed a progressive baldness with associated thickening of the skin; the records of Blue Tit, Great Tit and Pied Wagtail were similar. The Greenfinch, which was wild caught but had been kept in captivity for one month owing to a damaged wing, developed loss of feathers around one eye and the side of the face, with an associated scaly thickening of the

skin; a local veterinary surgeon who examined the bird suspected knemidokoptic mange.

One interesting report from Mrs A. Carney (*in litt.* 1967) involved a Dunnock which gradually lost the feathers of its head and neck until by mid-summer 1966 the alopecia had spread to the breast; at first the skin was pinkish, but eventually that of the head turned greyish. The feathers then began growing again until by mid-October the plumage was normal. About two weeks later, however, a whitish horny growth started to develop around the left eye; this later appeared to obscure vision and gradually spread across the head to affect the other eye. The Dunnock started to scratch the lesion, became very aggressive to other birds and was seen to attack a Robin in January 1967. Progressive loss of feathers recurred and the affected skin developed horny ridges; the bird eventually became blind as a result of the lesions obscuring the eyes and was found dead on 21st January. Unfortunately, the carcase was not submitted for examination.

The Mallard, an adult drake, was observed on a lake in Greenwich Park. It was in poor plumage, with areas of feather loss and general signs of skin irritation, especially around both eyes. Some parts of the skin were denuded of feathers, and obviously thickened. It is thought that a severe ectoparasite infestation could have been a possible cause of this condition.

Several other letters were received from evidently reliable observers who recognised baldness in Blackbirds, Robins and tits as a relatively common occurrence, but did not quote specific examples. These observations of birds with varying degrees of alopecia are difficult to classify, but in certain cases it is possible to make a tentative diagnosis. As already suggested, five Blackbirds and the Mallard could have been affected by a heavy burden of ectoparasites, particularly lice or feather mites. The Greenfinch might have been suffering from knemidokoptic mange. It has now been shown that mycotic skin infections definitely occur in British wild birds. Of those with alopecia described here, two Blackbirds, four Robins and one each of House Sparrow, Chaffinch, Blue Tit, Great Tit, Dunnock and Pied Wagtail could have been suffering from a mycotic dermatitis.

Articular gout

Two cases affecting Woodpigeons were investigated. One, which was very severe, was associated with nephrosis or nephritis of unknown etiology. Almost all the limb joints contained considerable deposits of urate material, especially the humero-ulna joints and the tibio-tarsal tarso-metatarsal joints. The white, grossly swollen joints were conspicuous in the unfeathered regions before dissection (plate 56b). The feet and legs of the second Woodpigeon, which had been trapped near Fordingbridge, Hampshire, were grossly swollen as a result of heavy

tion). Although the results are subject to certain limitations, it is hoped that this survey has helped to elucidate certain of the problems related to the skin diseases of wild birds. At the same time it may stimulate others to investigate in greater detail such important problems as cutaneous mycoses and the causes of alopecia of wild birds in general, and of Blackbirds in particular.

ACKNOWLEDGEMENTS

We are extremely grateful to all who sent us records or specimens of affected birds—without this information, the work could not have been done—but the number of people involved unfortunately makes individual acknowledgement impracticable. We are also most grateful to Petfoods Limited, of Melton Mowbray, and the Zoological Society of London for providing facilities for us to carry out this work.

SUMMARY

This paper records the results of a small survey of the cutaneous diseases of British wild birds, being based on data and pathological specimens received as a result of a previous review article and request for further information published in 1964. A total of 153 cases, involving 24 species, were investigated and an attempt made to classify these under various broad headings according to their probable etiology.

Of the conditions classed as infectious, bacterial diseases were the least common, apart from secondary staphylococcal infection of foot wounds; and cutaneous lesions of avian pox apparently the most frequent, particularly among House Sparrows *Passer domesticus*. Knemidokoptic mange was the most significant ecto-parasitic condition. Seven cases of cutaneous mycosis were confirmed and this is considered a particularly interesting finding. The commonest neoplastic condition was the squamous papilloma of the foot which appeared to be specific to the Chaffinch *Fringilla coelebs*. No less than 74 cases, involving twelve species and including as many as 32 Blackbirds *Turdus merula*, were classified under alopecia of unknown origin; in these, the lesions were confined mainly to the head and neck.

The various conditions recorded are discussed to show which are considered to be of special interest and which require further investigation.

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Notes

Overland migrations of Common Scoters *The Handbook* notes that Common Scoters *Melanitta nigra* occur on inland waters 'in small numbers irregularly but fairly often' and that such records 'are too frequent . . . during quite settled weather to be dismissed as merely "accidental".' At the time that was published (1939), however, it could be stated only that they seemed to be most frequent in April and November. Suspecting that it might now be possible to establish a more definite pattern, I have brought together information from the following sources: *Lancashire and Cheshire Fauna Society Annual Reports*, 1938-67; *Yorkshire Naturalists' Union Ornithological Reports*, 1938-63; R. Chislett, *Yorkshire Birds* (1952); C. Oakes, *The Birds of Lancashire* (1953); T. H. Bell, *The Birds of Cheshire* (1962) and its *Supplement* (1967); and personal correspondence from J. Moult (Manchester), C. Owen (Leigh) and A. F. G. Walker (Harrogate).

In the region thus covered, the records of Common Scoters—which sometimes involve hundreds of birds—show three regular and distinct peaks in April, July-August and October-November:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
13	7	17	38	18	17	74	45	25	29	31	13

There is also a pattern relating to sex and maturity. Males predominate in spring and to an even greater extent in June to August, being later superseded by females and immatures:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Males	5	7	16	30	9	61	265	212	13	21	10	6
Others	2	2	8	15	7	6	34	34	12	68	119	9

These figures are compiled exclusively from records wherein the birds' sexes or ages were definitely stated, and they relate to only a proportion of the totals involved. As might be inferred, however, the largest flocks do in fact pass through in late June to late August and in late October to early November, anything larger than a small party being exceptional at other times.

Unfortunately, no observers have as yet identified the same flock at more than one point *en route*, but by piecing together records from several years it is possible to form a composite picture sufficiently satisfactory to show that the usual line of flight in summer is approximately east to west from the Yorkshire coast, as in the following series of examples: (1) about 150, after circling, flew westwards at Spurn, east Yorkshire, 9th July 1960 (*Y.N.U. Report*); (2) 160 flying WNW up the Calder Valley, west Yorkshire, 10th August 1954 (J. Cudworth, *Y.N.U. Report*); (3) 200 flying west at Whiteholme Reservoir, Lanca-

shire/Yorkshire border, 31st July 1957 (V. S. Crapnell, I. Morley, *Y.N.U. Report*); (4) 30-35 at Pennington Flash, Leigh, Lancashire, flew off westwards, 31st July 1956 (F. R. Horrocks, *Lancashire Bird Report*); (5) 170 flying east to west at Shotton, North Wales/Cheshire border, 9th August 1964 (J. P. Wilkinson, *Lancashire Bird Report*).

Lest it be thought that these overland migrations are new, perhaps I might add that I have come across a manuscript record of 40-50 Common Scoters over the Lancashire/Yorkshire border near Littleborough on 20th October 1887. K. G. Spencer

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Herring Gull catching and eating bat On 4th May 1969, at Chew Valley Lake, Somerset, Paul Andrew and I were watching a group of seven immature Herring Gulls *Larus argentatus* when they all flew up to chase a fairly large bat which was hawking some 30 feet above the surface. We thought from its shape and flight actions that this was probably a Noctule *Nyctalus noctula*. After much manoeuvring, the leading Herring Gull caught the bat with an unusual display of agility. Then followed a typical squabbling chase by the other gulls before it settled on the water and with some difficulty ate the greater part of its unexpected prey. Timothy R. Cleeves

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Herring Gulls feeding on algae On 24th October 1968, on Penzance beach, Cornwall, I saw 16 first-winter Herring Gulls *Larus argentatus* pulling at both broad and thin 'fronds' of the green algae which were growing with other seaweeds on the rocks. By forceful tugging they detached long strands, which then often festooned their bills before being gulped down. The gulls swallowed considerable quantities in this way during the 30 minutes that I was watching. A number of adult and near-adult Herring Gulls were also on the beach, some distance from the immatures, but they made no attempt to take what appeared to be similar algae near-by. Eventually I disturbed the feeding gulls in order to collect specimens of the algae, which I found to be free of small shell-fish. Ian Tittley, of the Marine Algal Section, Department of Botany, British Museum (Natural History), kindly identified these (*in litt.*) as *Enteromorpha compressa*, *E. intestinalis* and *Ulva lactuca*, all members of the family Ulvaceae and all commonly found on sea shores.

The Handbook (vol. 5), in the sections on 'Food', makes only brief reference to 'seaweed' under Black-headed Gull *L. ridibundus* (p. 67), 'fragments of seaweed' under Common Gull *L. canus* and Lesser Black-back *L. fuscus* (pp. 81, 99) and 'seaweed (especially *Alaria esculenta*)' under Glaucous Gull *L. hyperboreus* (p. 109). Bernard King

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Entangled Black-headed Gulls Douglas J. Chinery's note on a Great Skua *Catharacta skua* entangled with a Herring Gull *Larus argentatus* (*Brit. Birds*, 62: 116-117) was fresh in my mind on 22nd June 1969 when J. R. Rose, Mr and Mrs J. W. Allen and I found the corpses of two adult Black-headed Gulls *L. ridibundus* locked together at Ravenglass, Cumberland. Each had a claw deeply embedded in the other's breast, but the primary cause of entanglement was a fine nylon line projecting from the throat of one of the birds and wound round the wings of the second. R. W. Robson

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Food-hiding by Rooks A note by K. E. L. Simmons (*Brit. Birds*, 61: 228-229) described the methods used by Rooks *Corvus frugilegus* in burying peanuts and referred to two previous accounts of their burying acorns and pine cones respectively. These three separate observations came from the adjoining counties of Somerset, Devon and Wiltshire, and Simmons commented, 'Food-hiding by the Rook seems not yet to have been recorded elsewhere.' He went on to quote an earlier suggestion by Dr I. J. Patterson (cited in an editorial comment in *Brit. Birds*, 60: 138) 'that there may be local traditions in such behaviour'; Patterson and his colleagues, working full-time on Rooks in Aberdeenshire, had seen no food-hiding there. In fact, however, this food-burying habit seems to be well-developed in several parts of Scotland and I shall be surprised if it does not prove to be much more widespread than is realised at the moment.

Credit for the first published observation goes to the late Dugald Macintyre. Writing in *The Scotsman* for 28th October 1950 he described Rooks stripping an oak tree of its acorns, recalled having watched Rooks removing and flying away with the nuts from a Spanish walnut tree at the North Inch of Perth, and concluded as follows: 'In an old-time "Nature Note" I recorded what seemed to be deliberate fir cone planting by rooks, and how the birds, with ploughed grounds at hand, preferred to dig holes for their prizes on pasture land.' I have not been able to locate Macintyre's original note, but it seems very probable that this too related to a locality in Perthshire. In the same month of October 1950 K. S. Macgregor and F. D. Hamilton recorded about 40 Rooks engaged in flying from a mixed wood to bury pine cones in open grassland at Aberlady Bay, East Lothian, some at least of these being buried in molehills (*Brit. Birds*, 44: 202). Exactly the same behaviour was seen in October 1951 (*Edinburgh Bird Bulletin*, 2: 4).

It was also in October 1950 that I first realised that the same activity could be seen daily in the grass field in front of our house at Colinton, on the south-west outskirts of Edinburgh. Over the next few years it proved to be a regular behaviour pattern that could be looked for every autumn. October was the month of greatest activity (earliest

date 21st September), but it continued on a lower scale throughout the winter (latest date 21st March). On every occasion when it was possible to identify the object buried, it was the cone of some species of conifer. The method of burying was exactly the same as that described by previous observers. The cone was almost invariably hidden in a small tussock of grass (up to about six inches high). The hole would be dug out with the bill, the cone picked up and deposited in the hole, and the hole then deliberately filled in with any handy material. Not infrequently several different holes were excavated before the cone was finally 'planted', and even after that it was sometimes immediately disinterred and re-buried a few yards away. One winter the field was ploughed up except for one small strip, and it was noticeable that the Rooks (like those observed by Macintyre in the passage quoted) confined their planting operations to the grass strip and ignored the plough altogether.

I have also noted this activity on one occasion at Gladhouse Reservoir, 13 miles south-east of Edinburgh, where on 28th November 1964 three Rooks were busily engaged in removing cones from a fir strip along the side of the reservoir to bury them in rough grassland 100 yards away. Another more recent record came from Biggar, Lanarkshire, where on 20th June 1968 Rona S. Hunter was able to watch an adult Rook thrust 'three finger-sized pieces of currant bun' under a rose bush in her garden and cover them over with a mound of small clods of earth (*Scottish Birds*, 5: 290). Then what actually prompted me to write this note was a further personal observation on 25th March 1969 when a Rook alighted in a herbaceous border in our garden in the Morningside district of Edinburgh and proceeded to excavate a hole in loose earth at the foot of a clothes post before burying a large slice of fat there. Finally, it would be surprising if such a well-established activity were confined to south Scotland and south-west England, and I can provide one additional observation from Sutton-in-Craven, in the West Riding of Yorkshire, where my cousin, A. D. Bateman, tells me that in September 1952 he watched several Rooks burying acorns in molehills in a field.

In all my own notes I have been able to find only one reference (dated 21st March 1954) which suggests that the food was buried without any preliminary digging and it can certainly be stated that in my experience it is the normal practice for Rooks to excavate a hole first. Since, however, Simmons (*op. cit.*) saw peanuts and a crust of bread being thrust into the ground without any preliminary digging and he and others (e.g. Derek Goodwin quoted in *Brit. Birds*, 51: 501) have emphasised that this is the normal technique for all the other Corvidae so far recorded burying food, it may be that the consistency of the soil determines the method used. Indeed, it has been suggested to me that Rooks dig holes only when the ground is too hard to push

into, but, having recently seen one excavate a hole in loose earth (see above), I believe that the nature of the object being buried may have a more important bearing on the procedure adopted. An acorn or peanut can probably be buried easily without further ado, but a pine cone, being larger, evidently requires more elaborate treatment, while such a soft object as a piece of fat is probably not at all amenable to direct insertion.

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Reviews

A Regional Guide to the Birds of Scotland. By W. Kenneth Richmond. Constable, London, 1968. 252 pages; frontispiece and 54 black-and-white photographic plates; 15 maps. 25s.

Mr Richmond's *Regional Guide* will by now have been bought by many people and no doubt well used. This little book fills an obvious gap: the sort of information it contains has hitherto been available only in such massive (and out-dated) works as J. A. Harvie-Brown's *Vertebrate Fauna* series or, in tabular form, in the Misses E. V. Baxter and L. J. Rintoul's earlier work on *The Geographical Distribution and Status of Birds in Scotland* (1928). The author has, on the whole, used his compendious knowledge of Scotland and its birds to full advantage and compressed it into a remarkably small space, but his book could have been much improved, and many of the minor inaccuracies rectified, had he delayed publication until each regional section had been checked and edited by someone with detailed local knowledge.

The main part of the book divides the country into twelve 'regions', with a description of the typical habitats of each; the status and distribution of the birds of Scotland is then presented in tabular form as a separate section. In addition, there are 15 useful maps and an introductory chapter which provides much information of a general nature on organisations with interests in Scottish bird life, together with a list of reserves. Some of the latter are of only marginal ornithological interest, but in all cases there are good notes on access and ownership. Visitors to Scotland will find this chapter particularly useful as an ornithological travel guide. One distinctly curious feature is the large number of photographs—the author's own, 55 in all—many of which are full-page and some double page. These are of varying quality, some pleasing, but others excessively blown up and coarse-grained. They serve no really useful purpose relative to the book's objectives and their omission would in no way detract from its value as a guide, which could then be made much more compact and 'pocket-sized'.

An original little book whose undoubted usefulness could have been much enhanced by considerable tidying up.

IAN D. PENNIE

The New Forest: An Ecological History. By Colin R. Tubbs. David & Charles, Newton Abbot, 1969. 248 pages; 21 black-and-white-photographs; 6 maps and other text-figures. 50s.

This excellent book should be read by everyone who has an interest in any aspect of the British countryside. It traces, from a section on the early geological formation of the area, the impact of man and his practices in land-use on what is now 'virtually the only large area of Lowland Britain where drastic change has not taken place'. Although, necessarily, the information given is particularly relevant to the New Forest and is thus peculiar to the unique pattern of land-management in that area, there is much that is generally applicable to the British countryside as a whole. Various chapters review historically, amongst other topics, the pattern of settlement and the changes and effects of man's activities, vegetation, soils, New Forest management and modern administration, the agricultural economy and the recent ecological history. Altogether the results of research in many different fields are succinctly brought together and lucidly synthesised.

Of most interest to the ornithologist are the chapters on the larger vertebrates and features of the modern fauna. Ornithologically, one of the New Forest's main functions is to act as a relatively secure breeding reservoir for several species of birds of prey, and a remarkable series of population counts—undertaken by Mr Tubbs and his equally enthusiastic friends—indicate that in recent years they are maintaining constant levels (although it is sad to realise that continued persecution in the surrounding areas prevents their increase there). In addition, population estimates for other scarce species, such as the Woodlark *Lullula aborea,* Red-backed Shrike *Lanius collurio*, Dartford Warbler *Sylvia undata* and Stonechat *Saxicola torquata*, are discussed for periods of up to 13 years and these reflect the great interest that has been taken in the birds of the area. There are useful maps, lists of references to each chapter, and a good index. The quality of photographic reproduction does not always do full justice to the originals and there are several mis-spelt scientific names, but these do little to mar an otherwise valuable book. J. S. Ash

Letters

White-rumped Swifts in Morocco I was very interested in the recent correspondence concerning the White-rumped Swifts *Apus caffer* in southern Spain and particularly in P. G. C. Brudenell-Bruce's suggestion that ornithologists visiting north-west Africa should look for this species there (*Brit. Birds*, 62: 122-124). In the summer of 1968 I was fortunate enough to spend the week of 18th-24th July in the

High Atlas during the course of an expedition to Morocco organised by the Department of Physical Education at Leeds University, and I had the pleasure of positively identifying *A. caffer*, which had apparently not been recorded before in north-west Africa. The area was a valley above Asni (a village about 50 km due south of Marrakech), more specifically in the 8 km between the settlement of Imlil at about 5,000 feet and the shrine of Sidi Chamarouch at about 8,000 feet. Unfortunately, this was the only valley which I was able to explore in the seven days, but I estimated that approximately 30 *A. caffer* were present.

I was already familiar with the earlier notes on this species and the Little Swift *A. affinis* (*Brit. Birds*, 60: 286-290; 61: 36-41) and was therefore sufficiently well aware of the identification features of both. I had also become well acquainted with *A. affinis* in Fes and Marrakech during the previous week. Consequently, as soon as I encountered these *A. caffer* above Imlil I was immediately convinced of their identity and spent some considerable time in taking field descriptions. It would be tedious to repeat these here since they largely reinforce what has already been written, but the following brief summary may be of interest.

I found *A. caffer* to be quite distinct from *A. affinis*. Although they appeared much the same size, *A. caffer* had more delicate proportions with slightly narrower and more pointed wings. The fork in its tail was not always visible, but this feature clearly showed when the birds were swooping and turning to catch flying insects; in straight, fast flight the appearance of the tail was more of a point. *A. affinis* showed a distinctly squared-off tail at almost all times and its large white rump seemed to gleam in strong light. The white rump of *A. caffer*, on the other hand, was sometimes so narrow as to be difficult to pick out in less than average light (but possibly these individuals were young of the year). Apart from the white rump, *A. caffer* looked almost uniformly dark in colour, shading to a slightly paler tinge on the lower belly.

It was significant that these *A. caffer* were seen almost invariably in association with Red-rumped Swallows *Hirundo daurica* in a rocky, barren environment. Both species seemed particularly attached to the cave-like overhang of a crag just above Sidi Chamarouch, where nesting may have taken place, but the site was quite inaccessible. During the heat of the day the swifts and the swallows left the valley bottoms and were to be seen circling together round the high crags of the Toubkal massif which rises to nearly 14,000 feet; once the local Lammergeier *Gypaetus barbatus* was mobbed by one of these mixed parties. Later in the afternoon the birds descended to the valleys again, often flying over Imlil itself.

I suggest that *A. caffer* is probably well established throughout the remote and ornithologically unexplored High and Middle Atlas,

and probably in the Rif too. From there it is a relatively short distance to similar habitats in southern Spain. K. A. CHAPMAN

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Until these observations by Mr Chapman, the Spanish nesting records of *A. caffer* were geographically isolated, with the nearest known breeding area some 1,750 miles away in Nigeria, but now we have the first missing link in the chain and, as Mr Chapman says, the species will probably be found in other areas in north-west Africa. The following letter, however, seems to demonstrate that it cannot be very widespread there. EDS

Whilst in Morocco, Algeria and Tunisia from April to July 1969, I took the opportunity of examining closely over 100 swifts with white rumps—in widely separated localities from Goulimine, in the south of Morocco, to eastern Tunisia—and all were clearly Little Swifts *Apus affinis*. I particularly noted the shape of the tail, the shape of the area of white on the rump, and the call. (The tail seemed to be a very consistent identification feature of *A. affinis*, at no time appearing at all forked and on some occasions even tending towards a very slight wedge.) Special attention was paid to a colony of about five pairs around a small stone bridge in the Jebel Sarhro area of the Anti-Atlas mountains, some ten miles from the nearest habitation. Their nests, under the bridge, were typical of those constructed by *A. affinis*.

It seems likely that, if the White-rumped Swift *A. caffer* does occur in north-west Africa, it can do so only in small numbers or in remote areas. JOHN R. HOPKINS

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Zoos and endangered species Robert Hudson stated (*Brit. Birds*, 62: 126) that the potential value of zoos in 'maintaining breeding stocks of species that are threatened in the wild state exists more in theory than in practice'. He then listed 'a few outstanding exceptions', the first of which, the Oryx (presumably he meant the Arabian Oryx *Oryx leucoryx*), is hardly a valid example since less than 50 are known to exist in captivity and it is too soon to assess the long-term possibilities of the project to build up a world herd at Phoenix Zoo, Arizona.

On the other hand, he omitted to mention two major examples. One of these, the Wisent or European Bison *Bison bonasus*, owes its existence in the wild state entirely to animals bred in zoos and subsequently released into the Bialowieza Primeval Forest in Poland: the original herd established there after the 1914-18 war was almost exterminated during 1939-45, but in 1956 several more captive-bred Bison were released and founded the present herd of over 60 now living in a wild state. The second example is Przewalski's Wild Horse *Equus przewalskii*:

only a handful is believed to remain in the wild in its native land of Mongolia and nobody knows how long this last remnant population can survive, but fortunately there is a good breeding nucleus of more than 150 in the world's zoos and in 1968 the species was bred at both London Zoo and Whipsnade, as well as in a number of American and Continental collections. It might be added that of the 16 species of pheasants which are in danger of extinction in the wild, eight are being bred regularly at the Pheasant Trust at Great Witchingham, Norfolk, and, apart from Swinhoe's Pheasant *Lophura swinhoei*, of which a number of young birds have already been re-introduced to the wild in Taiwan, plans are being made and stocks are available for the release of three more of the threatened species into their natural habitats in Asia.

Mr Hudson drew attention to the proliferation of small privately-owned zoos and said: 'There has to be justification for the resulting traffic in largely wild-caught stock.' Nobody can argue with that and it was one of several reasons why the Federation of Zoological Gardens of Great Britain and Ireland formed a Conservation and Breeding Committee last year. (Nearly all the more important zoological collections in this country are members of the Federation.) It is recognised that, with the continuing decrease in the numbers of wild animals, zoos will have less and less justification for obtaining wild-caught specimens. Therefore, they must do all they can to breed their own replacements and not only of endangered animals, since a common species today may very well be a rare one tomorrow. It is the task of the Conservation and Breeding Committee to co-ordinate and implement this policy.

Finally, Mr Hudson mentioned that the Union of German Zoo Directors had agreed that its member bodies would not acquire specimens of eight endangered bird species and asked: 'When shall we hear that its counterparts in other countries have made similar declarations?' Members of the British Federation have all agreed to refrain from illegal trading in wild animals and to notify the Federation before acquiring animals which are considered to be in danger of extinction (this embraces several hundred mammal and bird species). Recently, for example, the Federation's Council decided that member zoos should not acquire specimens of the rare Mountain Tapir *Tapirus pinchaque* even though foreign dealers had offered it. In the Federation Britain already has an active organisation well aware of the responsibilities of modern zoos and of the need to conserve rare species. Its counterpart in the United States is the American Association of Zoological Parks and Aquariums, whose member zoos have recently agreed not to import the Orang-utan *Pongo pygmaeus* due to the rarity and continuing decline in numbers of that ape.

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News and comment *Robert Hudson*

National farming and conservation conference It is fashionable to berate farmers for such practices as hedge removal, tree felling and the use of chemicals. Yet can a farm be managed in a way that pleases both economist and conservationist? This was the theme behind a working conference of farmers and naturalists arranged by a committee of seven organisations under the energetic secretaryship of David Lea (Royal Society for the Protection of Birds) and held at Silsoe, Bedfordshire, during 11th-13th July. I am grateful to David Glue for the following summary.

The delegates attending the conference were divided into six groups or syndicates, two of naturalists and four of farmers, and they then walked over 400 acres of farmland at Tring, Hertfordshire, the natural history of which had previously been assessed by the British Trust for Ornithology and by local naturalists organised by Bruce Ing (Hertfordshire and Middlesex Trust for Nature Conservation). Each of the syndicates was instructed to draw up a development plan for the farmland, on the basis that they owned it but had to meet an annual charge of £12 per acre; the naturalists' groups were to assume that the farmer was interested in conservation and was prepared to make concessions. The six plans were then compared and discussed. All four farmers' syndicates produced schemes which involved varying degrees of hedgerow and scrub removal, but only that concerned with cereal monoculture demanded the eradication of all internal obstructions. The naturalists' scheme advocated the retention of the entire scrub and hedgerow network, plus selective tree planting and the creation of a pool. Dr. N. W. Moore (Nature Conservancy) then assessed the implications of the various schemes upon the wildlife and natural vegetation; the cereal monoculture was the most drastic, involving the loss of the habitats of well over half of the existing breeding birds.

In conclusion, Derek Barber (National Agricultural Advisory Service) outlined a compromise plan which was acceptable to many delegates. In his early years the farm owner would probably be prevented by costs from removing many hedgerows and trees and so would take away only the more obstructive ones. In time he might be able to afford further clearances, but he would not need to indulge in the wholesale removal of hedges, because there is a limit to the maximum economic field size. Later, increasing affluence might enable him to adopt a more constructive attitude and undertake some habitat improvement, such as the planting of cover in field corners, especially if he were interested in game preservation. Several delegates expressed the hope that similar meetings would take place on a regional or county scale: it now seems that this will be the next step in drawing together farmers and conservationists.

The future of the environment 'Woe unto them that join house to house, that lay field to field, till there be no place, that they may be placed alone in the midst of the earth!' (*Isaiah*, 5: 8). The modern conservation movement is likewise concerned with all aspects of man's environment, for long-term dangers are not limited to farming changes and loss of wilderness areas. This was the message preached by Professor Barry Commoner, of Washington University, Missouri, in a powerful opening address to a one-day conference on environmental threats, organised by the Soil Association in London on 30th July.

His main thesis was that the very successes of modern technology, operating in ignorance of ecological laws, are leading to the degradation of the environment. Tinkering will not help; unless there is a major re-thinking, he foresaw a complete breakdown within the next 50 years in the United States. There, summer smog, dangerous as well as unpleasant, is caused by sunlight activating the nitrogen oxides from the exhausts of the more efficient modern car engines. Farmers have greatly increased

fertility with nitrate fertilisers, but these suppress natural nitrate fixation, so that still more artificial fertilisers are needed. Yet already nitrates running off into surface waters (where they are joined by more nitrates and phosphates from detergents produced in modern sewerage plants) are causing fantastic growths of algae in rivers. The algae use up all the oxygen, and animal life vanishes. Professor Commoner foresaw that the available oxygen might disappear from all 25 major river systems in the United States by 1980. Moreover, some of these nitrates go into the air, where they may combine with such compounds as terpene from plants to produce *rural* smog. Modern pesticides kill so efficiently that in some areas they have wiped out insect predators and then, if the pest species develop resistance (as many have done), crop damage may be more severe than at the beginning. Technological man is now threatening the ecosystem and conservation has become the concern of all, not merely a fanatical minority.

The lesson was clearly taken by the representatives of many societies at the conference, and they agreed to support the efforts now being made, under the auspices of the Countryside in 1970, to set up a Committee for Environmental Conservation whose aim is to provide more effective liaison between all bodies (conservation, amenity, sporting and recreational) concerned with our threatened environment.

New chemical for oil spills and oiled birds The *Torrey Canyon* affair underlined the hopelessness of trying to clean oiled seabirds with the materials then available. I.C.I. have now produced a chemical compound which they name Dispersol OS. This is an oil-soluble emulsifying agent which, unlike previous detergents, is not soluble in water; it is thus persistent and will survive any amount of immersion in sea water. Equally important, tests carried out by the Ministry of Agriculture, Fisheries and Food indicate that Dispersol OS has a low toxicity to marine organisms. In oil spillages it is intended that this new emulsifier should be sprayed on the oil while fresh and floating; it would not be very effective against solidified oil on beaches. It is claimed that oiled birds can be cleaned more easily with Dispersol OS, though it is not clear whether this product destroys natural oil on the feathers; presumably it does. Tests are continuing. If spilled oil can be emulsified more quickly and more efficiently than in the past, there should be proportionately fewer bird casualties in each incident and less damage to other marine organisms.

British bird film for Moscow film festival 'The Private Life of the Starling' was chosen by the National Panel for Film Festivals as Britain's short-film entry for the Moscow International Film Festival in July. Directed and filmed by Ronald and Rosemary Eastman, it is a successor to their well-known Kingfisher film. This 25-minute colour cine-study of the Starling includes close-up shots of anting behaviour, and also migrant Starlings filmed by day and night from the Smith's Knoll light-vessel in the North Sea. The film was produced and narrated by Jeffery Boswall of the B.B.C. Natural History Unit, and is due for transmission when B.B.C. 1 goes to colour in mid-November.

Chew Valley Lake checklist Since the Somerset reservoir known as Chew Valley Lake began to be flooded in 1952, it has developed ornithologically into one of the more important pieces of water in south-west England: 205 species of birds have been identified there, and 80 breed in the vicinity. The Chew Valley Ringing Station has now issued *A Check List of the Birds of Chew Valley Lake with a Guide to their Status* by Robin J. Prytherch. This novel publication consists of a card twelve inches by seven, printed on both sides and folded into three so that it fits into the *Field Guide*. The first of the resulting six sections is largely taken up with a detailed map of the reservoir, while the other five are devoted to a species list: the latter has four columns covering species name, whether breeding, numerical

status, and season(s) of appearance, and a system of dots enables one to read off each bird's status across the card. This is an interesting idea which others are likely to follow, though the price of two shillings (plus postage) is a wee bit steep. The *Check List* can be obtained from T. B. Silcocks, The Quest, Glen Avenue, Abbots Leigh, Bristol.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

I. J. Ferguson-Lees and J. T. R. Sharrock

These are largely unchecked reports, not authenticated records

This report summarises the records received for June 1969 and, unless otherwise stated, all dates refer to that month.

SOUTHERN AND CENTRAL EUROPEAN VAGRANTS

June often sees a continuation of the May pattern of southern vagrants, these occurring quite separately from arrivals of any numbers of commoner species. June 1969 was no exception, though there were rather fewer rarities of this kind than in some other recent years. As might be expected, three-quarters of them were in the first half of the month.

The only new heron was a **Little Bittern** *Ixobrychus minutus* at Chichester gravel pits (Sussex) on 8th, but the **Purple Heron** *Ardea purpurea* at Minsmere (Suffolk) stayed on to at least 29th. Rare raptors included **Honey Buzzards** *Pernis apivorus* on Fair Isle (Shetland) on 1st-2nd and 5th, at Dungeness (Kent) on 3rd and at Ecton sewage farm (Northamptonshire) on 15th; migrant **Hobbies** *Falco subbuteo* at Middleton St George (Co. Durham) on 9th and Spurn (Yorkshire) on 20th; and **Red-footed Falcons** *F. vespertinus* at Brean (Somerset) on 8th and (following the one at Ogston, Derbyshire, in May) at Great Hucklow and Egginton (both also Derbyshire) on 14th (female) and 21st-22nd (first-summer male), as well as one at Hamnavoe, Yell (Shetland) from 31st May until about 9th June. Only one **Spotted Crake** *Porzana porzana* was reported, at Loch Garten (Inverness-shire) on 5th, but another earlier at Leighton Moss (Lancashire) on 8th-9th May has not previously been mentioned, nor has a **Marsh Sandpiper** *Tringa stagnatilis* at Strand Loch, Gott (Shetland) on 4th-6th May. Single **Kentish Plovers** *Charadrius alexandrinus* occurred at Shellness (Kent) on 14th-15th and at Minsmere on 19th-21st. After their absence in May, three **White-winged Black Terns** *Chlidonias leucopterus* were seen, at Grindon Lough (Northumberland) on 7th, Egginton gravel pit on 24th and North Berwick golf course (East Lothian) on 27th. Kent produced a **Roller** *Coracias garrulus* at Canterbury and the only **Hoopoe** *Upupa epops* of the month at Sevenoaks, both on 14th, and another **Roller** stayed at Peterhead (Aberdeenshire) from 28th until 8th July. Passerines included a **Short-toed Lark** *Calandrella cinerea* on Fair Isle on 3rd; the only **Golden Oriole** *Oriolus oriolus* of the month on Cape Clear Island (Co. Cork) on 10th-12th (it seems to have been a rather thin spring for both Golden Orioles and Hoopoes); **Great Reed Warblers** *Acrocephalus arundinaceus* at Dungeness on 1st and at a Broadland locality on 18th-19th; an **Icterine Warbler** *Hippolais icterina* on Fair Isle on 5th; a **Subalpine Warbler** *Sylvia cantillans* on Fair Isle on 13th; a **Firecrest** *Regulus ignicapillus* at Dungeness on 1st; **Woodchat Shrikes** *Lanius senator* at East Cowton (Yorkshire) on 10th and Deal (Kent) on 16th (bringing the spring total to six); a **Rose-coloured Starling** *Sturnus roseus* on Fair Isle from 15th to 30th; and **Serins** *Serinus serinus* at Dungeness on 11th

and Leigh (also Kent) on 22nd-23rd. (**Serins** also nested in at least one county.)

NORTHERN VAGRANTS

There was a small number of northern vagrants; again, three-quarters of these were in the first half of the month. The only **Ospreys** *Pandion haliaetus* reported, apart from those in the Scottish breeding areas, were at Spurn on 12th and Blagdon Lake (Somerset) about 22nd. A **Crane** *Grus grus* stayed on Unst (Shetland) during 1st-4th and another appeared at Oldshoremore (Sutherland) during 20th-25th; on the subject of Cranes, it is worth adding that we have now heard of several others in Fife in March and early April, including one at Leuchars on 9th March and two there from 19th to 30th, one at Hill of Beath from mid March to early April, three at Peat Inn on 22nd March, three at Boarhills from 24th March to 1st April and five at Markinch on 2nd April. Northern waders included a **Dotterel** *Eudromias morinellus* at Dungeness on 4th-5th and a **Temminck's Stint** *Calidris temminckii* at Minsmere on 2nd-3rd. The only **Pomarine Skua** *Stercorarius pomarinus* reported was at Cape Clear Island on 3rd, but the much rarer **Long-tailed Skua** *S. longicaudus* produced two records, one again in the colony of **Arctic Skuas** *S. parasiticus* on Fair Isle on 5th and the other at Marsden (Co. Durham) on 25th. Fair Isle also had **Snowy Owls** *Nyctea scandiaca* on 20th May and 1st June, at the time when a pair was again nesting on Fetlar (Shetland). Lastly, the only Scandinavian passerines of note were a **Scarlet Rosefinch** *Carpodacus erythrinus* on the Calf of Man on 1st, a **Rustic Bunting** *Emberiza rustica* on Fair Isle on 8th and a **Red-spotted Bluethroat** *Luscinia svecica svecica* on Havergate Island (Suffolk) on 13th.

SEABIRDS

Unusual seabirds included an **albatross,** presumably *Diomedea sp.,* at West Haven, Carnoustie (Angus) on 15th and 18th, as well as **Sooty Shearwaters** *Puffinus griseus* off Cape Clear Island on 2nd and 8th and off Hartlepool (Co. Durham) on 24th (two). The only rare gull reported, and the only Nearctic bird of the month, was a **Bonaparte's Gull** *Larus philadelphia* at Filey (Yorkshire) on 20th. There was a good scattering of **Little Gulls** *L. minutus,* including a flock of immatures to the north of the River Tees in Co. Durham, which increased from eleven on 6th to 20 on 3rd July. During the last ten years there have been a number of records of more than ten Little Gulls in Co. Durham, including a remarkable concentration of 200 at Hurworth Burn Reservoir in September 1964, but the earliest date for one of these flocks has been 30th July and so the build-up in June was unexpected.

WILDFOWL

The month produced a surprising series of out-of-season ducks and geese, though in some cases one must suspect that they were escapes or feral birds. Among the most noteworthy were a **Goosander** *Mergus merganser* at Minsmere on 1st, a 'brown-head' **Smew** *M. albellus* at Attenborough (Nottinghamshire) on 21st, a Bean Goose *Anser fabalis* all month at Sevenoaks, a **Brent Goose** *Branta bernicla* on Walney Island (Lancashire) on 1st, and a total of three **Barnacle Geese** *B. leucopsis,* two at Minsmere on 8th, 9th and 21st and one at Sevenoaks on 13th-14th. It is convenient also to include here the closely related and similarly highly suspect **Flamingo** *Phoenicopterus ruber* at Holbeach (Norfolk) on 12th.

QUAIL

The numbers of **Quail** *Coturnix coturnix* vary enormously from one summer to the next and 1969 seems to have been quite a good (but not phenomenal) year with widely scattered records, suggestive of breeding, in June and July. Reports came from Kent and Norfolk in the east, from Northamptonshire, Rutland and Derbyshire in the Midlands, and from Somerset, Herefordshire and Shropshire in the west. A migrant was found as far west as Cape Clear Island on 26th.

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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 author's address clearly given in one line at the foot. If more than one note is submitted, each should be on a separate sheet, with signature and address repeated.

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Status and breeding success of Golden Eagles in north-west Sutherland in 1967

Leslie H. Brown

INTRODUCTION

In recent years the status of the Golden Eagle *Aquila chrysaetos* in Scotland has been the subject of concern. Lockie and Ratcliffe (1964) found that the breeding success in Wester Ross fell from about 70% of pairs in 1937-60 to about 30% in 1960-63. At the same time the proportion of non-breeding pairs (pairs present in their usual nesting areas without laying eggs) increased from about 3% to 41%. They feared that dieldrin and aldrin in sheep dips had caused a catastrophic decline in the fertility of the eagles, like that observed in the Peregrine *Falco peregrinus* (Ratcliffe 1963), and that this could lead to an early decrease in their numbers. Then in 1966 dieldrin was banned in sheep dips.

The present survey in Sutherland was done on 380 square miles in June and July 1967, in another part of the western Highlands where much of the ground is used for sheep grazing, as in Wester Ross. The aims were to find the number of pairs of eagles and to study their food supply. Another aim was to get good data on breeding success, so as to follow up the suggestion made in the next paragraph.

An earlier survey by Brown and Watson (1964), on 347 of the 380 square miles studied in 1967, showed that the average area per pair was little more than in the eastern Highlands, yet the amount of live prey present was only a small fraction of that in the east. Eagles in the west fed largely on sheep carrion, which occurred in abundance. Preliminary data on breeding success in Sutherland indicated, however, that the number of young fledged per successful nest was lower than in the east. Brown and Watson (1964) suggested that this might be due to the scarcity of live prey in the west, even though carrion might be abundant.

METHODS

Methods were similar to those used in the earlier but rather less thorough survey in this area by Brown and Watson (1964). Working from the one-inch Ordnance Survey map, likely sites were plotted and examined systematically to save needless exertion. It was necessary to walk 1-1½ miles per square mile of country covered. In good visibility each likely breeding cliff was examined carefully from several angles at a range of about half a mile: 12 × 50 binoculars were ideal for this. Obvious nests were visible almost at once; less obvious ones, and those in gullies or hidden by vegetation, could sometimes not be seen without a closer climb. On a few occasions I had to climb right on to a ledge to investigate suspicious signs, and I had to do this also in bad weather with mist. The condition and position of any nest was noted: ruinous, in good repair, showing signs of having been used in recent years, and so on. Nests that were or had been occupied in the year of study required closer examination, but with care. In the late fledging period visits are unlikely to cause disturbance, but during the incubation or early fledging periods, when exposure to cold or wet could damage eggs or small young, they are to be avoided. In these cases, observation from a distance usually revealed what a nest contained. A few nests could not be reached, looked into or observed from any convenient angle, but most could be reached or examined from less than 100 yards and their contents accurately determined.

In the following account the word 'territory' is used only for convenience. There is no good evidence that Golden Eagles defend a territory in the same way that songbirds, or even some other raptors, defend their foraging areas; eagles probably hunt outside their territory too. 'Home range' might be a better term, but 'territory' is probably more easily understood; it should not be taken here to mean a defended area, but that occupied and hunted by a pair of eagles and their surviving young in a year.

Success of the eagles in a particular territory is usually easy to establish. Occupied nests, particularly in the fledging period, are often easily found. Failure is more difficult to prove, for Golden Eagles will sometimes breed unobserved in an obscure site—in a gully, on an insignificant cliff, or even on an overgrown ledge of the usual nest cliff. One may first find the nest later on, after breeding is over, but can see proof of breeding from the condition of the nest. In the present survey one nest was found only because the ground was liberally bespattered with the eaglet's droppings; another, used in 1966, was almost invisible in a crack. When no signs of breeding were noted, any possible nest ledge had to be carefully examined, not only for an actual nest, but for signs of past usage or indications of new building. This was far more laborious than scanning known nests for signs of activity, and I learnt to greet with relief any positive evidence of breeding.

In a survey in June and July it was difficult to be certain whether nests which had been repaired earlier in the year, but which were empty in June, had been laid in and robbed or had never contained eggs. A careful examination of the nest, however, usually revealed certain indications if incubation had actually taken place, such as flecks of down on the nest rim and a markedly flattened cup. Sometimes these signs were obscured by later building, as happened in one nest in this survey, which was believed to have been robbed earlier in the year. Usually, however, experience will indicate with reasonable certainty whether eggs have or have not been laid and incubated in a nest which is empty by June.

Nevertheless, despite all reasonable care, mistakes can occur. One nest in this survey, inaccessible without mountaineering techniques and very difficult to see into from any angle, was thought to contain a well-grown eaglet on 12th June when a large brown bird was seen moving on the eyrie. At 22.15 on 7th July, however, unknown to me at the time, J. N. Dymond was lowered down to this nest and found two eggs, one obviously addled, the other warm and still incubated, probably about 115 days after being laid. The large brown bird that I had observed had not been an eaglet at all, but the sitting adult. This single case reduced the mean figure for breeding success from 0.45 to 0.40 eaglets per pair. Fortunately, all the other eaglets had been seen clearly enough for me to be certain not only that they were eaglets, but that a second one had not been inadvertently missed in a successful nest. It is always possible, however, that somewhere in this large region one or more pairs successfully reared an eaglet in an overgrown or obscure nest site where patient and thorough search had failed to locate them.

NUMBER OF PAIRS

In 1958-60 Brown and Watson (1964) estimated that their 347 square miles held 16 pairs, with a possible seventeenth pair as an irregular breeder. This gave an average hunting ground of 13,015 acres, or 12,250 acres counting the seventeenth pair. As a result of the 1967 survey one of these pairs was rejected: if it ever bred regularly, there was now no trace of a nest in its former haunts. On the other hand, three other pairs were located, one apparently new and possibly irregular, but the other two old-established pairs which were probably present in 1958. The probable number of pairs in both 1967 and 1958 is therefore considered to have been 18, with an average territory of 11,560 acres per pair.

One of the 1967 pairs (8 in table 1) may not be regular: it was non-breeding and a sub-adult was seen in the territory; it had one small nest and was building another in a site known to have been occupied 35 years ago (G. Sutherland *in litt.*). There is also some doubt that pairs

6 and 7 were separate, in fact, or whether their nests were alternates. On the basis, however, of regular spatial distribution of other pairs in the area, it is most probable that pairs 6, 7 and 8 all represented breeding territories and they have therefore been retained till proved otherwise, which could be done earlier in the year when nests are being repaired.

Table 1. Nest sites of Golden Eagles *Aquila chrysaetos* in north-west Sutherland in 1967 and activity recorded

Pairs 1 and 20 were outside the survey area; pairs 2, 5 and 20 were probably or perhaps robbed. Of the total of 62 nests seen, 43 were in good repair and there were also four others newly constructed, giving a total of 47 in good repair or recent use. The altitude range was 450-1,500 feet above sea level, with an average of about 890 feet

Pair number	Nests seen	In good repair	Altitude in feet	Activity recorded and result
(1)	2	2	800	Pair seen on one of two visits; probably reared one young last seen 16th June
(2)	3	3	1,100	Roosting; building; did not breed, perhaps robbed, but probably successful 1966
(3)	3	2	450	One adult seen on one visit; reared one young flown 9th July
(4)	6	5	500	One adult seen; roosting; building; one nest under construction; did not breed, probably not robbed; sub-adult in territory
(5)	4	3	1,500	Pair seen; almost certainly laid and robbed
(6)	1	1	500	Adults seen several times; addled eggs 7th July
(7)	4	3	1,200	Adults reported earlier in year; did not breed
(8)	2	1	1,000	One probably sub-adult seen; roosting; building; one nest being built; did not breed
(9)	5	3	750	Pair seen several times; reared one young last seen 8th July
(10)	5	4	900	One adult seen; roosting; building; one new nest being built; did not breed
(11)	2	1	600	Roosting; building; one new nest being built; did not breed
(12)	2	1	800	Pair reported early in year; said to have been robbed, but not certainly laid
(13)	5	2	500	Pair seen breeding; reared one young last seen 26th June
(14)	4	3	1,100	Pair seen; did not breed; sub-adult in territory
(15)	2	2	750	No adults seen; reared one young seen in nest nearly mature 6th July
(16)	2	1	1,000	No adults seen; roosting; building; did not breed
(17)	1	1	1,200	One adult seen; reared one young still in nest 7th July
(18)	3	3	1,300	One adult seen; reared two young seen in nest 7th July
(19)	2	1	1,300	One adult seen; roosting; did not breed
(20)	4	1	500	One adult seen; building; reported robbed earlier
TOTALS	62	43		

If one of them has to be rejected, then the correct number of pairs is 17, and the average territory 12,250 acres. Nevertheless, the important point is that a much more thorough check of the area in 1967 showed substantially the same total number of pairs with 16-17 in 1958-60 and 16-18 (but probably 18) in 1967. Whether the mean hunting range is in fact 11,560 or 13,015 acres makes no difference to later discussions in this paper.

Two other pairs immediately adjacent to the 1958-60 survey area of 347 square miles were included in tables 1 and 2 to increase the sample size. One of these hunted partly inside the study area and both lived in the same general ecological conditions and geographical area. The inclusion of these pairs does not affect the average territory size of 11,560 acres, but increases the new study area by an extra 33 square miles to a total of 380 square miles. Several other pairs outside the study area were also checked, but the results were not included as in their case it was not certain that all possible nest sites had been examined.

Contrary to general expectation and information from local people, there is no present evidence of a marked decline, much less a catastrophic one, in the numbers of Golden Eagles in this part of Sutherland in the past decade. In every territory except one, good evidence was found of the existence of one or more eagles: sightings, an occupied nest with an eaglet, fresh building, roosting ledges and moulted feathers on suitable perches. In the single exception, credible reports of the presence of an eagle were received from a shepherd who had lived there for many years and knew the nests well.

This general finding is supported by records of sightings. Eagles were seen 28 times in 32 days spent in the field, an average of 0.88 per day (sightings of the same eagles several times in a day have been discounted). Eliminating three days spent searching areas unlikely to contain eagles, the average number of sightings per day was 0.96. In occupied territories with eaglets or eggs, sightings averaged 1.06 per day, and 1.4 per day on those days when eagles were seen. In non-breeding or failed territories, sightings averaged 0.85 per day and 1.2 per day on those days when eagles were seen. No eagles were seen on eleven out of 32 days; of these days, three were spent in areas unlikely to hold eagles, four in territories known to be occupied, and four in territories which had failed or in which the pair was not breeding in 1967.

These figures suggest that the number of adults is not lower in non-breeding than in successful territories. In a non-breeding territory the birds may be anywhere in 11,500 acres, while in a successful territory, with young in June, the female is likely to be seen near the nest. Thus one is less likely to see birds from a non-breeding pair than birds from a breeding pair. Nevertheless, in several cases one or both adults of such non-breeding pairs were seen, and in others I found evidence of

their presence. If, at an average of 1.4 sightings per day on which eagles were seen, one can be certain that both birds of a breeding pair exist, it is most probable that the same can be said in non-breeding or failed territories where sightings averaged 1.2 per day on which eagles were seen.

A reduction in the adult population in recent years might result in the occupation of an unduly high proportion of territories by sub-adults unable to breed. The evidence does not indicate, however, that the proportion of sub-adults in Sutherland in 1967 was any higher than elsewhere in Scotland or than in previous years. Of 22 eagles seen, three (14%) were not adult; one of these, on the evidence of moulted quills being built into the structure, was building a new nest, and another was seen in a possibly marginal territory. In the eastern Highlands in 1958-60, before the advent of dieldrin and aldrin, the eagle population during October-June was estimated to contain 16% which were not adults (Brown and Watson 1964). There is therefore no evidence that the population of sub-adults in Sutherland in 1967 was abnormally high.

BREEDING SUCCESS AND EAGLETS REARED PER PAIR

The 20 pairs in the sample almost certainly reared eight eaglets in seven successful nests (i.e. those from which at least one young flew). Five of these were still in the nests between 3rd and 7th July, and a sixth had flown on the 8th. One of the other two was seen on 26th June. It is unusual for an eaglet to be lost once it is partly or well feathered, for the reason that at this stage the female can leave the nest site and share the duties of hunting with the male; the eaglet then has both parents killing for it, whereas up to the feathering stage the male has to feed the whole family. It is therefore reasonable to assume that all these eaglets flew, in which case the minimum breeding success was 35% of pairs, with 0.40 eaglets per pair and 1.14 eaglets per successful nest. One nest out of seven reared two eaglets.

NUMBER OF NESTS AND BUILDING RELATED TO SUCCESS

Table 1 shows that non-breeding or unsuccessful pairs tend to have more nests than successful pairs. The average number of nests for all pairs was 3.1, for successful pairs 2.86, and for unsuccessful pairs 3.23. Considering only those nests in good repair, the average for all pairs was 2.35, for successful pairs 2.14, and for unsuccessful pairs 2.38. The differences are small, but if pair 6, which had addled eggs in July, is included as successful since it had not been interfered with, the averages for successful and unsuccessful pairs become 2.5 and 3.42 on all nests and 2.0 and 2.58 on nests in good repair.

The non-breeding or unsuccessful pairs were often, indeed usually, engaged in building or in nest repair in June and July, whereas pairs

feeding eaglets were not. Four nests under construction were found, all in territories of non-breeding or unsuccessful pairs; two were in territories where sub-adults were seen, one of which was building a new nest. One full adult was also building a new nest and had added material to three others in June. It seems possible that persistent or frequent failure to breed leads to selection of new sites and construction of new nests. Such activity could have survival value where human interference is common. Building during the breeding season may be a form of displacement activity among eagles that have failed to breed successfully.

CHARACTER OF NEST SITES RELATED TO SUCCESS

In table 2 the character of the nest sites and some other factors have been further analysed. It should be noted in this table that, if no nest was occupied, the one most recently and fully repaired is the one considered likely to have been used. Accessibility is divided into: (1) accessible by a scramble without ropes; (2) accessible to a single man with a short rope, e.g. by a rappel to an overhung ledge; and (3) inaccessible without a helper and more advanced mountaineering techniques. Remoteness is divided into: (4) relatively close to roads or dwellings, often well known to local shepherds and gamekeepers, and more likely to suffer from deliberate or inadvertent human disturbance ('well-known'); and (5) in remote deer forests, far from houses or public roads, or in out-of-the-way places unknown to local shepherds or gamekeepers ('little-known'). A well-known pair can convert, temporarily at least, to a little-known pair by building a new nest in a site difficult to find; such nests often pass unnoticed for a year or two. Any such analysis is to a degree arbitrary—decisions must be made on the basis of field experience and local information, which is especially important in gauging 'remoteness'—but from it the following points emerge:

(1) Of seven nests accessible by a scramble, two were successful (only 28% compared with the total success rate of 35%): both were in remote or little-known sites. At least two nests in this category may have been robbed, while one territory with easily accessible nests was occupied by a sub-adult which was building a new nest and presumably could not breed.

(2) Of five nests accessible with a short rope, two were successful (40%), rearing three eaglets: again, both these were remote. One nest in this category, almost accessible by a scramble, was said to have been robbed, and another was in a perhaps marginal territory occupied by a sub-adult.

(3) Of eight nests inaccessible without mountaineering technique, three were successful (38%); one other had not been interfered with and held eggs in July, so could perhaps be regarded as successful from

the viewpoint of human disturbance. Two of the three successful nests were in remote sites.

The simple fact of easy accessibility without ropes thus appears to have some adverse effect on breeding success. An accessible nest in a remote area may succeed, however, as may an inaccessible nest in a well-known locality. Egg-collectors would probably rob those nests easiest of access and nearest to roads or tracks, and any local shepherd or gamekeeper bearing a justified or unjustified grudge against a pair of eagles might interfere with such easy sites, but leave inaccessible nests alone.

Table 2. Breeding success of Golden Eagles *Aquila chrysaetos* in north-west Sutherland in 1967 in relation to factors of accessibility and habitat

Of the seven successful pairs marked in the penultimate column of crosses, six reared one young each and the seventh two young, giving a total nesting success over the 20 pairs of 0.4 young per pair. 'Intermediate food supply' in the notes on the right hand side means that both high deer forest and low grouse moor occurred in the territory in almost equal proportions. See table 1 for further details of the nests and of the activities of the eagles

Pair number	Accessible by scramble	Accessible with short rope	Inaccessible without aid	Well known, near habitations or roads	Remote or little known	Sheep run/grouse moor/low ground	Deer forest/Ptarmigan/high ground	Successful	Unsuccessful	
(1)	×	–	–	–	×	×	–	×	–	
(2)	×	–	–	×	–	×	–	–	×	Probably robbed
(3)	–	×	–	–	×	×	–	×	–	Intermediate food supply
(4)	×	–	–	–	×	×	–	–	×	Sub-adult building
(5)	×	–	–	×	–	×	–	–	×	Probably robbed
(6)	–	–	×	×	–	×	–	–	×	Intermediate food supply;
(7)	–	–	×	×	–	×	–	–	×	addled eggs 7th July
(8)	–	×	–	–	×	×	–	–	×	
(9)	–	–	×	×	–	×	–	×	–	
(10)	–	–	×	–	×	–	×	–	×	
(11)	–	×	–	×	–	×	–	–	×	
(12)	×	–	–	×	–	×	–	–	×	
(13)	–	–	×	–	×	–	×	×	–	
(14)	–	–	×	–	×	–	×	–	×	
(15)	–	–	×	–	×	–	×	×	–	
(16)	×	–	–	–	×	–	×	–	×	Said not to have bred for
(17)	×	–	–	–	×	–	×	×	–	eight years
(18)	–	×	–	–	×	–	×	×	–	Reared two young
(19)	–	–	×	–	×	–	×	–	×	Unusually rich intermedi-
(20)	–	×	–	×	–	×	–	–	×	ate food supply; almost certainly robbed
TOTALS	7	5	8	8	12	12	8	7	13	
%	35%	25%	40%	40%	60%	60%	40%	35%	65%	

(4) Of eight pairs breeding in well-known sites close to roads and houses, only one was successful (only 12.5% compared with the total success rate of 35%). This site was inaccessible without mountaineering techniques, but was well enough known to have been photographed by a person who had apparently been shown it by a local man living at least ten miles away. It should be added that one of the unsuccessful nests in this category was the one which contained eggs in July.

(5) Of twelve pairs breeding in remote or little-known sites, six were successful (50%), rearing seven eaglets. Of these six, two were accessible with a scramble, two by a short rope, and two were inaccessible; the corresponding figures for the six unsuccessful sites were two, one and three.

These figures appear to indicate clearly that, as long as the nest is little known or remote from human habitations, the actual accessibility of the site is not so important. Out of five nests easily or fairly easily accessible to a single man and also well known, none was successful, whereas of seven nests in the same categories but also remote, four were successful (58%); this difference is statistically significant ($P < 0.005$). Of the three unsuccessful nests in this group, two were in territories apparently occupied by sub-adults which presumably could not breed, so that a truer comparison with the nought out of five would be four out of five. One of the unsuccessful but remote pairs was in a possibly marginal territory quite close to a shepherd's house, but unknown to the inmate who had been there eight years.

CHARACTER OF TERRITORY RELATED TO SUCCESS

Table 2 also shows the character of the ground where each pair was living. There are (1) sheep-run pairs, with territories mainly or entirely on low-lying ground populated chiefly by sheep, Red Grouse *Lagopus lagopus*, Golden Plovers *Pluvialis apricaria*, Curlews *Numenius arquata*, gulls *Larus spp.* and so on, and (2) deer-forest pairs, living in high deer-forest country with a substantial area of high tops populated by Ptarmigan *Lagopus mutus*, Red Deer *Cervus elaphus* and some Red Grouse, but few or no sheep. Assuming that Golden Eagles remain in their territories the year round (as experience indicates is probably the case), sheep-run pairs would be more likely than deer-forest ones to feed on carcases impregnated with aldrin and dieldrin, though the latter could, in most cases, obtain sheep carrion by flying four or five miles. Some territories are intermediate in respect of food supply, but in each of these cases one can fairly allocate them to the most appropriate category.

Of twelve pairs living mainly or entirely on low ground (sheep-run pairs), three were successful (25%) and one still contained eggs on 7th July. The successful nests, and the one with eggs, were all either inaccessible or remote, or both. All three nests that may have been

robbed (as opposed to five likely non-breeders that probably never laid) were also in this type of country. If the three nests believed to have been robbed had been successful, rearing an eaglet each, breeding success in this group would have been six out of twelve (50%).

Of eight pairs in deer forest country, four were successful (50%), rearing five eaglets (0.62 per pair). This figure could be typical of breeding success in this area in undisturbed conditions. All these nests were remote, by virtue of the terrain in which the birds lived; one was accessible with a scramble, one was accessible with a short rope, and two were inaccessible.

As they stand, the figures indicate that breeding success in sheep-runs, at 25%, was markedly lower than in deer-forests, at 50%, and this difference might be a true difference in fertility caused by dieldrin and aldrin in sheep dips. If it is accepted, however, that three of the sheep-run pairs were probably robbed, while none of the deer-forest pairs was, then the true index of breeding success should have been 50% in each case, if each of the robbed sheep-run pairs had reared an eaglet. In that event, there would be no reason to suppose that aldrin and dieldrin had had any recent effect on the fertility of eagles hunting over sheep-runs. To distinguish for certain between these alternatives is impossible with one short survey. It is clear, however, that in any future work in this area it will be necessary to establish clearly whether eggs are laid or not in unsuccessful nests.

The main conclusion is that human interference, direct or indirect and especially in easily accessible well-known nest sites, is probably the main cause of failure to breed successfully once eggs have been laid by Sutherland eagles. The figures obviously need confirmation.

FOOD SUPPLY

Numbers of live prey

Earlier work in 1958-60 showed that the natural supply of the preferred food species—Red Grouse, Ptarmigan, Mountain Hares *Lepus timidus* and Rabbits *Oryctolagus cuniculus*—was about one-fifth to one-seventh of that in the eastern Highlands, where the density of pairs of adults is similar to that in Sutherland (Brown and Watson 1964). The supply of natural food always appears scarce in Sutherland compared with the eastern Highlands, but in some years the difference appears greater than others, probably because of variations in the fluctuations of abundance of the various species. In particular, 1967 appeared to be a poor year, with very little live food available.

The available food supply in 1967 was estimated by noting the numbers of possible prey species seen during each day's work. The estimated distance covered during the 32 days was 366 miles. (This was as measured on the Ordnance Survey map, but in fact it was probably nearer to 400 miles, allowing for the extra distance in moving up and

down hills.) The result was a crude transect count 366 miles long, in the course of which I saw 21 Red Grouse or Ptarmigan, 83 Golden Plovers, eleven Curlews, seven adult wild ducks (including Mallard *Anas platyrhynchos,* Wigeon *A. penelope* and Teal *A. crecca*) and five well-grown Mallard ducklings, as well as many gulls (chiefly Common *L. canus* and Black-headed *L. ridibundus*, but also a few Herring Gulls *L. argentatus*), and Greenshanks *Tringa nebularia* and smaller waders. (Golden Plovers and Curlews, although evidently forming only a small fraction of prey taken, have been included because one Golden Plover chick was found in an eyrie and an eagle was watched apparently killing a young Curlew.) The figures indicate the obvious scarcity of preferred species of avian prey, but mammalian prey seemed even scarcer. Only one live Mountain Hare was seen, though part of another was found in an eyrie. No Rabbits were seen in country hunted by eagles, but there were some in coastal warrens. Live prey was thus obviously very scarce in the whole area studied.

It seemed strange that the eagles apparently did not feed on gulls at all; I would have thought that they would raid gulleries for the young. There was no evidence, however, that either adult or young gulls were killed, and the smaller species were completely indifferent to the eagles, though Herring Gulls sometimes cried out in alarm and flew away when one soared overhead. On the other hand, one pair of eagles fed extensively on Fulmars *Fulmarus glacialis* in late June and July, and must have travelled eight to ten miles to catch them; the nest could be located by the smell of Fulmars.

By estimating the flight distance of live prey seen, it was possible to obtain a very rough idea of the density of prey populations. Red Grouse and Ptarmigan were flushed at an average of about ten yards: assuming, therefore, a transect 20 yards wide and 366 miles long, the count was 21 Red Grouse/Ptarmigan in 2,600 acres, between one quarter and one fifth of an eagle's average territory. Golden Plovers, which start showing anxiety at 100 yards or more, were correspondingly estimated at about one pair per square mile. There might thus have been 80-100 Red Grouse or Ptarmigan in an average territory, but only 30-40 Golden Plovers, even though more of the latter were actually seen. Ptarmigan did not occur in several of the territories, but locally their populations were probably more dense than those of Red Grouse; the same was found in 1958-60 on the high ground in this area (Brown and Watson 1964).

From these crude figures no good estimate of the true availability of live prey in 1967 is possible, but some comparisons can be made with the earlier survey. In 1958-60 the biomass of live prey per two miles of transect count (= 100 acres) was estimated at 2.4 kg on tops, 0.7 kg on moors and 1.1 kg in glen bottoms; calculating proportionately, this equalled 0.84 kg per two miles of all habitats together. In 1967,

on the other hand, only 15.74 kg of live prey was estimated in 366 miles, which equals 0.086 kg per two miles of transect or only about one-tenth of what was observed in 1958-60. The 1967 figures are not directly comparable with those of 1958-60 as many of the earlier counts (but not all) were obtained with the aid of a dog, when more Red Grouse and Ptarmigan would obviously be flushed. Furthermore, the earlier counts were made in spring and autumn, when these birds are wilder; grouse that are nesting or have young in June-July often do not flush so readily. The result, however, is a broad indication that food supply in this area in 1967 was less abundant than in 1958-60.

Availability of carrion

Carrion eaten by eagles includes dead sheep, lambs, deer and deer calves; the last two are the only forms likely to be taken to the eyrie for the young. All carcases seen during the transect were recorded, though by June many had mouldered into the ground. An old carcase can be missed in rough ground at a range of less than 20 yards, whereas a freshly dead sheep is visible at a mile or more. The total number of remains found was eight dead adult sheep, one dead lamb and six dead deer in 366 miles; of these, three sheep and the lamb were relatively fresh, the rest old. Excluding dead lambs, and assuming that all carcases within ten yards of the line of march were seen (i.e. covering a total area of about four square miles), this is equivalent to about 2,420 kg of carrion per territory. The true amount of carrion available in the area was, however, probably much greater than is indicated by this small sample.

Brown and Watson (1964) estimated that 9% of adult sheep and 13% of lambs would die per annum in this area, equivalent to 81 kg of dead sheep and 11 kg of dead lambs per 100 acres; the corresponding figures for Red Deer were 7 kg of dead adults and 7 kg of dead calves per 100 acres. On this basis there would be 12,190 kg of carrion of various sorts available in an average territory. In 1967 the total amount of carrion appeared to be less than these figures indicate, perhaps owing to a rather open winter, but the mortality of lambs was actually above average because of a wet and cold May in this part of Sutherland, according to several shepherds and farmers. These estimated that 80% of ewes give birth annually, but that in 1967 the number of surviving lambs per 100 ewes was only 55-60 by the end of June; in other words, at least one lamb in four died between birth and late June. In practice this would mean that 580-720 dead lambs would be available in any territory mainly on sheep-runs. Some of these would be close to homesteads, but, if only one in ten were in more remote places, there would still be enough dead lambs available in each territory for the eagles to feed their young on nothing else during the entire fledging period. Yet in this area I found only one dead lamb in June, indicating

that by then mortality had largely ceased and that the carcases had been cleaned up by scavengers, including eagles.

To sum up, it appears that, even if mortality of adult sheep and deer was lower than average in 1967, it is unlikely that there would have been less than 5,000 kg of various sorts of carrion available in each terrritory, with a greater concentration probable on the twelve sheep-run territories.

Food preferences

Food preferences were assessed by seeing roughly what was available on the ground and by examining prey and bones in eyries and castings at roost ledges, as well as by direct observation of the eagles. The results indicate that eaglets were fed mainly or entirely on natural prey, while the adults ate a good deal of carrion and probably also many small animals caught when hunting and not brought to the nest.

Prey seen in eyries included twelve Red Grouse and Ptarmigan, one Mountain Hare, one Red Deer calf and one Golden Plover chick. On the evidence of feathers, Red Grouse, Ptarmigan and, in the one case, Fulmars were the important items of diet. Bones taken from the nest of pair 2, where young had been reared in 1966, were entirely Red Grouse or Ptarmigan and there were no lamb bones in this eyrie even though the area was heavily stocked with sheep. George Waterston reported to me that he had seen a lamb taken to another eyrie, but when this was examined it contained neither lamb bones nor any wool, though there were Red Grouse, a Mountain Hare and a Golden Plover. Thus, from the remains found in eyries, it seemed clear that any shortage of natural prey must be apparent rather than real, since young eagles were fed mainly on such prey and not much on the apparently abundant dead lambs.

From scattered observations it appeared that the adults fed largely on carrion. Among six pellets found on roost ledges four were composed mainly of wool, one of deer hair and one of feathers, probably Ptarmigan. Thus, although the young appeared to be fed mainly on natural prey uncontaminated or less heavily contaminated by sheep dips, the adults clearly could ingest these substances by feeding on dead sheep. During the breeding season, however, the adults, especially the female, would also feed much on the remains of kills brought for the eaglets and not eaten by them.

Adults probably also ate any small animal they could catch when hunting, without taking it to the eyrie. One actual kill was observed, when a sub-adult female alighted gently near a pair of anxious Curlews and ate one of their young in a couple of gulps. Provided eagles are prepared to seek and kill such small animals, it is evident they would find quite a lot during a day's hunting. From the fact that one pair travelled eight to ten miles to kill Fulmars, it also appears that they are

not rigidly confined to their own territories for hunting. They probably hunt within the territories of adjacent pairs, and large areas of mountain tops may be hunted by several pairs. If territories were strictly demarcated and defended—as appears to be the case among, for instance, several species of the genus *Buteo* (Craighead and Craighead 1956, Mebs 1964)—fights between eagles would often be seen on or near the boundaries between adjacent pairs; such boundaries would, in Sutherland, be no more than 1½-2 miles from the eyries and soaring eagles would often be able to see their neighbours. I have observed no such fights, either in Sutherland or elsewhere in Scotland.

Food requirements

The food requirements of a pair of eagles were estimated by Brown and Watson (1964) as 174 kg of live prey and carrion per annum; of this, 163 kg would be actually eaten and the rest wasted. The requirements of young in the nest, on the basis of 0.8 young per pair per year, were estimated at another 54 kg, of which 39 kg would be eaten, and the requirements of additional immatures and sub-adults at about 43 kg per annum, of which 42 kg would be eaten. The total weight of food required per territory to maintain a stable population was estimated at 271 kg per annum, of which 54 kg would be for young in the nest. These figures are undoubtedly open to argument, but they are the best available and later observations have indicated that they are probably not far from the truth.

The maximum figure of 271 kg per annum could theoretically be reduced somewhat in Sutherland, since breeding success was lower than 0.8 per pair per annum, at least in 1967 and probably in other years. Also, pairs with young could perhaps forage in the territories of non-breeding pairs to some extent. In practice, however, there is no real evidence that this often occurs; breeding pairs are usually seen on their own ground. It would be safer to assume that the normal requirements of about 270 kg per pair per annum, composed of carrion and live prey, must be produced by a territory of 11,560 acres in Sutherland, as elsewhere.

Assessing actual availability against this requirement, it seems likely that, while the supply of live food may appear to be short on the ground, carrion is superabundant, at least during late winter and early spring. The very rough figures for live prey obtained in 1967 indicate that in an average territory there may be only 0.086 kg of live prey of preferred species per 100 acres, or only about 10 kg in the whole territory. This would seem manifestly too low, but even using the figure obtained in 1958-60, of 0.84 kg per 100 acres (which is approximately the area covered in walking two miles), the availability of live preferred prey would only be 96 kg per territory of 11,560 acres. This figure would exclude any small animals that might be found and eaten

by the adults when hunting, but, on the basis of the 1967 observations, would have to provide much of the food for the young eagles in the nest.

It therefore appears that in Sutherland live prey of the preferred species is likely to be very scarce, while carrion, at about 5,000 kg per territory (though varying from year to year), is certain in most years to be more than adequate. These estimates are relevant to the discussion which follows on factors affecting breeding success.

DISCUSSION

Comparison of breeding success in Sutherland and elsewhere

The figure of 0.40 young per pair may appear low, but is similar to those obtained elsewhere in Scotland in 1964-66, in Speyside in 1967, and even in the Cairngorms in 1946 before dieldrin and aldrin were invented. In 191 pair-years in eight different areas, some marginal, the average breeding success in Scotland during 1964-66 was 0.45-0.47 young per pair per annum, varying from 0.17 in two areas to 0.66 in a part of the eastern Highlands with an unusually abundant natural food supply (R.S.P.B. Golden Eagle Survey unpublished). In five areas where more than 25 pair-years were recorded, the average was 0.50-0.52 young per pair per annum, varying from 0.28 and 0.39 in two parts of the western Highlands and 0.39 in the central Highlands to 0.64 and 0.66 in the eastern Highlands. The breeding success in Sutherland in 1967 was thus higher than the average of the two western areas and equal to that in the central Highlands.

The Sutherland figure is also similar to that recorded in Speyside in 1967. There, twelve pairs reared at least five eaglets (42% success, or 0.42 young per pair) in an area of very much more abundant food supply. In Speyside, as in Sutherland, human interference reduced breeding success: one adult female was shot on her nest and another nest was reported robbed (Hon. Douglas N. Weir verbally). In Sutherland one nest almost certainly and two others probably were robbed. Assuming that human interference accounted for two nests in Speyside and three in Sutherland that would otherwise have been successful, the figures for breeding success would then have been 58% and 50% respectively—not a major difference despite the very wide variation in natural food supply. In both areas there were some apparently 'marginal' territories, in which breeding was seldom successful; in some cases these were occupied by sub-adults.

The data may also be compared with earlier results. In the Cairngorm area in 1946 eleven known pairs reared five eaglets, or 0.45 young per pair, a result also affected by human interference. In Sutherland, in the study area, incomplete results in 1958 indicated a breeding success of less than 0.50 eaglets per pair. The 1967 figure is, therefore, probably not as unusually low as it might at first seem.

The possible effects of food supply on breeding success

There appear to be two stages during the breeding cycle of any pair of eagles or other birds of prey where shortage of food might adversely affect their breeding success. These stages, which might perhaps be called 'points of strain', are:

(1) Before egg laying, in the case of the Golden Eagle in February and early March, when shortage of food might make it impossible for the female to lay.

(2) During the latter part of the first half of the fledging period when the male is hunting for himself, for the female and for one or more large young. The female does not relieve the male of this duty until the young are well feathered and can be left alone in the nest. This appears to be as true for the Golden Eagle as for most other large diurnal birds of prey and in May the female usually remains close to the nest (Brown 1955, Brown and Amadon 1969).

One would expect the effect of food shortage at the two stages to be quite different. Shortage of food in the fledging period cannot affect egg laying, but should result in heavy mortality of young hatched from full clutches laid by the majority of females. Shortage of food before laying should result in a large proportion of females failing to produce eggs.

In Sutherland it appears that a high proportion of females do not lay eggs. In 1967 only eight of the 20 females definitely had eggs or young and even if the three that were presumed robbed had also laid, there were still certainly nine non-breeders. It is possible that aldrin and dieldrin in sheep dips may have increased the proportion of non-breeders, but (a) there were still many (50%) non-breeders among the eight remote deer-forest pairs that were not so likely to have eaten dead sheep, (b) earlier results before aldrin and dieldrin were invented indicate that a high proportion of non-breeders is quite normal in the Golden Eagle (Watson 1957), and (c) a high proportion of non-breeders is quite normal in several African eagles where there is no possibility of this effect having been caused by aldrin or dieldrin (Brown 1955). It seems, therefore, that there would in any event have been quite a high proportion of non-breeding females. We must assume that they did not lay eggs because for some reason they could not, either because of immaturity or sterility, or perhaps because of lack of food in the pre-laying stage.

In Sutherland, and elsewhere in Scotland, carrion is abundant in early spring; at the same time live prey is likely to be at a minimum—for the same reason of winter mortality. In Sutherland the adult eagles feed freely on carrion, and it is therefore difficult to believe that actual shortage of food, which would at least suffice for subsistence, could account for the apparently high proportion of non-breeding females. One is led to suggest that this high proportion is not explicable by

shortage of food in the shape of carrion. It may be, however, that shortage of live natural prey at the time of laying eggs is critical.

In certain African eagles, notably the Crowned Eagle *Stephanoaetus coronatus,* the male feeds the female before egg laying and during the incubation period. Cases have been observed where, if the female is not fed sufficiently often at a time of year when she could be expected to lay, she may not do so (Brown 1966); and, conversely, if she is fed well enough, she may lay at a quite abnormal time of year. If the female Golden Eagle, either for physiological or psychological reasons, or a combination of both, needs to be fed by the male at or near the nest site just before egg laying, this could explain the apparently anomalous situation in Sutherland where, in the presence of abundant carrion apparently more than sufficient to maintain life, a large proportion of females do not lay. While the male does not usually require to exert himself in food gathering, it may be that, in an area of poor supply of live prey, he cannot catch enough natural prey to feed the female adequately in the pre-laying stage in certain years. This tentative suggestion would be supported by the apparently generally higher rate of breeding success observed in eastern than in western Scotland, though here the end effect is likely to be produced by a combination of a higher proportion of laying females and better brood survival.

There is no direct evidence to support this possible explanation in the Golden Eagle. Gordon (1955), in eight years' observation at an eyrie in Skye, did not definitely observe the male feed the female. On the other hand, the climate in Scotland in February and March is sufficiently severe that few people have watched eagles for long at this season. Testing this idea would be a useful subject for research.

Once eggs have been laid, the appetites of female eagles appear to be small, at least among African species (Brown 1966 and unpublished). In any case the female Golden Eagle can and does leave the nest to feed at intervals, and in March and early April, anywhere in Scotland, she can scarcely have to fly more than a few hundred yards to find a carcase which, in the cool weather then prevailing, will keep for weeks. There is thus no reason why, if she has once laid eggs, she should not hatch them (neglecting human disturbance); nor does the male have to exert himself greatly to catch prey.

Once the young have hatched, the male steps up his rate of killing. The female, however, stays in the nest or near it and feeds the young. Even if there has been no acute shortage of food up to now, the increased need, especially when the young are beginning to grow their feathers, is considerable. About four to six weeks after hatching the male eagle is feeding himself, the female and one or two large young whose appetite is nearly equivalent to that of an adult (Craighead and Craighead 1956, P. Steyn *in litt.*). If there is a real shortage of prey in the territory, mortality among the young should be severe at this time.

But in Sutherland in 1967, and so far as known in other years, there was little or no observable mortality among growing young. In all the nests the number of eaglets was the same in late June and July as at the first visits in early June when they were still partly downy and there was thus no evidence that any present in early June later died from shortage of food or other reasons. When two eaglets hatch, however, the elder usually kills the younger in the first three weeks, even in the presence of abundant food. Losses may be somewhat greater in areas of poor food supply (Watson 1957), but in four out of five of all cases the battle is fatal to the younger eaglet and this had presumably happened before the first visits in early June at the six nests in Sutherland in 1967 where only one young was reared.

It will be evident that far more detailed studies, carried out over a period of years, would be necessary to relate the level of food supply in different territories and in different years to breeding success. What little evidence was gathered in Sutherland in 1967 did not indicate any marked differences in food supply in successful and unsuccessful territories. In fact, the successful seemed generally to be worse supplied than the unsuccessful, at any rate in June and July when the survey was done. Carrion was perhaps more abundant in the successful territories, where six out of eight dead sheep were seen in the seven out of 20 territories that were successful, but four of these sheep were in one territory, where the eagles were apparently feeding their young entirely on natural prey and hence probably eating natural prey themselves too. Only three Red Grouse or Ptarmigan were flushed by me in seven successful territories as opposed to 18 in 13 unsuccessful territories. The territory which was apparently best supplied with natural food—four Red Grouse, one Mountain Hare and eight Golden Plovers being seen in 21 miles of walking—was unsuccessful. These figures indicate no more than that an obviously scanty natural food supply late in the breeding season probably has no marked effect on breeding success once the young have hatched.

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SUMMARY

The present paper describes a survey in summer 1967 of the status, number of pairs and breeding success of Golden Eagles *Aquila chrysaetos* in about 380 square miles of north-west Sutherland, 347 of which had been previously studied in 1958-60. The special interest of the area is that it supports a large population of Golden Eagles in terrain with an apparently very poor natural food supply. There were 18 pairs in the area, with an average territory of 11,560 acres; this density is similar to that in parts of

the eastern Highlands which are much better supplied with food. Methods used are outlined; errors are thought to have been small. The only main drawback with a survey in June-July is that it is not possible to be certain whether some empty nests had contained eggs earlier in the year and been robbed, or not been laid in at all. Figures are given for the population in 1967 compared with 1958-60. There was no evidence for a decline in the total population of eagles, nor was the proportion of immatures unusually high.

Details are given of breeding success, with some reasons for possible failure. In a sample of 20 pairs, seven were successful (35%), rearing 0.4 eaglets per pair at 1.14 eaglets fledged per successful nest. One nest had addled eggs, three were probably robbed and the other nine pairs probably did not lay. Breeding success is analysed according to the accessibility of the nest ledge, the remoteness of the breeding site and the type of food supply. Sites easily accessible and well-known failed more often than those remote and inaccessible. There was insufficient evidence to show whether pairs on sheep runs, which would be more likely to ingest toxic chemicals from sheep dips, had become less likely to breed successfully than others. This is a preliminary conclusion, however, which needs checking by further work in the spring (i.e. to distinguish for certain between non-breeding birds and pairs which laid and were robbed). Human interference is probably a more important factor in reducing breeding success.

The food supply as estimated by transect counts of live prey and carrion over 366 miles is given. Natural food appeared extremely scarce, but carrion was abundant, particularly dead lambs. Food preferences indicate that the Sutherland eagles fed their young mainly on natural food, chiefly Red Grouse *Lagopus lagopus* and Ptarmigan *L. mutus*, but themselves ate much carrion. It would be difficult to supply an overall food requirement of about 270 kg per pair per annum from live animals in an average territory.

The manner in which availability of food might affect egg laying and subsequent breeding success is discussed. Natural food supplies appear sufficient to enable the eagles to rear young once they have hatched. It is suggested, without direct evidence to support the idea, that a low level of live prey might inhibit egg laying and that this may be the mechanism by which breeding success is ultimately controlled. This possibility would be worth testing by future research.

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The Hastings Rarities again

E. M. Nicholson, I. J. Ferguson-Lees and J. A. Nelder

It was only to be expected that the searching review of the Hastings Rarities in August 1962 (Nelder 1962, Nicholson and Ferguson-Lees 1962) would, in certain circles, cause considerable distress and a desire to rebut, if possible, the arguments which led to the retrospective rejection of so many records. Perhaps the main surprise is that we had to wait as long as six years for the first detailed counter-attack, now provided by Dr James M. Harrison*. Let us say at once that, although we can find little common ground with Dr Harrison in this matter, he has done a service to ornithology in so fully and forthrightly championing the authenticity of the Hastings Rarities. The contrary case deserved to be stated, and no one could have done it in a more gentlemanly and responsible spirit than he. Despite his acute dissatisfaction with what we shall for brevity's sake follow him in terming our 'Report' (this term covering both the papers cited above), he has creditably tried, like ourselves, to refrain from exacerbating sore feelings and unnecessarily raising the emotional temperature.

In any area, national or local, some bird species are present continuously in greater or smaller numbers; others occur seasonally or irregularly; and others again arrive through some rare accident. Only very recently have people felt the need, and painfully set about acquiring the capability, to trace these occurrences and to record a sufficient sample of them reliably enough to permit sound conclusions and generalisations. The gun, the net, the museum, the oral or written discussion, the telescope, binocular and tape-recorder, the camera and notebook have all been pressed into service. But, above all these, each advance has depended upon scientific self-discipline and readiness to subordinate personal feelings to rigorous methods of proof, however uncomfortable or distressing the process may be.

Three centuries ago the architects of the modern scientific world chose as the motto of the Royal Society '*Nullius in verba*' (which might be freely translated as 'Take nobody's word for it'). No branch of learning which deviates from that test can rate as scientific. Ornithology in Britain has strong and valued roots outside science, but past tendencies for other disciplines to regard it as an unscientific hobby have gradually

**Bristow and the Hastings Rarities Affair* by Dr James M. Harrison, DSC. Printed by A. H. Butler Limited, 33-35 Western Road, St Leonards-on-Sea, Sussex (from which address it may be obtained), 1968. 160 pages; one colour and 29 black-and-white plates, including photographs of mounted specimens, recent rarities and correspondence with George Bristow and Dr N. F. Ticehurst; 2 maps and 3 other text-figures. 30s.

almost been eliminated by the scrupulous and unflinching insistence of ornithological leaders on the highest critical standards. Throughout the Hastings controversies the split has essentially been between those who demanded objective, independent, rigorous appraisal of every scrap of evidence and those who insisted that records should be accepted because they said so, and because they would otherwise feel their competence or veracity impugned.

The almost untranslatably different languages in which this Hastings dialogue has been conducted over half-a-century are vividly illustrated in Dr Harrison's work. In his introduction he quite fairly quotes from the Report our 'warning against the use of our investigation to seek to fasten any sort of guilt on any person or persons living or dead'. He adds, however, that it engendered a 'strong suspicion against Bristow' which he seeks to annul.

Indeed, it is important to appreciate that the central topic of Dr Harrison's book is not the same as that of our Report. We addressed ourselves to the essential ornithological question (which had been posed, but left in suspense, some 40 years earlier) whether it was compatible with the principles and standards governing acceptance for the British List that the long series of Hastings Rarities should enjoy continued recognition, or whether they should be deleted as lacking the necessary evidence. We concluded that they should be deleted, but we did not find it possible, nor think it necessary, to determine to what extent negligence in verification, error or fraud might have contributed to their previous mistaken acceptance. Given that the series contained a number of conspicuous features sharply at variance with those of all the other series contributing to the British List, and that in very few instances would the actual evidence provided justify acceptance by present-day canons, we found that the degree of concealment practised and the persistent failure to observe procedures enabling any independent check to be made involved a serious suspicion that deception had been practised. We left it at that.

Dr Harrison and his statistical consultant John Boreham insist, however, upon discussing the question 'Was Mr G. Bristow a cheat?'. Not surprisingly, direct evidence of a character which would be admissible in a court of law is almost entirely lacking and, beyond retreading the well-worn path of opinions on character and credibility expressed by a number of people with some personal knowledge, Dr Harrison has little to contribute. Indeed, considering his emphasis on the integrity and expertise of all those concerned and the importance to be attached to this aspect, it is astonishing that his personal knowledge and assiduous enquiries should have revealed so little extra information about the Hastings ornithologists and collectors.

In these circumstances, the book disappoints hopes that it might add significantly to our knowledge of what occurred. It concentrates

largely upon an attempt to throw doubt upon the methods and conclusions of our Report and to reassert the plausibility (and, therefore, the acceptability) of the Hastings Rarities. Nevertheless, its argument runs skew to our own, giving prominence to speculations which we regarded as better left unpublished—a view which is reinforced by Dr Harrison's well-meaning attempt to place Bristow on trial and find him innocent. If, as we confidently expect, the vast majority of disinterested British ornithologists and the decision-makers concerned continue to deny the authenticity of the Hastings Rarities, the responsibility for fastening guilt specifically upon Bristow will rest mainly with Dr Harrison, who has now presented it virtually as an inescapable corollary of rejecting these records. It is entirely possible that such an outcome, besides being unnecessary, may do Bristow himself less than justice.

The main points of Dr Harrison's counter-attack, other than those already mentioned, may best be derived from his summary. He claims to have shown that:

(1) The evidence does not support the view that Bristow was engaged in any kind of fraud.

(2) The suggestion of the importation of rare birds on ice has not been substantiated.

(3) The suggestion that the pilotage arrangements at Dungeness played any part in 'the *alleged* fraud' is without foundation.

(4) Where habitat has been unaltered and human pressures have been least severe, 'the occurrences of rarities in numbers are still going on'.

(5) Climatic conditions, especially in central and western Asia, could explain unexpected occurrences of birds from these regions in Britain.

(6) Statistical methods were used wrongly, and in isolation, for the disproof of the Hastings Rarities.

(7) The Report was wrongly timed, too narrow in its approach and defective in investigating fully possible natural explanations of the occurrences.

These are all perfectly fair points, but, as some are very technical and some extremely wide-ranging and complex, it is impossible within available space to give them more than summary treatment here. Nevertheless, we shall take them in order.

(1) *Bristow's part in any fraud*

Any investigation at this late stage of Bristow's role is badly handicapped by lack of information; and we do not regard it as either feasible or desirable. It would, however, certainly be possible to improve greatly upon Dr Harrison's disarmingly prejudged and selective approach, readers of which would hardly realise that the whole issue was originally raised 'officially' by Bristow himself in his letter of 30th June 1916 to H. F. Witherby reproduced verbatim in the Report (pages 328-329 and in part also in facsimile facing page 281). Bristow himself admitted then

'that you and other ornithologists entertain doubts as to the authenticity of some of the rare birds I get, & I must admit not without reason'. He promised to assist 'if you can suggest anything for me to do to allay these suspicions'. Witherby proposed safeguards, but, as he wrote four years later to J. B. Nichols, Bristow had 'not complied with these conditions', although 'You will probably remember that I talked over these conditions with you at the time and you agreed with me that they were altogether reasonable.'

It is quite wrong therefore to suggest that a worthy tradesman long dead is being made the victim of damaging suspicions to which he cannot reply. Had Bristow and his friends not persistently declined repeated opportunities to put their cards face upwards on the table, this tedious and distasteful retrospect would never have been needed.

Irrespective of all obscure and controversial aspects, Bristow is personally on the record, in his letter of 30th June 1916, as admitting to the deliberate suppression of the names of those involved in the origins of many of his specimens. He also repeatedly evaded showing them to the designated referee, Dr N. F. Ticehurst, while they were fresh enough to be critically judged. Such conduct never occurred, still less was condoned by leading local ornithologists, in other areas producing rarities. On those grounds alone, which have nothing to do with statistical aspects, it would be perfectly reasonable to disallow the records concerned.

It is most disturbing that Dr Harrison should even now launch a general attack upon subjecting to rigorous scientific proof claimed sight records of rarities in Kent and Sussex. He makes much of two instances (his own Buff-breasted Sandpiper *Tryngites subruficollis* at Rye in 1934 and the Pallas's Sandgrouse *Syrrhaptes paradoxus* at Stodmarsh in 1964) where significant additional evidence led to the acceptance of records initially rejected as unproven. Such instances, far from being unfortunate, are valuable in demonstrating that scientific tests are being applied without fear, favour or woolliness, and that there is a threshold level beneath which acceptance of a record would be improper, even if all concerned have a hunch that it is probably correct.

There never should have been, there is not now and there is not going to be one standard of scientific evidence for east Sussex and south Kent, and another for the rest of Britain. Paradoxically, it was the realisation that grave deception could occur in the case of the critically identified skins of the Hastings Rarities which helped to persuade such leading ornithologists as H. F. Witherby and Colonel R. Meinertzhagen not to discriminate as severely as their predecessors against sight records. Yet here we have Dr Harrison, a skin collector, trying to reassert for modern sight records the casual methods of verification which were deemed good enough by the Hastings group of ornithologists for adding one new species after another to the British List.

Whatever differences of opinion may exist, the safeguarding of the standards which now entitle accepted sight records of birds in Britain to enjoy no less authority than those for specimens 'obtained' and preserved in collections is a vital common concern of British ornithologists, on which they should be prepared to stand up and be counted. Those administering these standards may and do sometimes make mistakes, but at least the facts and the inferences drawn from them are all plainly on the record, and the process operates under a fierce light of criticism which, although sometimes painful, is salutary for all.

(2) *The possibility of importation on ice*

Dr Harrison's quoted evidence that reliable and effective marine refrigeration was not available before 1928 proves altogether too much. Bristow himself informed Witherby, in his letter of 30th June 1916, that he had received and mounted seven birds of various species brought from the region of South Africa *in a refrigerator*. Bristow at that crucial date made no such claim as is now advanced that specimens so imported presented him with any problem as a taxidermist. However, while not accepting Dr Harrison's arguments as in any way conclusive, we would agree with him that there are aspects both of the historical development of marine refrigeration and of the degree of conspicuousness of its effects, especially upon the soft parts of birds, which call for more detailed research than either we or Dr Harrison have hitherto been able to arrange. Our argument was merely intended to indicate the possibility that specimens could have been brought in in this way and could then have avoided detection under the lax and dilatory methods of verification which the record shows to have been followed at Hastings at the time.

Nevertheless, having said that, it is relevant to quote some comments on the effects of refrigeration on birds which Eric Gorton, Keeper of Natural History at Bolton Museum, has kindly made after reading pages 30-32 of Dr Harrison's book. These, based on his own expert knowledge, seem at variance with Dr Harrison's conclusions:

'Dr Harrison's findings do not entirely tally with our own. Specimens which we keep in the deep freeze in the laboratory do eventually lose moisture, especially from the legs, and the colour goes, but this takes a considerable time. Some years ago, through the good offices of S. Martin, we received a number of birds which had died on board fishing vessels out from Hull, mainly in the Greenland area, but some in mid-Atlantic. These had been kept in freezers and reached us for skinning several months later. The remarkable thing about the greater proportion of them was their freshness and suppleness, so much so that I have to admit that I could have been taken in if one had been presented to me as recently obtained locally. We do handle a good amount of material, too!

'Three examples will illustrate this. The first specimen we received was a Snow Bunting *Plectrophenax nivalis* found north-west of Godthaab on 20th May 1958 and skinned by us nearly three months later, on 13th August: all soft parts were noted as soft and pliable and the bird, which was readily sexed as a male, made up into

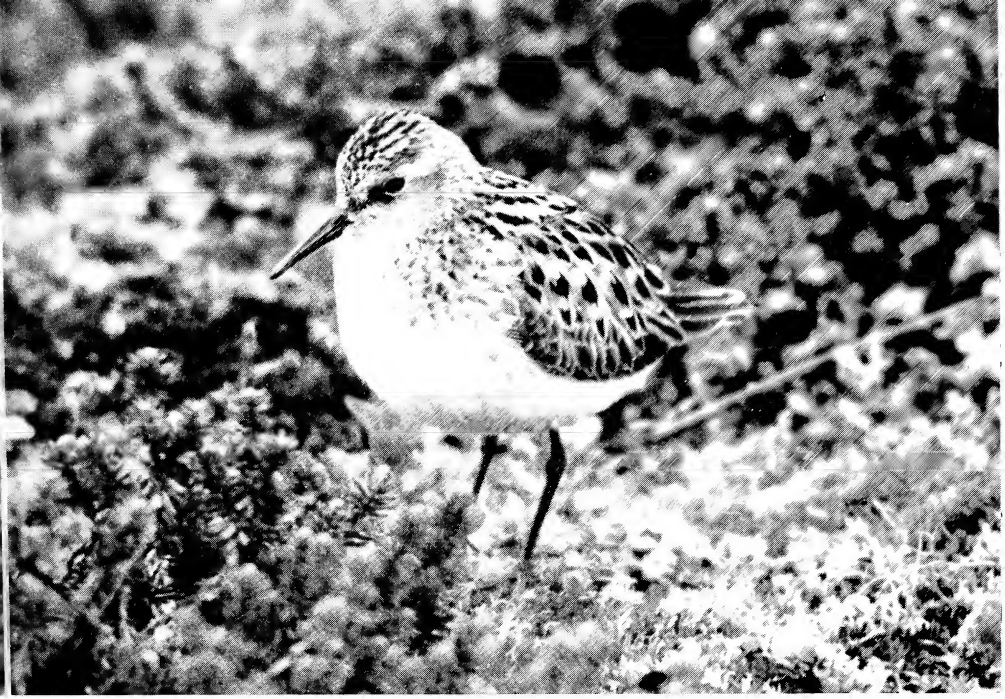

PLATE 57. Little Stint *Calidris minuta* at nest, Norway, July 1968; note the short, straight bill. Red-brown mottled with black above, and mainly white below with dark spots at the sides of the rufous breast, this tiny wader breeds from north-eastern Norway across arctic Russia and Siberia (see page 382) (*photos: Gösta Håkansson*)

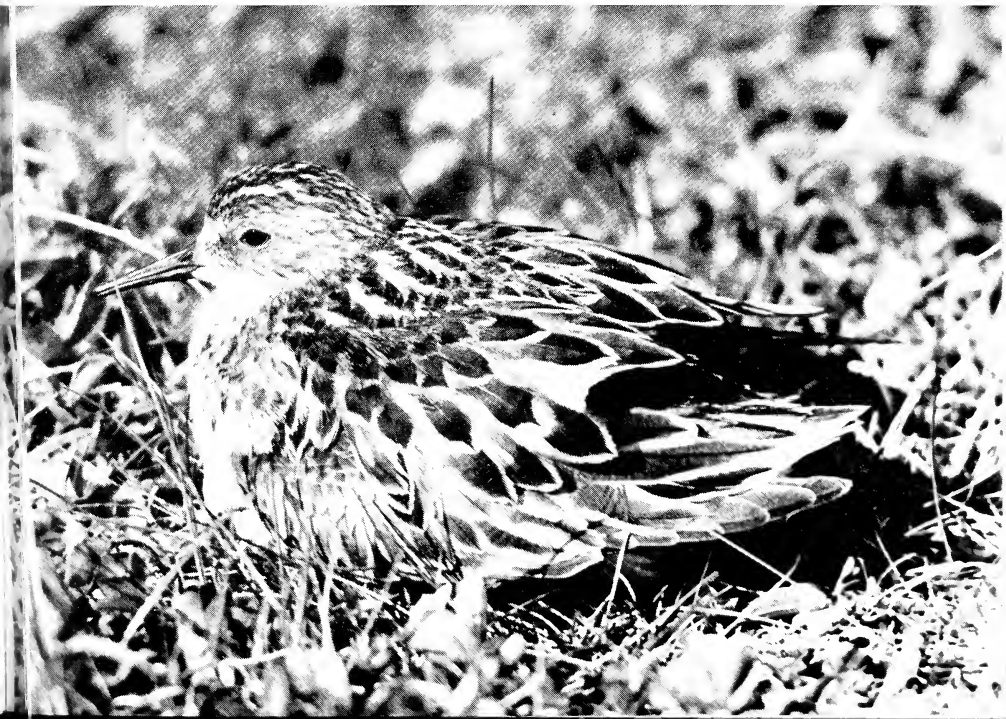

PLATE 58. Above, nest of Little Stint *Calidris minuta,* Norway, July 1968; the four eggs are greenish to brownish blotched and spotted with dark yellowish-brown and chestnut. Below, the habitat, an island a few miles from Vadsö, dotted with rocks and covered with cowberry, crowberry and reindeer moss (*photos: Gösta Håkansson*)

PLATE 59. Above, adult and chick, Norway, July 1968; the chicks are reddish-yellow above, mottled with black and speckled with white, and white below. No hide was used and the adult was unafraid of a camera a metre away (*photo: Gösta Håkansson*). Below, migrant stretching one wing, Suffolk, September 1961 (*photo: Eric Hosking*)

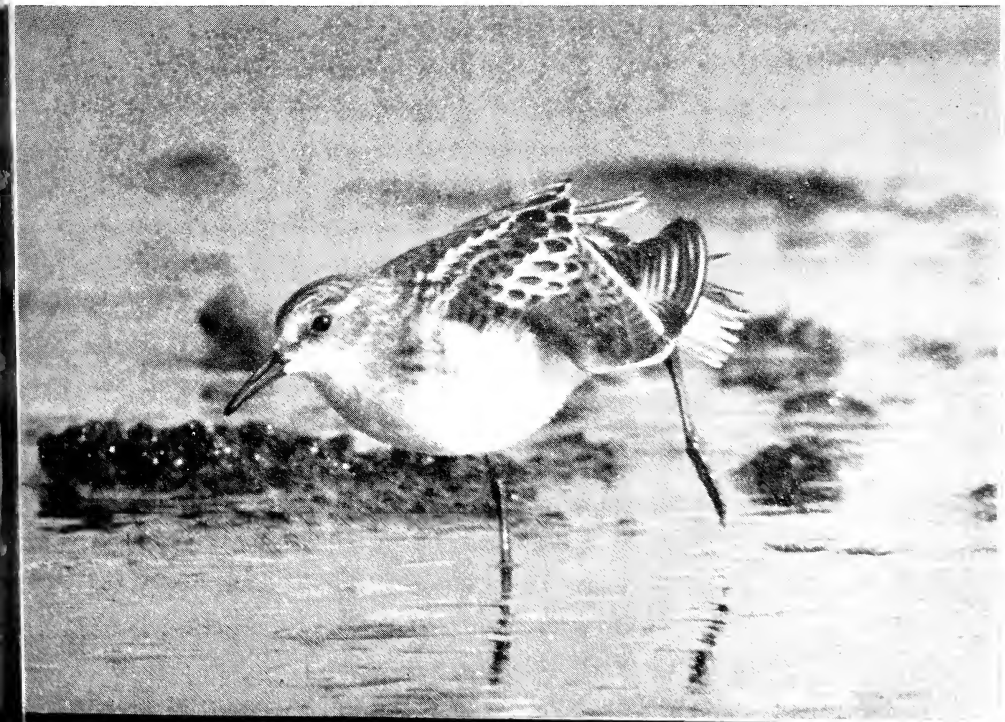

PLATE 60. Little Stints *Calidris minuta* on autumn passage, Suffolk, September 1961. Note the two characteristic white lines on the back, forming a V. Although stints often feed by picking insects, crustaceans and molluscs from the surface, they will also probe with their short bills in mud or water (*photos: Eric Hosking*)

a fine cabinet skin. More memorable, however, was an American Water Pipit *Anthus spinoletta rubescens* taken in Davis Strait on 3rd June 1960 and skinned over three months later, on 9th September: pipits are notorious for ready decomposition and, if untreated, will often "slip" overnight even when fresh, but this was in beautiful order after 14 weeks, soft in the flesh and easily sexed as a male, and it made into an excellent study skin with the feathers above the nostrils and on the belly and the upper and under tail-coverts all in place. The third example, to take quite a different group of birds, was a Turnstone *Arenaria interpres* found in mid-Atlantic on 17th July 1960 and skinned by us two months later: its ovaries were readily distinguishable and it is now in perfect condition in the cabinet.

'There is no doubt that these and other specimens have made skins which are just as excellent as those provided by fresh corpses and that their body condition would not have given rise to concern regarding excessive decay. It is difficult to understand how such dissimilar findings as ours and Dr Harrison's can be reconciled, but the condition of the bird when it is killed may have a bearing. None of the Atlantic specimens was fat and all seemed in good physical condition, the body and intestines being very healthy-looking. On the other hand, some local specimens which we receive at Bolton in winter are obviously diseased and already have the sickly smell of decay.'

In view of these remarks, we cannot agree that such an explanation for some of the Hastings Rarities is to be excluded as impossible. We would not, however, quarrel with Dr Harrison's conclusion that 'the importation of rare birds on ice has not been substantiated'. This was not an essential part of our case.

(3) *Pilotage arrangements at Dungeness*

Dr Harrison claims to have shown that 'the suggestion that the pilotage arrangements at Dungeness played any part in the *alleged* fraud has been shown to be quite without any foundation in fact'. Considering that on his own showing two of 'that fine body of men', the Cinque Ports pilots, were caught smuggling within the most relevant decade, and considering what we know goes on, often quite legitimately, in contacts between smallish craft offshore, it seems to us that Dr Harrison overstates his case. In any event, there would be no implication of any illegal act.

(4) *Changes in habitat and patterns of occurrences*

Bearing in mind that we are discussing exclusively occurrences of very rare wanderers far off-course, and not summer or winter residents or regular passage migrants, we consider that, in the light of now quite copious world-wide information, there is no ground whatever for supposing that changes in habitat or in human pressure of the scale and type which have occurred in the Hastings area since 1900 would have any effect on the frequency of occurrences. Even in the extreme case of Greater London such a theory would not stand up; consider, for example, the many records of rarities at Perry Oaks sewage farm immediately adjoining London Airport.

Mr John Boreham, Director of Economic and Statistical Analysis in

the Ministry of Technology, who has furnished Dr Harrison with an 'expert assessment', falls into the usual trap for those who know plenty about statistics and little about birds by 'noting the amazing fact that in neither article was there any discussion of the growth or decline of the population of other animals, especially man, in these parts. Surely the increase in the human population of Hastings from 1891 to 1951, and the corresponding extensions to the built up area must have had some effect on the bird population?' We in turn can merely note the amazing fact that a senior statistician in the public service should have thought fit to take sides publicly on so technical a matter without apparently even having learnt to make the elementary distinction between the regular bird population of an area and chance ephemeral occurrences of vagrants.

On this aspect Dr Harrison's book is very misleading and if, as he states, there is any change in the local pattern of occurrence of rarities, it is most unlikely to have anything to do with the factors mentioned. Is it in any case true that there has been much change in, say, the environment of Westfield, and is it true that in such places, which figured so prominently in earlier Hastings records, 'the occurrences of rarities in numbers are still going on'? Neither proposition appears to us to stand up.

(5) *The influence of climatic conditions*

The argument that we omitted to take account of known climatic changes in the period is incorrect. We considered their possible influences in far greater detail than Dr Harrison, but we did not devote much space to them owing to the patent impossibility of showing how such changes in Asia could possibly lead to an influx which would be concentrated in the Hastings area and not shared by other parts of Britain. It is worth pointing out again, however, that during the main incontestible contemporary example of such an immigration from Asia, that of Pallas's Sandgrouse in May 1908, at the zenith of the Hastings activities, Sussex was the only one of the six most south-easterly counties which did *not* produce a record; indeed, none was collected anywhere within the Hastings area, despite the fact that three were observed by H. G. Alexander near Littlestone, Kent. It was, of course, a feature of the Hastings Rarities (discussed on pages 307-308 of the Report) that two other irruption species, the Pine Grosbeak *Pinicola enucleator* and the Nutcracker *Nucifraga caryocatactes*, tended to be recorded in the wrong years or as the wrong subspecies. Thus it is amusing that Dr Harrison should choose to highlight the Nutcrackers by reproducing under the heading 'Epilogue . . . and still they come, those "Hastings Rarities" ' a photograph of one at Hailsham, Sussex, in August 1968, the one autumn when it would have been really surprising if there had been no Nutcrackers in the Hastings area.

(6) *The use of statistical methods*

Discussion of the book's statistical criticism is complicated by the stated fact that the author, Dr Harrison, found it 'quite beyond me', while the statistical adviser, Mr Boreham, admits to no particular knowledge of or interest in birds. Before going into print ourselves we found it necessary to integrate both types of expertise. (In this connection, E.M.N. and I.J.F.-L. wish to point out that J.A.N. is both a professional statistician *in the biological field* and an experienced amateur ornithologist.) It is extraordinary that a statistician of Mr Boreham's standing should have approached such a problem with the hope that 'statistics could . . . actually assess the probability that Mr Bristow was a systematic cheat'. In fact, the basic issues relate to the more straightforward and more proper statistical question whether or not the pattern of the Hastings Rarities is reconcilable with known facts concerning the occurrence of rarities in Britain.

The methods of the statistician have been treated by Dr Harrison throughout the book with a mixture of awe and fear, but no magic is attached or should be attached to these methods. They are simply techniques for collating and assessing information. The general form of the pattern which emerges is straightforward, and requires no mathematical expertise to appreciate. The significance tests that have been applied put quantitative measures on the lack of agreement shown by various sub-patterns in the main pattern.

Statistical arguments deal with mass phenomena and with patterns appearing when many observations are taken together, and it is a fact that observations whose individual properties seem without obvious pattern may show such a pattern when considered together. What was interesting in the figures presented in the original analysis were the striking statistical *regularities*. Indeed, if these regularities had not been present, the arguments against the genuineness of the Hastings Rarities as a whole could not have been adduced. The quotation by Dr Harrison (page 96) that 'Nature is too disorderly for a statistician' is thus particularly wide of the mark. An example of the extraordinary orderliness of the data is shown in table 2 of Nelder (1962), where the relative proportions of birds in the three rarity classes is shown to be homogeneous for the remainders of Sussex and Kent in both eras, and for Hastings in the second era. Thus, in spite of the changes in habitat recorded by Dr Harrison, in spite of the trends in climate which he also notes, in spite of the changes in collecting, shooting and bird-watching, in spite of the growing sophistication and mobility of observers, the proportion of class I to class II to class III rarities outside the Hastings area-era remained at about 1 : 1 : 2. It should be added that the division of the rarities into three classes according to the number of accepted English examples in *The Handbook* (class I having less than 20, class II 20-99 and class III 100 or more or not enumerated) was explained on pages

284-285 of Nelder (1962) and the species and subspecies in each class were listed on pages 297-298.

The fact that rare birds did and still do occur in the Hastings area is not in dispute. But the hypothesis that *all* the Hastings Rarities are genuine (call this hypothesis G for short) receives neither support nor contradiction from the enumeration of lists of rarities that have occurred since. The evidence against the genuineness of the Hastings Rarities does not mean that *all* the records considered were false. As pointed out by Nelder (1962: 288), the data predict about 247 rarities in the first era (1895-1924) instead of the 516 actually recorded (taking multiple records as one each)—to say nothing of the others which, as Dr Harrison now confirms at several points (e.g. pages 141-143), were never recorded. Evidence that scores of rarities over this period were genuine (see page 378 in this paper) does not support hypothesis G, since many such rarities were to be expected. Theories cannot be verified, but they can be falsified, and progress is made by a process of weeding out. The statistical analysis was concerned to demonstrate the falseness of hypothesis G.

Mr Boreham complains (page 19) that 'there is no discussion of what the "records" consist of'. The reader who sees J.A.N. being reproved with a quotation from Yule and Kendall would hardly guess, if he had not read Nelder (1962), that a most detailed statement was given there (pages 283-285) of how the records were extracted and categorised.

The auxiliary hypotheses required to account for the lack of agreement of the Hastings Rarities with the other groups are said by Mr Boreham to be two. One is required to account for the discrepancy in the ratio of rarity classes. The remarkable uniformity of these ratios in the other five area-eras has already been commented upon. It means that arguments based on changes of habitat, climate and general trends with time cannot be invoked to explain them. Those who wish to maintain hypothesis G must explain how the records for the suspect area-era of the Hastings Rarities come to differ so violently from the rest. No such explanation appears in the book: remarks such as (page 53) 'The allotments and notably the Pebsham Farm area were constantly watched and *any* unusual bird undoubtedly quickly found its way to Bristow' (our italics) merely suggest that the number of rarities found would be unusually large, but not that the relative proportions of the rarity classes would be affected.

The second discrepancy to be accounted for is the abnormal frequency of multiple records in the Hastings Rarities. Again, all the changes referred to above left the proportion of multiple occurrences essentially unchanged at 12% for both class I and class II rarities, except for the Hastings Rarities where more than twice that proportion occurred. Obviously such multiple occurrences would be expected if the birds were actually killed in an area where they were relatively common, but,

if hypothesis G is to be maintained, then again Dr Harrison must show how this high proportion of multiple occurrences could have arisen. This he fails to do. He also fails to account for the fact that in the Hastings Rarities the proportion of plural occurrences, instead of falling steadily as we pass from class III to II to I, is actually highest for class I. Again, the rest of the data are consistent in showing the expected pattern of fall.

The significant features of the time trends have been entirely ignored in the book. First the close fit to the Poisson distribution for class I rarities for the rest of Sussex and Kent for the period 1895-1924 shows an essentially static situation. The great variation in the Hastings Rarities is not due to fluctuations in the supply of birds. The peaks of 1905 and 1914 are not the result of good migration seasons; in fact, 1914 is one of the leanest years for the remainder of the two counties, having only one rarity in any class. Note also that the ratio of the numbers in the rarity classes is different in these two peak periods. The average values for the five years 1903-07 are class I 11.6, class II 5.2, class III 9.6, while for the period 1912-16 they are class I 17.2, class II 6.0, and class III 4.8. In this latter period the proportion of class I rarities is particularly outrageous. If we take the class III rarities as collectively credible, they imply an effectiveness of search of about a half of the 1950-54 level. This means that the class I numbers are about *nine* times higher than expected.

Mr Boreham has one positive suggestion to make, namely to separate the records by Bristow v. other and by casual gunner v. ornithologist gunner v. observer. He suspects, probably rightly, that some of the classes would be too small to be of any use. What can be said with confidence is that this procedure would merely enhance the discrepancies already discussed still further. Mr Boreham's fears that our analysis would be vitiated by compounding heterogeneous classes of record are groundless, for the *data themselves* show consistent regularities over a wide range of observer type and period, only the Hastings group being anomalous. His subsequent attempt on page 20 to explain the high proportion of class I rarities need not be taken seriously; it is based on the suggestion that Bristow could sell only the very rare specimens, whereas all the evidence supplied by Dr Harrison himself points in the opposite direction.

To sum up, the damaging nature of the statistical arguments against the hypothesis of genuineness seems not to have been fully grasped by Dr Harrison (or indeed by Mr Boreham). Their numerical evidence confirms our own assessment that improved modern methods and intensity of observation still do not produce many class I rarities.

(7) *Further comments on the timing and thoroughness of the investigation*

Mr Boreham rightly stresses the importance in 'the Bristow series' of

shooting by casual gunners. But his unfamiliarity with his subject leads him to assume that it is or was a normal and acceptable practice for specimens of such origin to be equally casually conveyed into scientific circles and, without any independent verification or documentation, to become a basis for additions to the British List. With the one unhappy exception of Hastings this never was the case. Consequently, no other time or place can furnish the essential control group which Mr Boreham seeks. Moreover, when in 1916, at the request of Bristow himself and with the concurrence of other Hastings ornithologists (such as J. B. Nichols), H. F. Witherby defined ground rules for bringing the future procedure over rarities in the area into line with national practice, the result was not to produce a new series of properly verified occurrences, but to lead to a discontinuance, with a few exceptions, of further submissions from Hastings for national recording.

One strange feature of Dr Harrison's book is its treatment of the numerous rarities which were labelled and sold as having been shot near Hastings, often almost simultaneously with those in the national record, but which went straight into some collection without ever getting into print. If all these, some of which the book now lists and illustrates, were added to those submitted for recognition, they would of course greatly inflate the already incredibly large numbers of the Hastings Rarities. Perhaps some day someone will have the patience to trace and list all that are still extant or known about. After 1916 the great majority of Hastings occurrences fell into this irregular and unrecognised category, but even in the heyday of Hastings acceptances it was already substantial. Why does Mr Boreham ignore the obvious implications of this additional group of unpublished Hastings Rarities? Anyone who argues for the credibility of the recorded series has to face the fact that many other unauthenticated rarities were simultaneously circulating in the same area through the same channels, the only distinction being that, unlike the rest, they were not successfully sponsored for national recognition by the same small group of local ornithologists. Why were some put forward and others not? If, as appears to be the case, Dr Harrison is prepared to accept these unpublished specimens as also authentic, where does he draw the line in accepting any claim which anyone cares to make?

A curious claim made by Dr Harrison on page 28 is that 'those responsible for the conduct of these ornithological records at that time . . . appointed a number of acknowledged authorities to act on the spot as scrutineers in such cases. Those appointed were exceptionally qualified for the duties envisaged, and clearly understood what was required of them, and the responsibilities entailed. The following were selected and accepted office: W. B. Alexander, J. L. Bonhote, W. R. Butterfield (Curator of the Hastings Museum), L. A. Curtis Edwards, W. H. Ford-Lindsay, G. Knight, W. H. Mullens, M. J. Nicoll, J. B. Nichols,

Thomas Parkin and Drs N. F. and C. B. Ticehurst . . . all were well aware of the possibility that deception might be attempted and were therefore especially alerted on this point.' He also refers to 'the panel of distinguished men who had approved and passed the records at the time.'

This passage is perhaps the most remarkable and provocative in the book. Obviously if we had had any knowledge of any such appointment of a panel after our exhaustive investigations we would have discussed it in our Report. It seems equally evident that if it had been known at the time to Bristow, or to H. F. Witherby or J. B. Nichols (who is among those named above), the correspondence reproduced by us in full on pages 328-335 would have had to have followed quite different lines. Yet here at this late hour Dr Harrison refers to it in more or less formal terms, attributing to it a role which, if true, would make it largely responsible for the incredible claims which gained currency, and yet we are not given the vaguest date for this so-called appointment nor does Dr Harrison bother to name who he means by 'those responsible for the conduct of these ornithological records at that time', and what authority they possessed to delegate in this unprecedented way.

If correct, the statement would considerably modify our understanding of the conditions in which the Hastings Rarities were recorded. But where is Dr Harrison's evidence that such a panel ever existed? What record is there of its adjudicating on any single claimed occurrence? We invite Dr Harrison to place on record all the evidence in his possession and thus validate a claim which must otherwise be considered wholly misleading. The need for such validation is enhanced by the use which Dr Harrison has made of these allegations on page 29 to convey to readers the impression that our Report is wrongly seeking to upset verdicts properly made at the time by a competent panel of ornithologists. We trust that Dr Harrison will recognise that in fairness to all he should either substantiate or plainly withdraw these statements.

We have no intention of being drawn into personalities, but since we are now criticised by Dr Harrison for our alleged failure to make due local inquiry, we think it right to mention briefly a single example of the disturbing outcome of the inquiries which we did unremittingly undertake. H. W. Ford-Lindsay (not 'W. H.' as in most of Dr Harrison's references) is named among the 'exceptionally qualified' referees above mentioned. Indeed, he should have been so, since this was the man on whose responsibility were added to the British List the Grey-rumped Sandpiper *Tringa brevipes*, the Moustached Warbler *Lusciniola melanopogon*, Rüppell's Warbler *Sylvia rüppelli* and such a critical sub-species as the Western Large-billed Reed Bunting *Emberiza schoeniclus compilator*.

Finding that he was alive and in good health, we visited him at Hastings on 9th April 1955, hoping to gain first-hand insight into the qualities and methods which had characterised such outstanding con-

tributions to the advancement of British ornithology. We said nothing to suggest disbelief in his records, but simply came as seeking further detail. Nevertheless, he skilfully evaded giving any direct information and we formed the impression that he had made up his mind to regard the whole episode as one over which to draw a thick veil. What he told us, however, was revealing enough. He depicted himself as an ordinary local solicitor who had a weakness for more or less ephemeral enthusiasms, such as stamp-collecting. Before the 1914-18 war some friends had influenced him to dabble similarly in rare birds, but he had become tired of it during the war and had put it out of his mind ever since. Questioned concerning his first-hand ornithological experiences, he said that the rarest bird he had ever seen in a wild state in England was a Golden Oriole *Oriolus oriolus*, and he spoke of 'the Great Green Woodpecker'. Yet this was one of the small band once more paraded by Dr Harrison as an 'acknowledged authority'. Making all allowances, Ford-Lindsay's account of himself was absolutely conclusive against his ever having possessed ornithological competence remotely equal to dealing with the difficult and obscure rarities which stood to his credit.

Dr Harrison also devotes three pages (pages 61-63) to the long subsequent record of Audubon's Shearwater *Puffinus* (*assimilis*) *lherminieri* alleged to have been found alive on the beach at Bexhill by W. E. Dance on 7th January 1936. More than a month later Bristow notified this to Dr Harrison, who began a campaign to get it accepted, in the course of which, over four months after the event, he took as he says the unprecedented step of persuading Mr Dance to swear an affidavit. Although this isolated case did not fall within the scope of our analysis of the Hastings area-era, E.M.N. and I.J.F.-L. in fact interviewed Mr Dance on 24th September 1962 and he impressed them as truthful and having no axe to grind. He said frankly that he had been persuaded against his better judgment to sign not only the main body of the affidavit which was true within his knowledge, but also an additional statement that the bird he had seen alive on the beach was the same as the skin shown him four months later by Dr Harrison. He regretted this and had had grave doubts since whether it was correct. We must add that, affidavit or not, no such statement merits scientific credence and that Dr Harrison, although he evidently acted in good faith, made an error of judgment in placing Mr Dance in this situation.

As Dr Harrison makes much play of our alleged failure to consult our senior and much esteemed colleague Dr N. F. Ticehurst, the facts must be placed briefly on record. At the outset of our enquiries we had high hopes of his ability and willingness to collaborate in them and we first wrote to him about them towards the end of 1953. His reply, dated 8th December 1953, expressed such uncompromising dissent from participating in any reconsideration of the subject that we were left with no alternative but to pursue our investigations independently

and invite his comments on the outcome. We did not approach him again on this matter, therefore, until 16th May 1962 when we sent him the galley proofs that provided the first opportunity to show him the text and appendices as a whole. Dr Ticehurst's letter of 23rd August 1960 to Dr Harrison, reproduced at the end of the book, was not written after he had seen the Report (Dr Harrison suggests that the date of this letter was 'obviously' a mistake for '23rd August 1962'), but simply after he had seen the preliminary statement published by Hollom (1960) in June of that year. In fact, we have a letter from Dr Ticehurst to I. J.F.-L. which is dated as close to Dr Harrison's suggested date as 21st August 1962 and which states that 'so far as the purely Bristow records are concerned I cannot but accept your main conclusions'. It is one of the saddest features of the Hastings story that its inevitable end should necessarily have brought so much distress to one whose good nature and high standing in British ornithology was so cruelly traded upon by others. We take this opportunity to reaffirm that Dr Ticehurst's only fault in the matter was to believe too much in his fellow men.

When Dr Harrison criticises our Report as 'in default in its timing', he seems to imply that the time of its appearance was in some way deliberately planned by us to the disadvantage of some other parties. This of course is nonsense. Ever since the Bristow-Witherby correspondence in 1916 it had been obvious to any sensible man that here was some unfinished business which some day someone would have to deal with. Witherby was frustrated in his intentions in this respect for reasons which Nicholson (1968) has already discussed. It was only after the 1939-45 war, therefore, that the issue could be freshly considered, and the task was then set in hand and carried through as fast as other pressing commitments allowed. We recognise that among others who were inconvenienced Bannerman (1953-63) was especially unfortunate.

The methods adopted by the original sponsors of the Hastings Rarities, and by their apologists right down to this day, have made the task of trying to sift out the truth enormously difficult and time-consuming. Many relevant facts, which may well be available to some, remain under the table, so that indirect methods of analysis have to be resorted to in default of direct information. Such a leading figure in the episode as the then Curator of Hastings Museum, W. Ruskin Butterfield, deliberately destroyed every record of the rarities at the time when serious questions began to be asked about them. Even Dr Harrison tries to persuade his readers to discount our Report on the ground that 'the instigators of the investigation' were entirely 'ignorant of the persons and places of that time'. This statement, which Dr Harrison did not attempt to verify, is incorrect. One of us (E.M.N.) was already reasonably familiar with the Rye, Hastings and Pevensey Bay areas by 1916, and actually added half-a-dozen species to his life list in

the vicinity of Brede at the time when the second of the two White's Thrushes *Zoothera dauma* claimed for that east Sussex parish was allegedly shot. Another of us (I.J.F.-L.) was an active field ornithologist throughout the area during 1950-56, based only a few miles from Bristow's workshop in St Leonards-on-Sea, and was familiar with much of the actual terrain on which first-class rarities were alleged to have been found. (Contrary to what Dr Harrison suggests, much of this terrain had changed little between 1916 and 1962 when our Report was published.)

As we stated in the Report (pages 348-359) we had to draw a clear line between inclusion and exclusion while recognising that the occurrences claimed for many of the lesser rarities such as Glossy Ibis *Plegadis falcinellus*, Great Snipe *Gallinago media*, Bee-eater *Merops apiaster* and Roller *Coracias garrulus* fit quite well into the general known pattern and that many of these are probably valid. In recommendation (d) on page 343 we proposed that any of the records initially discarded *en bloc* should be subject to reinstatement where a particular case is made out.

Dr N. F. Ticehurst has provided a number of valuable comments on particular specimens with this in view, and we share his and Dr Harrison's regret that no progress has yet been made in dealing with them. It is, however, a mistake to suggest that our Report implied 'questioning the honesty of all and sundry concerned' with each record. On the contrary, if we had on the scanty available evidence sought ourselves to except a number of records within the stated limits as being valid the honesty or competence of those responsible for all the rest would have inevitably been slighted. The only way to avoid this was by initially treating them *en bloc* and then making reinstatements wherever good reason was shown to do so case by case.

That this procedure has not so far worked is due partly to the formidable number of details involved in all the possible cases, partly because no-one except Dr Ticehurst has come forward with specific proposals for reinstatement, and partly because, quite apart from the difficulty of finding the necessary skilled man-hours for this large and thankless task, there is some difficulty in determining to which authority it properly belongs. A serious underlying problem, to which we have already referred, is that a number of those most interested in the Hastings Rarities are wedded to standards of evidence and proof so far apart from those applied nationally that it is difficult to establish a common ground of communication. Dr Harrison himself provides a striking example with his observation of a Rufous Bush Chat *Cercotrichas galactotes* at St. Helen's Wood, Hastings, in May 1914; he told Bristow and a few days later it was shot four miles away at Brede, yet it is still unrecorded.

Another illustration of the gap in understanding concerns the definition of rarities. On pages 114-131 of his book Dr Harrison gives

space to 'A comparative list of "Modern" and "Hastings" rarities' compiled by R. E. Scott. At first sight this might seem to support Dr Harrison's case, for it amasses a total of 448 'Modern' rarities in a supposedly comparable period against 483 records during 1903-16, the peak of the Hastings Rarities. But it does not bear close examination and Mr Scott has merely confused the issue.

First, more than half the Modern total of 448 is made up of 239 occurrences of four species: 61 Cranes *Grus grus,* 36 Mediterranean Gulls *Larus melanocephalus,* 57 Gull-billed Terns *Gelochelidon nilotica* and 85 Bearded Tits *Panurus biarmicus.* Of the 61 Cranes, no less than 58 were in three flocks during the unprecedented influx in October-November 1963 (*Brit. Birds,* 57: 502-508). Mediterranean Gulls and Gull-billed Terns have become regular visitors to south-east England since the Hastings era and their inclusion on this scale hardly affords a more valid comparison than would the modern records of breeding Little Ringed Plovers *Charadrius dubius,* of which species there were only three specimens among the Hastings Rarities (plus a fourth, unrecorded, which proved to be of the Indian race *jerdoni* and to have been mounted from a skin). As for the Bearded Tits, these have long been British breeding birds and their inclusion in this context seems absurd.

Second, Mr Scott's Modern list is increased by a large number of records from the Eastbourne district, which is outside the clearly defined limits of the list of Hastings Rarities given on pages 348-375 of our Report ('excluding localities to the west of Pevensey Levels'). These include 40 of the Cranes, twelve of the Mediterranean Gulls, 30 of the Gull-billed Terns and an uncertain proportion of the Bearded Tits. They also include 41 further records of 19 other species. In addition, several more (as well as many of the Bearded Tits) are listed with no better locality than 'Sussex', most of which is also outside the Hastings Area. It is true that Eastbourne district records are likewise included in Mr Scott's Hastings list, but there are only 15 of them. Perhaps 15 in 1903-16 compared with 41 in the Modern period (excluding the four 'numerous' species) would be a fair indication of the greater number of rarities to be expected in these days of intensive observation and recording, in an area where there were no artificial circumstances half a century ago?

Third, the list is uncritically constructed in other ways. It purports to regard as rarities the species on the exploratory list drawn up by the Rarities Committee in 1958 (and not, therefore, the pre-1938 criteria used in our Report). Yet it includes the Barred Warbler *Sylvia nisoria* with six Modern and two Hastings records. It also includes five Modern Red-headed Buntings *Emberiza bruniceps,* although all records of this species are now generally regarded as escapes. It states that the Hastings part 'probably includes every rarity record

claimed in that period' (although another appendix contributed by Dr Harrison on pages 141-143 lists a further four), while suggesting that the Modern part is restricted to acceptable records. Yet the latter include no less than 29 which do not appear to be accepted by any competent county or national authority.

Fourth, to complete this exceedingly misleading treatment, a span of 14 years (1903-16) from the Hastings era is compared with an alleged 14-year Modern period which actually covers 16 years (1950-65). In order to cull an accurate and comparable Modern list from Mr Scott's data, a great deal of screening would thus be necessary. Even, however, if we simply omit the Mediterranean Gulls, Gull-billed Terns, Bearded Tits, 1963 Cranes and Eastbourne area records from both parts of his list, the Hastings sample stays as high as 454 birds of 104 species, while the Modern one drops right down to 170 of only 52 species (and that in a period which is two years longer).

More significant, however, than the mere numbers involved are the degrees of rarity. Of these 104 Hastings species, as many as 69 are class I rarities, having less than 20 English examples in *The Handbook* (see pages 371-372 of this paper), compared with only 24 of the 52 Modern species. A striking point shown by Mr Scott, but not commented on by Dr Harrison, is that no less than 67 species on the Hastings list of 1903-16, the majority of them in class I, do not recur in the Modern list of 1950-65 despite such greatly increased skilled observer coverage as is provided by Dungeness Bird Observatory; the converse figure is only 18. In fact, the differences are really greater than these totals suggest, in that the species (as against subspecies) treatment in Mr Scott's lists, presumably forced on him because modern sight-records are not concerned with geographical races, means that many unlikely subspecies, never since recorded in Britain, are omitted from the Hastings side. These would include, for example, the Alpine Ring Ouzel *Turdus torquatus alpestris,* Indian Stonechat *Saxicola torquata indica* and Western and Eastern Large-billed Reed Buntings *Emberiza schoeniclus compilator* and *tschusii,* as well as the 'wrong' races of species which are themselves rarities, such as the North African Black Wheatear *Oenanthe leucura syenitica* and Corsican Woodchat Shrike *Lanius senator badius.*

Still more significant, Mr Scott's list highlights the question of multiple records (see also pages 372-373), though this receives virtually no comment from Dr Harrison. No less than 29 (42%) of the 69 class I rarities on this Hastings list produced multiple records, compared with only four (17%) of the 24 class I rarities on the Modern list. In many of the Hastings cases (involving 25 of the 29 species) the multiple conveniently consisted of one or more 'pairs'. But modern knowledge is clear that vagrants of *most* species usually occur singly and that males and females often travel apart.

Thus our case still rests upon the relative number of class I rarities and the incidence of multiple occurrences being utterly inconsistent with the known proportions in other series. Mr Scott's list, including some records subsequent to our Report, merely reiterates those features. We made it clear in 1962 that the 595 records which we proposed should be rejected doubtless include many good ones (statistics suggest about 250), but in the circumstances there can only be reinstatement in cases where individual proof is forthcoming.

In view of the prominent role which the Hastings Rarities have played in ornithological history, we have felt bound to deal at some length with the arguments by which Dr Harrison seeks to give them further currency. The world is full of credulous ears receptive to specious arguments and creditably concerned lest injustice be done. British ornithologists, however, have learnt by experience the need for objectively and critically testing whatever they are asked to accept as fact. Dr Harrison's well-meant apologia provides no ground for altering the conclusions of our Report, reached after years of investigation and accepted almost universally by those who have been in a position to consider the matter critically and independently of local interests or prior commitments.

Fortunately, we are now entering a period in which ornithologists no longer accord to additions to the British List such reverence and scientific value as once attached to them. Had this more balanced and less passionately committed outlook matured half a century earlier, the peculiar climate which gave rise to the Hastings Rarities might not have developed. The need for setting the record straight unfortunately had to be faced, not least in order to clear the way for the more comprehensive European approach to bird distributions and movements which is tending to supersede the earlier insular attitudes. It is in the light of this more modern approach that any necessary further consideration of the Hastings Rarities would best be conducted.

ACKNOWLEDGEMENTS

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Studies of less familiar birds

155 Little Stint

Photographs by Gösta Hakansson and Eric Hosking

Plates 57-60

The Little Stint *Calidris minuta* is regular on passage in Britain and Ireland, chiefly in autumn (late July to mid-October) but also in small numbers in spring (mid-April to early June). In some autumns it is abundant, with flocks running into hundreds, but in other years there are very few. It is most common on the east coast, but also regular in smaller numbers on the west side of England and Wales and in east and south Ireland; it occurs inland quite often, but is scarce in north and west Scotland.

The breeding range extends from the north-east corner of Norway eastwards across arctic Russia and Siberia to the Yana delta and New Siberian Islands, almost entirely north of the Arctic Circle (66°30′) north to about 76°N. In 1965 a nestling was found in the Ammarfjäll area in Swedish Lapland—the first breeding record for Sweden—and it may be that other pairs occasionally nest as far west as that, especially in cold, late springs (*Vår Fågelvärld,* 25: 143-147).

The photographs on plates 57-59a were taken on an island in the Varangerfjord area of north-east Norway. Plate 58b shows the habitat with a vegetation of grasses, cowberry *Vaccinium vitis-idaea,* reindeer moss *Cladonia alpestris* and crowberry *Empetrum nigrum.* There were two pairs on the island and Gösta Hakansson found one nest with four eggs in a small tussock of grass on 7th July (plate 58a); the adult incubated unconcerned while he sat 'half a metre away'. All the eggs had hatched when he next visited the nest on 9th July, but only one chick was left by the 12th; an Arctic Fox *Alopex lagopus* was thought to be the culprit.

I. J. Ferguson-Lees

Notes

Fish jumping into Heron's mouth On 16th August 1969, at Talybont Reservoir, Breconshire, we saw a Heron *Ardea cinerea* standing on the edge of a small concrete 'waterfall' about two feet high; it was leaning forward in such a manner that its open bill was just below the level of the overflow. The pool at the foot of the waterfall was full of small fish, approximately two inches in length, which were attempting to leap up to the stream above; a few were successful. The Heron remained motionless in the same position for five or ten seconds, with its bill in the vicinity of the leaping fish, and as soon as

one of these jumped into the space between the bird's open mandibles they would snap shut and catch it. The Heron then raised itself so that it could adjust and swallow its prey. After a few seconds' rest, it returned to the original posture and repeated the procedure.

The Heron had what appeared to be a very casual and leisurely approach to catching the fish: it was not seen to 'dart' its bill in any direction, apparently being quite content to wait for one to jump unintentionally into its mouth. There appeared to be a sufficient number of fish leaping the fall for the Heron to obtain two to four per minute in this manner. JOHN and GWILYM GRIFFITHS

26 Gwaelodygarth, Merthyr Tydfil, Glamorgan

Mute Swan's method of disposing of broken egg In May 1961, in Oxford, I was making a routine check on the nest of a Mute Swan *Cygnus olor* to record the number of eggs which, if the female remains sitting on the nest, can be counted only by making her stand up. On this occasion, in her belligerent defence of the nest, she aimed a highly inaccurate blow at me with one wing, and succeeded merely in breaking an egg. As soon as I had left, she disposed of this broken egg by eating or drinking the contents (which were still fresh with no obvious signs of development) and then carrying the shell away. The shell had broken into a half and two rather smaller pieces, each of which the swan picked up in her bill, one at a time, and carried four or five yards to the river's edge before dropping it in.

I understand that it is rare to see ducks, geese or swans carrying anything in their beaks. Certainly most of the Mute Swans' nests in the Oxford area still contain much egg-shell after the young have left and hence removal of the pieces is clearly not regular. In their 'Egg-shell disposal by birds' (*Brit. Birds,* 35: 220) C. and D. Nethersole-Thompson recorded for this species that 'Shells remain in or pitched over side of nest' and Dr Janet Kear informs me that she found no records of egg-shell removal by swans when she was collecting material for the paper by Dr P. A. Johnsgard and herself entitled 'A review of parental carrying of young by waterfowl' (see *The Living Bird,* 7: 89-102). CHRISTOPHER PERRINS

Edward Grey Institute, Botanic Garden, High Street, Oxford OX1 4AY

Dr Janet Kear comments as follows: 'Dr Perrins's observation is unique for swans and, as he says, rare for waterfowl generally. Nest material is shifted to the nest in a series of sideways-passing movements which appear relatively inefficient and make this swan's direct carrying from the nest especially interesting. Two further records of egg-carrying by waterfowl have been reported since our paper in *The Living Bird,* the species involved being Mallard *Anas platyrhynchos* and Muscovy Duck *Cairina moschata.* This behaviour has been re-

ferred to previously in the Mallard by L. K. Sowls (1955, *Prairie Ducks*) and also by A. Avitabile (*Wilson Bull.,* 81: 331), and in the Muscovy by J. C. Phillips (1922-26, *A Natural History of the Ducks*), but, for lack of any other evidence, it must be regarded as unusual.'

Dr Kear invited the observers concerned to write up these additional records of egg-carrying and they are published below. Eds

Egg-carrying by female Mallard On 28th April 1968 I was sitting on the rise by the Hermitage on St Serf's Island, Loch Leven, Kinross, examining the duck-nesting area for evidence of egg-stealing by Jackdaws *Corvus monedula* (two of which were seen to carry away a duck egg apiece within the space of an hour). At about 14.00 BST a female Mallard *Anas platyrhynchos* flew out of a clump of tufted hair-grass *Deschampsia caespitosa,* carrying a half egg in her bill and closely pursued by two Jackdaws. She flew up over the willow belt and then down, presumably into the water on the edge of the island. She was wing-tagged yellow, which meant that she had been caught on a nest with eggs that year. My first interpretation was that she was removing an egg-shell from her hatched nest. Shortly afterwards, however, a yellow-tagged female flew up from behind the willows, at about the same spot, accompanied by a male. They landed together about 50 yards west of the place from which the egg-carrying female had taken off. After some walking about, the female disappeared and the male remained with his head up. This behaviour is more appropriate in a pair starting (or in this case relaying) a clutch, since the male would normally have deserted the female before she hatched off. If it was the same female (and there is no guarantee that it was), then the egg carried could have come from an old nest which was being cleaned out, rather than from a newly hatched clutch. G. V. T. Matthews

The Wildfowl Trust, Slimbridge, Gloucester

Egg-carrying by female Muscovy Duck At about 17.20 BST on 26th May 1969, at Appleton Manor, near Abingdon, Berkshire, I saw a female Muscovy Duck *Cairina moschata* walk fairly rapidly out of an old barn, carrying an egg crosswise in her bill, with her lower mandible inside the egg. When about five yards from the entrance to the barn, she laid down the egg and walked away without showing any further interest in it. The egg had been incubated for ten days and was fertile.

The female was one year old and had another eight eggs in her nest at the back of the barn. About ten minutes before she appeared there had been a disturbance inside the barn, as two people had tried to get a pair of geese and their two goslings away from food that was being prepared there. It was only about a minute after the barn had become peaceful again that the Muscovy Duck appeared with the egg, making one suspect that it had perhaps been cracked in the

excitement and that she was, therefore, removing it from the nest at the first opportunity.

At about 17.00 BST on 15th June I placed a deliberately cracked (and rather messy) egg in her nest and observed her actions from the doorway of the barn. After about a minute she left the nest carrying the egg in the same manner as before, walked about two yards towards the door and laid the egg down. She then poked about in it, seemingly eating some of its contents, before leaving it and returning to her nest.

M. E. Evans

The Wildfowl Trust, Slimbridge, Gloucester

Age ratios of Little Gulls on passage in Lancashire The Little Gull *Larus minutus* is an increasingly common visitor to Lancashire, particularly in the region of the mouth of the Mersey. The species became annual in the county in the mid-1950's, but remained scarce until 1965 when no fewer than 23 different individuals were recorded. Since then, however, it has occurred at several coastal gull roosts in flocks of sufficient size to make possible a study of the age ratios. Even so, although the separation of first-year from second-year and adult plumages is straightforward, it is often difficult to distinguish second-winter or second-summer individuals from full adults. (Separation of second-year birds on the ground is not at all easy unless conditions are exceptional and, as many individuals in the early part of the year are in worn plumage, the black tips to the 4th-6th primaries are not always visible; usually the blotchy dark under-wing is the best character, although some second-year birds are apparently indistinguishable from full adults even on this feature.)

Because of this difficulty, we have divided observations of Little Gulls into first-year and adult/second-year. Table 1 gives the monthly distribution of all the available Lancashire records, these being taken

Table 1. Monthly numbers and age ratios of Little Gulls *Larus minutus* in Lancashire

	Total	Adult and second-year	First-year	Not aged	First-year per adult/second
January	8	3	5	—	1·66
February	142	85	57	—	0·67
March	52	34	16	2	0·47
April	9	3	5	1	1·66
May	83	19	64	—	3·36
June	36	4	32	—	8·00
July	20	4	15	1	3·75
August	43	32	10	1	0·31
September	105	54	28	23	0·52
October	41	17	23	1	1·36
November	6	—	2	4	—
December	4	2	1	1	0·50

mainly from our own field notes and from the *Lancashire Bird Reports*. Two spring peaks are clearly shown, one in February-March (though the majority of records in this period came from a single year) and the other in May-June, as well as an autumn peak during August-October. Adult/second-year Little Gulls occurred in a significantly higher proportion during the first spring peak than the second; it is possible that the first peak consisted mainly of birds coming into breeding condition, while the second peak involved non-breeders. This is borne out by the June records of individuals which have lingered for several weeks along the Lancashire coast, particularly on the Ribble estuary and in Morecambe Bay: though not 'summering' in the true sense, they are unlikely to have reached the breeding grounds in the same year.

Of the Little Gulls in the first spring peak, 137 were recorded in a single flock in February 1968. These arrived at a time of very light easterly winds and thick sea mist, and remained for a week before dispersing. They were identified as 64 adults (46.7%), 18 second-winter (13.1%) and 55 first-winter (40.1%). As Little Gulls have been shown to nest in second-summer plumage, the flock thus contained almost 60% of potential breeders. One explanation of this remarkable occurrence is that unfavourable weather conditions off the south Lancashire coast caused the grounding of a flock which would normally have passed by out of sight; this may have been the return migration of that part of the Little Gull population which moves westwards to winter in the north Atlantic (Bertel Bruun, *Dansk Orn. Foren. Tidsskr.*, 62: 126-136). In autumn the proportion of adult/second-year was high in August and September, but first-winter then became slightly more numerous in October. P. A. Lassey and M. E. Greenhalgh
6 Catherine Slack, Hove Edge, Brighouse, Yorkshire HD6 2LL

Black-headed Gulls following boats at night I was interested to read Christopher Felton's note on Black-headed Gulls *Larus ridibundus* following boats at night (*Brit. Birds*, 62: 117). In his book *The Birds of Hampshire and the Isle of Wight* (1963), Edwin Cohen quoted P. W. Munn's observation in November 1913 'that a steamer getting into Southampton after dark is surrounded by flocks of gulls as in daylight; they feed on the refuse from the ship by the aid of the large lights used for disembarking passengers'. I know of no other published record of this behaviour, but Black-headed Gulls do often feed along the shore at night, at or close to their roosting sites, especially when there is bright moonlight. T. A. Coward (1916, 'A change in the habits of the Black-headed Gull', *Mem. & Proc. Manchester Lit. & Phil. Soc.*, 60: 1-6) was the first person to publish an account of this, referring to the Mersey estuary, and similar behaviour was then recorded on the Tamar (*Devon Bird Report*, 1932). More recently, I

have on several occasions noted Black-headed Gulls feeding at night on the Severn estuary. The nocturnal feeding of these and other gulls with the help of lights from boats and landing stages seems likely to be an extension of the feeding on the shore. J. D. R. VERNON

55 Wolfridge Ride, Alveston, Bristol

Herring and Lesser Black-backed Gulls following boats at night Some years ago I used to travel fairly regularly by sea between Belfast and Liverpool. Many of the Herring Gulls *Larus argentatus* and Lesser Black-backed Gulls *L. fuscus* which flew after the steamers by day would eventually roost at night on the masts. Even when it was quite dark, however, some could still be seen flying around, both in and beyond the light of the floodlamps. MICHAEL P. WALTERS

74 Grange Road, Ealing, London W5

When we published Mr Felton's note, we stated that we considered this nocturnal behaviour likely to be widespread where conditions were right. The above two notes provided further evidence of this and we now regard the subject as closed. EDS

Early breeding of Swallows in south-west Spain The reports of juvenile Swallows *Hirundo rustica* in Jersey and Yorkshire on 17th May 1969 (*Brit. Birds,* 62: 282-284), and the editorial comment that it seemed most likely that these had been reared in the Mediterranean area, prompt me to record an exceptionally early nesting in the Coto Doñana, south-west Spain, three years earlier. On 11th April 1966, in the courtyard of the Palacio de Doñana, I ringed a brood of five Swallows which were almost fully developed and would certainly have flown within the next week. Nest-building must have started no later than the beginning of March, and laying by the end of the first week of that month. Heinz Hafner, a Swiss ornithologist who had spent the previous winter in the Coto Doñana, had seen a few Swallows intermittently throughout that time, and presemably it was two of these wintering birds which produced this early brood. Migrant Swallows which had arrived in the vicinity during March had apparently not yet started to breed when I left the area on 13th April, beyond the usual chasing, singing and visiting suitable nest sites. PETER DAVIS

Ty Coed, Tregaron, Cardiganshire

We have tried to ascertain when Swallows normally start breeding in southern Spain, but our only information (*per* F. G. H. Allen) is that at a house near La Linea, where there are a number of pairs each year, the earliest recorded date for them to be 'back at their nests' is 17th January. This suggests that Mr Davis's record (eggs laid by the end of the first week of March) may not be so exceptional. EDS

Reviews

Handbuch der Vögel Mitteleuropas. Vols 2 and 3. Anseriformes. Edited by K. M. Bauer and U. N. Glutz von Blotzheim. Akademische Verlagsgesellschaft, Frankfurt am Main. Vol 2 (1968): 535 pages; 5 colour plates; 76 text-figures and maps. Vol 3 (1969): 504 pages; 1 colour plate; 78 text-figures and maps. DM 48.50 each.

In his review of the first volume (*Brit. Birds,* 59: 310-312), E. M. Nicholson described the origins and aims of this major work, as well as its distinctive features. The second and third volumes are devoted to 42 species of swans, geese and ducks that happen to have occurred in the eight countries of 'middle Europe' (the Netherlands, Belgium, Luxembourg, Germany, Switzerland, Austria, Czechoslovakia and Hungary). Because of the exceptional thoroughness, clarity and accuracy of the text, these volumes also form by far the most useful book yet written on the wildfowl of Europe. They should become, and for a long time remain, an indispensable guide to what is known about the best-known wildfowl of the world. Those species occurring only as the result of introductions are dealt with relatively briefly. Otherwise the length of each account depends nearly as much on what is known of the species as on its status in Europe. North American and Russian publications, as well as those from all Europe, have been carefully noticed and summarised. British ornithologists should be pleased to find how large a contribution we have made to the general knowledge of wildfowl, while noting how rapidly the share of workers elsewhere has increased in the last few years.

The original decision that the book should not contain coloured illustrations has been modified to the extent of including five plates of the heads of geese in volume 2. Pleasant though these are, they confirm that a full set of illustrations was unnecessary. The chosen alternative of providing references to published photographs is a commendable one. The figures and the maps are well-drawn and informative, though they are reproduced at a scale demanding keen eyesight.

The very high quality of this work encourages questions and reflections. Presumably the primary function of a regional handbook is to give a reliable account of the present status of the species occurring there, with more or less historical detail. Should it also attempt to deal with the causes of change? Could that be done, given the patchy information about numbers and distribution that is available for even the best-known species? Might it not be more useful, because more provocative, to give space to speculations on factors affecting abundance than to meticulous repetition of historical records?

Who uses plumage descriptions, and for what purposes? If I am given a Greylag Goose shot in Kent, can this book, or any other, enable me to decide from its appearance how old the bird was and whether it was most likely to have been bred locally, from the stock released near Sevenoaks, or to have come from Iceland, or Denmark, or Austria? In such a case I would still turn to E. L. Schiøler's *Danmarks Fugle* (vol I, 1925), because he described particular specimens of known provenance, rather than giving only a generalised account derived from a sample of unspecified composition. But I doubt if a satisfactory answer could at present be given, while refusing to believe that none is possible. We badly need a genius able to devise means of classifying birds on the basis of their superficial appearance to a much greater degree of refinement than is now practicable. In North America there is already a major practical application, in setting hunting regulations, for the technique of telling the species, sex and age of a duck from the appearance of a severed wing. It would be very much better to be able to do that, and to tell where the bird came from, on the basis of a few feathers.

In the sections on linear measurements and weights, substantial advances have been made on the barbaric practice of merely recording the range in size of a few skins. But the editors have contented themselves with assembling data from various sources, without attempting to consolidate them or to indicate where reported differences are likely to reflect biological variations rather than technical ones. In the future more attention will be given to large samples of live birds, as well as to such matters as the effects of age on wing-length and of deep-freezing on the size of specimens.

The accounts of behaviour are lengthy abstracts or paraphrases of published papers, usually illustrated by the original line drawings. These form a very convenient crib for German-reading students (though non-German readers probably need it rather more) to set alongside Dr P. A. Johnsgard's well-known *Handbook of Waterfowl Behaviour* (1965).

A comparison with volume 3 of *The Handbook of British Birds* shows how many details of the general biology of wildfowl have been added, or corrected, in the 30 years since *The Handbook* first appeared. If the new book were in English, it would set off a whole new generation of writers of notes for *British Birds*. Unfortunately, it is unlikely that an English translation of the *Handbuch* will be commercially attractive, supposing that further volumes of the *Handbook of North American Birds* will eventually appear and that the projected *Birds of the Western Palearctic* is making satisfactory progress. A book in the hand is worth two in the air, however, and ornithologists are deeply indebted to Dr Bauer and Dr Glutz for these further instalments of a work that, above all, stimulates our curiosity. HUGH BOYD

News and comment *Robert Hudson*

Concern over environmental pollution While few (if any) scientists would go along with the warning given on 21st October by Daniel Moynihan, adviser on suburban affairs to President Nixon, that vertebrate life on this planet could become difficult or even impossible in the 1980's, nevertheless thinking chemists and biologists are disturbed by the increasing ecological imbalance created by developed countries. The use of toxic chemicals in agriculture should be considered in the wider context of pollution of essential water supplies. Monoculture and hedgerow removal may not prove so traumatic as the reckless usage of artificial nitrate fertilisers. A combination of increasing carbon dioxide in the atmosphere and accumulating effects of man-made heat may lead to future warming of the planet, resulting in melting of the polar ice-caps with subsequent raising of sea levels and drowning of population centres and food-growing regions. These would be very long-term effects, but corrective measures ought to begin now. In the absence of proper concern for the quality of our environment and the wise husbandry of our natural resources, 'progress' may well defeat its own purpose and spell disaster for future generations. One hopes that these matters will be discussed at governmental level during European Conservation Year 1970. This paragraph cannot do justice to the complexity and seriousness of the likely side-effects of agricultural and industrial technologies progressing in defiance of basic ecological factors. Dr Frank Fraser Darling has been discussing these wider aspects of pollution problems in the 1969 Reith Lectures on the B.B.C. 4th Programme. Let us hope that his words will be heeded.

Fair Isle Bird Observatory 'News and comment' for June reported the projected building of new observatory accommodation on Fair Isle. This work has been accomplished with commendable speed, and the new Bird Observatory was officially opened by the Rt Hon. The Earl of Wemyss and March, President of the National Trust for Scotland, on 18th October. The new and spacious buildings are constructed of prefabricated cedar on laminated frames, with double-glazed picture windows, electricity and central heating; and the whole has an attractive appearance. Accommodation charges range from 30 shillings per day for dormitory to 45 shillings per day for single rooms; these prices are inclusive of all meals. Fair Isle Bird Observatory is now 21 years old; with its fine new headquarters the observatory has truly 'come of age'.

Natural History Museum Trustees Dr J. E. Smith, Director of the Marine Biological Association Laboratory, Plymouth, has been elected Chairman of Trustees of the British Museum (Natural History), in succession to Sir A. Landsborough Thomson; the latter has been co-opted as a Trustee for a further term of two years. To ornithologists, this is an important period in the administration of the Natural History Museum, for work is about to start on a new building at Tring which, it is intended, will ultimately house the Bird Room and its collections.

Death of G. P. Dementiev On 14th April 1969 there passed away, aged 71, one of the best-known of Soviet ornithologists and conservationists—Professor Dr G. P. Dementiev. As Director of the Ornithological Laboratory of Moscow State University, he built up the ornithological collections of the University's Zoological Museum to one of the largest in the world. Among Russian honours he was elected President of the Commission for the Protection of Nature of the U.S.S.R. Academy of Sciences. He was an honorary member of ten foreign ornithological societies, a member of the Executive Board of the International Union for the Conservation

of Nature, and recipient of the international Grand Gold Medal of Geoffroy St Hilaire. Professor Dementiev was the author of and contributor to over 400 biological publications, of which the best known to westerners is the encyclopaedic six-volume *Birds of the Soviet Union* (now being translated into English), of which he was senior editor. His lamented death leaves a gap in Soviet ornithology which it will be difficult to fill.

Turkish Bird Report The Ornithological Society of Turkey was formed in 1968 (see 'News and comment', August 1968). Now hopes that its members would produce a useful English-language summary of observations have been fulfilled with the appearance of their *Bird Report, 1966-1967.* This ample publication (169 pages) consists of a detailed systematic list enumerating all species recorded during these two years, the observations being subdivided according to regions (e.g. Black Sea coastlands, Thrace, Central Plateau, Eastern Turkey). The majority of species are familiar to west Europeans, of course, but one's mouth waters to read of Pygmy Cormorant (breeding in substantial numbers in places), Ruddy Shelduck (winter flocks of up to 300), Short-toed Eagle (the commonest eagle), Caspian Snowcock (recorded on the summits of three mountains), Syrian Woodpecker (the commonest of the family), White-throated Robin (southern coastlands only), and Crimson-winged Finch (not uncommon). This excellent publication is available for a mere 12s 6d from Richard Porter, Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire.

Recent reports

J. T. R. Sharrock and I. J. Ferguson-Lees

These are largely unchecked reports, not authenticated records

This report summarises the records for July 1969 and, unless otherwise stated, all dates refer to that month.

AMERICAN VAGRANTS

Three Nearctic birds may have been early transatlantic vagrants or a reflection of the phenomenal numbers which came over in the autumn of 1968. The first was an **American Wigeon** *Anas americana* at Loch Ashie (Inverness-shire) on 8th. This was followed by two waders, a **Pectoral Sandpiper** *Calidris melanotos* at Wisbech sewage-farm (Norfolk/Lincolnshire) on 9th and then a **Stilt Sandpiper** *Micropalama himantopus* at Minsmere (Suffolk) on 27th-29th.

SHEARWATERS, SKUAS, GULLS AND TERNS

Among the rarer shearwaters reported were a **Great Shearwater** *Puffinus gravis* in the Irish Sea (seen from the ferry) on 3rd; a **Sooty Shearwater** *P. griseus* off Braunton (Devon) on 20th; a **Cory's Shearwater** *Calonectris diomedea* off Cape Clear Island (Co. Cork) on 22nd and two off Bundoran Shore (Co. Donegal) on 28th; and a **Balearic Shearwater** *P. puffinus mauretanicus* off Bardsey Island (Caernarvonshire) on 23rd followed by two on 26th. There was also a **Manx Shearwater** *P. p. puffinus* inland at Calf Heath Pool (Staffordshire) on 21st, while a record of 330 Manx Shearwaters moving south off Hartlepool (Co. Durham) on 26th was made even more interesting by eight **Pomarine Skuas** *Stercorarius pomarinus* and two adult **Long-tailed Skuas** *S. longicaudus.*

Early **Glaucous Gulls** *Larus hyperboreus* included one at Lytham (Lancashire) from 19th onwards and one at Donna Nook (Lincolnshire) on 22nd. The first six **Medi-**

terranean Gulls *L. melanocephalus* of the autumn were single birds between Freshfield and Formby (Lancashire) during 6th-12th, at Dungeness (Kent) on 15th and 18th-20th, at Donna Nook on 20th, at Huttoft (also Lincolnshire) on 26th and at Minsmere on 30th. Three rare terns were a **Gull-billed Tern** *Gelochelidon nilotica* at Ballyconneely Bay (Co. Galway) on 1st—only the second Irish record—a **White-winged Black Tern** *Chlidonias leucopterus* at Alvecote Pools (Warwickshire) on 12th and a **Caspian Tern** *Hydroprogne tschegrava* at Sandwich Bay (Kent) on 27th.

SPOONBILLS, RAPTORS AND WADERS

Spoonbills *Platalea leucorodia* were reported at four localities: one at Minsmere for most of the month, with a second on two days; two at Southwold (Suffolk) on 7th, one staying until 10th; three on the Isle of Sheppey (Kent) during the first fortnight; and one at Rainham (Kent) on 28th. The only notable raptors were **Ospreys** *Pandion haliaetus* at Minsmere on 2nd and 26th, and an immature male **Red-footed Falcon** *Falco vespertinus* at Gibraltar Point (Lincolnshire) from 25th to 5th August.

By mid-July the first northern waders were beginning to move south and scarcer species included **Red-necked Phalaropes** *Phalaropus lobatus* at Huttoft in mid-month and at Minsmere on 28th-31st (with a second on the last two days) and **Temminck's Stints** *Calidris temminckii* at Wisbech on 23rd-24th and Minsmere on 27th-31st. The only July reports of **Curlew Sandpipers** *C. ferruginea,* forerunners of the immense passage to follow in late August and September, were one or two at Minsmere during 16th-27th and then five to seven there until the end of the month; one at the Wicks and Midrips (Kent/Sussex) on 26th; and one at Sandwich Bay on 29th. Up to six **Avocets** *Avosetta recurvirostra* were seen at various East Anglian and Kentish localities from 11th onwards, but more unusual were single ones at Upton Warren (Worcestershire) for several days up to 29th—only the second record for that county—and at Steart (Somerset) on 31st. The only other southern waders were two **Kentish Plovers** *Charadrius alexandrinus* at Minsmere on 29th-30th and one on 31st.

NEAR-PASSERINES AND PASSERINES

It was a very quiet period for scarce landbirds. The highlight was a party of three **Bee-eaters** *Merops apiaster* at Fair Isle (Shetland) on 7th-9th and then at Weisdale (Shetland) on 9th-12th. A **Rose-coloured Starling** *Sturnus roseus* was seen at Bishops Stortford (Hertfordshire) in the last week of the month. Lastly, two **Serins** *Serinus serinus* were present all month at Orlestone (Kent) and one at Roborough (Devon) on 12th.

Requests for information

Unusual mortality of waterfowl In the late summer of 1969, unusual numbers of dead and dying birds (mainly ducks, but including Coots *Fulica atra,* Moorhens *Gallinula chloropus* and some passerines) were reported from several inland waters in south-east England. Details of any such cases of abnormal mortality on inland waters in 1969 (dates, numbers, species, and whether any cause suspected or ascertained) are urgently needed by **Stanley Cramp, 32 Queen Court, London WC1.**

Direct effects of rain on birds Information is required for a survey of the direct effects of rain on birds, particularly field observations of behavioural responses to rain (other than rainbathing), wetting by rain, associated mortality, inhibition of flight, avoidance of rain, and sheltering of young. Please send relevant observations to **R. J. Kennedy, Department of Zoology, University of Newcastle upon Tyne NE1 7RU.**

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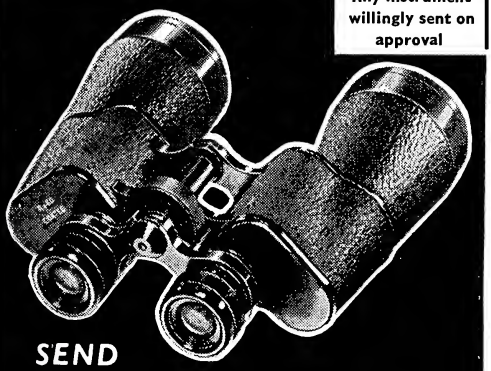

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Assistant Warden required for Calf of Man Bird Observatory from March to mid-October 1970. Ringing permit and some experience of mist-netting desirable. Wage £6 10s per week plus accommodation. Details from Manx Museum & National Trust, Douglas, Isle of Man.

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British Birds

Report on bird-ringing for 1968*

Robert Spencer

Like its predecessors, this report consists of two main sections: a table of birds ringed and a list of recoveries. Even though they are highly selective (and in this report more so than ever), the recoveries occupy rather more than three-quarters of the length of the report and represent the main work load of the administrative staff. The tables, on the other hand, are comprehensive and include, so far as human care allows, absolutely every bird ringed during the year. Precisely because of this comprehensiveness they probably are, to the non-specialist, no more readable than those balance sheets which most of us neglect in favour of the Treasurer's or Chairman's statement. This is a pity, for whereas the list of recoveries reflects the year's work of the staff (disregarding, for this purpose, the fundamental contribution of the public who report these recoveries), the special function of the tables is to summarize the work of the 1,300 ringers.

A glance at table 1 reveals that 593,917 birds were ringed during the year—a figure which obviously requires evaluation. It is, for example, slightly higher than the total ringed in 1967, but includes rather fewer nestlings. Of the 247 species comprising it, the individual totals of 69 were ten or less while, at the other end of the scale, those of 32 exceeded 5,000.

Table 1 also shows that over 484,137 birds were ringed when fully grown and, although no figures are available concerning the method of capture, it is reasonable to guess that at least three-quarters of them were mist-netted. Indeed, there can be no doubt that the mist-net, more than any other factor, has been responsible for the big expansion of ringing in Britain and Ireland during the last 15 years, enabling

*This is the thirty-second report issued on behalf of the Ringing and Migration Committee and is a publication of the British Trust for Ornithology. For the thirty-first report, see *Brit. Birds*, 61: 477-523.

ringers to catch on a worthwhile scale species which they could scarcely have hoped to handle before its advent. Nevertheless, it would be quite wrong to convey the impression that it is an effortless wonder-worker, and an educated guess based on the personal experience and observations of staff members suggests that the country-wide average of birds ringed per hour of ringer-effort may be as low as one, and rarely exceeds ten. Considered in the light of these estimates, the total of 484,137 full-grown birds caught and ringed in the year acquires an additional significance as hours expended. Even if the much higher catching rate of ten per hour is accepted, a decimal point introduced before the final nought still leaves a figure representating a prodigious effort on the part of the ringers.

It might be asked whether the results justify the expenditure of all this effort, and any fair answer to this question must depend on how widely or narrowly one interprets the word 'results'. Certainly, if the only successful outcome recognised is a recovery, then the ringing of certain species may well be of somewhat limited value. In the early days of ringing, and indeed as recently as 15 years ago, much of the ringing in this country was what is now somewhat derisively termed 'ring and fling': the essence of the operation was to get a ring on the bird and then to move on to the next one, the only possible 'result' of such activity being a recovery. To-day a ringer returning to the work after an absence of 20 years would at once be struck by the great diversity of ancillary studies based on the bird in the hand. For example, a major effort is directed towards discovering methods of sexing and ageing such seemingly monomorphic species as the Song Thrush and the Robin. Other valuable fields of enquiry include the growth of wing-length with age, diurnal and seasonal variation in weights, and the timing and sequence of moults. Thus, in some ways, a bird retrapped several times during the course of its life in a suburban garden, may yield information quite as valuable (if less dramatic) than a migrant recovered in the antipodes.

Furthermore, increasing use is being made of ringing and recovery figures as a means of monitoring populations of common birds. The number of individuals of any particular species ringed differs from year to year. If one can assess, and make adjustment to allow for, the annual variation of human endeavour, the remaining fluctuations in numbers ringed may reflect population vicissitudes. A member of the Trust staff, H. B. Ginn, has been studying this problem and his find-

	1961	1962	1963	1964	1965	1966	1967	1968
Lapwing	2,552	2,592	1,253	1,438,	1,258	1,841	1,777	2,256
Wren	2,103	1,920	707	1,599	2,683	4,130	6,216	6,007
Song Thrush	10,861	11,269	8,121	9,430	11,131	11,890	13,120	14,149

ings have appeared in *Bird Study,* 16: 210-248. In its present stage of development, this type of analysis is primarily a tool for local application, but its operation, however crudely, at a national level may be seen in the small table at the foot of the preceding page. This sets out the numbers ringed of three species—Lapwing *Vanellus vanellus*, Wren *Troglodytes troglodytes* and Song Thrush *Turdus philomelos*—in the years before and after the exceptionally severe winter of 1962/63.

It is, perhaps, worth commenting that hours in the field are followed by hours devoted to paperwork of ever-increasing complexity. For example, a large-scale ringer studying weight and moult may spend several hours each week copying out and classifying his data.

Another major change which the ringer from 20 years ago would notice is the great increase of corporate ringing. Doubtless this partly springs from purely social reasons: if one is to spend a whole day ringing, it is pleasant to have company. Partly, however, it is a matter of necessity. For example, table 2 shows that 9,709 Knots *Calidris canutus* and 1,204 Sanderlings *C. alba* were ringed in 1968, compared with grand totals for the previous 58 years of only 6,572 and 812 respectively. These massive totals in one year are made possible only by co-operative effort. Over £300 worth of electrically controlled cannon-netting equipment may be assembled for a single catching operation—an expenditure far beyond the means of an individual ringer. But it is not just a matter of money, for the sum involved is well within the research budget of a university: the fundamental problem is one of man-power. Sophisticated equipment of this type may require many days of careful reconnaissance to find a suitable site, and several hours to install it, but may then lead to the capture of a thousand or more birds at a press of a button. To deal swiftly and safely with such a sudden intake of birds, it is necessary to assemble a well-drilled crew of perhaps 20 ringers, each knowing precisely his role in the complex operation set in motion by the sweep of the net through the air. No institute can afford man-power and vehicles on this scale, and so recent years have seen the emergence of the specialised ringing group whose members are at one and the same time skilled specialists in a disciplined field team and shareholders in a syndicate. This is, indeed, a far cry from the 'Potter' or 'Government Sparrow' traps at the bottom of the garden which were the stock-in-trade of our ringer of 20 years ago and which, incidentally, still have a valuable role to play.

At intervals over the years two types of natural disaster, fierce storms and arctic winter conditions, have killed large numbers of birds and so brought about sudden increases in the number of recoveries. To these two regular causes of death, 1968 added a new and macabre third, an abnormal concentration of minute marine organisms known as dinoflagellates which emit a lethal neurotoxin.

Their presence in phenomenal numbers in the waters off the Northumbrian coast led first to the poisoning of fish and in turn to the mass death of the seabirds which feed upon fish (*Brit. Birds,* 61: 381-404). Most seriously affected were the rich seabird colonies of the Farne Islands where intensive ringing studies have been carried out for many years and their deaths are reflected twice in this report: in the increased number of recoveries of certain species and also in the subsequently reduced ringing totals.

Even the second section of table 2, which by definition deals with seldom-ringed species, is in part a record of current ornithological history. The Collared Dove *Streptopelia decaocto,* for example, first appeared there twelve years ago. In the brief period of eight years it moved swiftly into the first section of the table, where it can now be seen that no fewer than 563 were ringed in 1968 alone. Although on a much smaller scale, there is evidence that Cetti's Warbler *Cettia cetti* is similarly extending its range year by year and the three ringed in 1968 doubled the national total. A more spectacular event of the year was the great invasion from eastern Europe of Nutcrackers *Nucifraga caryocatactes* and nine were ringed compared with one in the entire previous history of British ringing. Autumn also saw the largest recorded influx of the rare Pallas's Warbler *Phylloscopus proregulus,* a Siberian species which normally winters in south-east Asia. The fact that no fewer than ten were ringed is an indication of the numbers which must have reached our shores.

Before leaving the tables we may note that three more species—Scaup *Aythya marila,* Crested Tit *Parus cristatus* and Bewick's Swan *Cygnus bewickii*—have achieved the respectability of a 'century' and have accordingly been promoted to the first section of table 2. Of the four species added to the national ringing list in 1968, the Little Crake *Porzana parva* and the Roller *Coracias garrulus* were the result of private enterprise by ringers; while the Spectacled Warbler *Sylvia conspicillata* (the first record for Britain or Ireland) was captured at Spurn Bird Observatory, and the Blackpoll Warbler *Dendroica striata,* (only the second British record by a mere ten days, but familiar by name to many British ornithologists as the subject of outstanding recent American migration studies) was caught at Bardsey Bird Observatory.

The number of recoveries handled during the year was higher than ever before. It should be placed on record, however, that the figure was inflated by several hundred birds *reported* in 1967, but unavoidably held over until the year under review because, perhaps paradoxically, the staff was unable to process them in the first critical year of introducing Automatic Data Processing methods!

The system of using ordinal numbers to draw attention to the significance of foreign recoveries, first introduced two years ago, is

continued unchanged in this report with the ceiling at the 20th recovery and, although in the fullness of time such figures must gradually disappear from the pages as one species after another reaches the critical level, there is not the slightest sign of this happening yet: the pages of the recovery section are as liberally as ever sprinkled with firsts, seconds and thirds. One does not have to seek far, for the list opens with a Red-throated Diver *Gavia stellata* in France (1st), a Storm Petrel *Hydrobates pelagicus* in the Faeroe Islands (2nd) and a Manx Shearwater *Puffinus puffinus* in the West Indies (1st). The great majority of our duck recoveries tend to come from northern Europe, eastwards to Siberia, but there are several southerly journeys to be found in this report including a Teal *Anas crecca* in Morocco, a Gadwall *A. strepera* in Spain and a Pochard *Aythya ferina* in Portugal. The recovery of a second Scottish Osprey *Pandion haliaetus* in Spain means that at least two out of the first seven birds of this species ringed, far from contributing to the tiny breeding strength, failed to survive even their first autumn migration. We must hope that those *not* reported still survive and that they will eventually find Scottish mates.

Amongst the waders, particularly interesting recoveries are a Golden Plover *Pluvialis apricaria* in Italy, a Turnstone *Arenaria interpres* on the Greenland ice-cap (all previous recoveries in Greenland, regardless of species, have been on the narrow coastal fringe), a Jack Snipe *Lymnocryptes minimus* in Spain, a Whimbrel *Numenius phaeopus* in the U.S.S.R., a Spotted Redshank *Tringa erythropus* in Malta, a Curlew Sandpiper *Calidris ferruginea* in Tunisia, and a Sanderling in Ghana.

A Common Tern *Sterna hirundo* provided the third ever recovery of a British-ringed bird in Australia, the two previous records being a Manx Shearwater and an Arctic Tern *S. paradisaea*. As chicks of Common and Arctic Terns are notoriously difficult to separate (there are many who insist that this cannot be done reliably), it is fortunate that the bird was ringed as an adult, for it is the Arctic Tern which has acquired the reputation of being a wanderer of the southern oceans. Had the bird in question been ringed as a chick, there must always have been a lingering doubt that it had been correctly identified.

Amongst the most regular visitors to the southern hemisphere is the Swallow *Hirundo rustica,* and each year evidence continues to accumulate that this species and the Sand Martin *Riparia riparia,* on return passage northwards in spring, may follow a much more easterly route than in autumn. Details are published in this report of one individual of each being recovered as far east as Tunisia. A further three recoveries of Redwings *Turdus iliacus* in Georgia bring the total of this species from that part of the U.S.S.R. to eight, while an additional recovery in the Lebanon further emphasises this south-easterly sector of the bird's range. On the other hand, the recovery of a British-ringed Song

Thrush in Italy is without precedent; and it is surely remarkable that an adult female Blackbird *T. merula* ringed in mid-May (and presumably therefore British in origin) should subsequently be reported from northern Spain.

As we have come to expect, the typical night-flying summer visitors—chats, warblers and flycatchers—have produced a rich collection of recoveries both in this country and abroad, but, while each without question qualifies for its place in this highly selective list, few have that novelty value which claims special attention. This is perhaps least true of the Lesser Whitethroats *Sylvia curruca* recovered in Greece and Cyprus, and of the Bluethroat *Luscinia svecica* retrapped at Slapton Ley two years, to within a week, after its original capture there in September 1966.

A cause for concern is the dearth of recoveries from Portugal. Although most marked in the case of the Whitethroat, this unhappily applies to nearly all species. In the last four years the numbers of recoveries from Portugal of some 50 common species has fallen steadily from an all-time peak of 139 in 1965 to 109 in 1966, 94 in 1967 and now 56 in 1968. It is difficult not to associate this serious decline with the retirement of G. M. Tait, who for more than a quarter of a century devoted his leisure hours to tracking down recoveries in Portugal and urging the Portuguese people by means of numerous press articles to co-operate by reporting their finds. It is greatly to be hoped that someone in Portugal will take up the concern, for science can ill afford to lose recoveries in this way.

Of the seed-eating species which occupy most of the remaining pages of the report, there can be no question that the most unexpected and interesting recovery is that of a Twite *Acanthis flavirostris* ringed as a nestling in Derbyshire and subsequently reported from northern Italy. The greater part of the world's Twites are to be found in the cold steppe and mountain region of central Asia, with a smaller, possibly relict, population in the extreme north-west of Europe. From time to time the species has been suspected of breeding also in the Alpine massif of Europe and the particular interest of the present recovery is that it reveals the possibility of colonisation of that area by the north-western population.

Lastly, we sadly record the death in May 1968 of Miss Elsie P. Leach who for many years was responsible for the day-to-day administration of the British ringing scheme and who was co-author of numerous reports in this series (a full appreciation of her work appeared in *Brit. Birds,* 61: 554-555).

COMMITTEE

The members of the Ringing and Migration Committee on 31st December 1968 were Dr C. M. Perrins (Chairman), A. Anderson, Dr J. S.

Ash, P. Hope Jones, J. R. Mather, J. M. McMeeking, M. A. Ogilvie, R. E. Scott and Dr A. B. Watson, with Dr D. W. Snow (representing the Trustees of the British Museum), I. J. Ferguson-Lees, Dr J. J. M. Flegg and D. R. Wilson (*ex officiis*) and Robert Spencer (Secretary).

FINANCE

The work of the ringing scheme is financed partly by the Nature Conservancy, an annual grant being received to cover the salaries of half the staff, and partly from the proceeds of the sale of rings and other equipment and from revenue derived from ringing permits. The Wildfowl Trust obtained their rings at cost price, but made a contribution of £75 towards the costs of administration. The publishers of *British Birds* made their annual grant of £25. Accommodation and certain services are provided by the British Trust for Ornithology, who make good any deficit in the direct income of the scheme. Income and expenditure are incorporated in the accounts of the Trust, published in its Annual Report.

In May 1968 a Visiting Group from the Natural Environment Research Council (of which the Nature Conservatory is a constituent body) inspected the work of the ringing scheme as part of a programme of visits to all such grant-aided bodies. We are gratified to report that the group was favourably impressed by its visit and accordingly recommended that from April 1970 the financial support to ringing from N.E.R.C. should be put on a contractual basis, and should operate, subject to review, for a period of ten years. The proposed new financial arrangements will not permit any expansion of the work, but will provide a greater measure of financial security than has been possible before and will ensure that the existing programme is more adequately financed.

STAFF

Robert Spencer, Robert Hudson, C. J. Mead, R. C. Faulkner, J. N. Dymond, Mrs M. Benson, Miss S. Dell and Mrs J. Warren.

ACKNOWLEDGEMENTS

Grateful acknowledgement is made to the Nature Conservancy for their generous grant towards the salaries of the headquarters staff, and to H. F. & G. Witherby Ltd and the Wildfowl Trust for their continued financial support. We are indebted to the Trustees of the British Museum for permitting us to use the address of the Natural History Museum on our rings, and to the staff there for forwarding our mail and dealing with enquiries. Our especial thanks go to our friends at the Biological Records Centre of the Nature Conservancy who, month in, month out, turn our coded data into punched cards suitable for analysis and then manipulate the cards in order to answer our

questions. J. N. Dymond, Miss Josephine Hamming and D. J. Onley compiled some of the species summary tables in this report and R. C. Faulkner prepared and drew all the maps.

PUBLICATIONS

The following papers, based wholly or partially on the results of British ringing, have been published:

COULSON, J. C. and BRAZENDALE, M. G. 1968. 'Movements of Cormorants ringed in the British Isles and evidence of colony-specific dispersal'. *Brit. Birds,* 61: 1-21.

———, POTTS, G. R., DEANS, I. R., and FRASER, S. M. 1968. 'Exceptional mortality of Shags and other seabirds caused by paralytic shellfish poison'. *Brit. Birds,* 61: 381-404.

EVANS, P. R. 1966. 'Wader migration in north-east England'. *Trans. Nat. Hist. Soc. Northumberland, Durham and Newcastle upon Tyne,* 16: 126-151.

FLEGG, J. J. M., MUSSON, D. F., and COX, C. J. 1966. 'A ten year study of the Black-headed Gull in Kent'. *Kent Bird Report,* 14: 72-82.

HUDSON, R. 1968. 'The Great Skua in the Caribbean'. *Bird Study,* 15: 33-34.

MEAD, C. J. 1968. 'Birds as vectors of the foot-and-mouth virus'. In POOL, W. A. (ed.), *The Veterinary Annual.* Bristol. pp. 70-75.

———, FLEGG, J. J. M., and COX, C. J. 1968. 'A factor inhibiting subspecific differentiation in the Lapwing'. *Bird Study,* 15: 105-106.

MINTON, C. D. T. 1968. 'Pairing and breeding of Mute Swans'. *Wildfowl,* 19: 41-60.

MURTON, R. K. 1968. 'Breeding, migration and survival of Turtle Doves'. *Brit. Birds,* 61: 193-212.

POST, P. W. 1967. 'Manx, Audubon's and Little Shearwaters in the northwestern North Atlantic'. *Bird Banding,* 38: 278-305.

SNOW, D. W. 1968. 'Movements and mortality of British Kestrels (*Falco tinnunculus*)'. *Bird Study,* 15: 65-83.

——— 1968. 'Birds and the 1967-68 foot-and-mouth epidemic'. *Bird Study,* 15: 184-190.

Table 1. Numbers of birds ringed and recovered

A pullus is a nestling or chick not yet flying (page 406)

	RINGED			RECOVERED
	Juv/Adult	Pullus	Total	Total
1968	484,137	109,780	593,917	14,813
1967	463,144	111,185	574,329	12,428
1966	451,626	100,611	552,237	13,408
1965	427,051	91,689	518,740	14,182
1964	372,537	76,700	449,237	12,665
1963	355,007	80,918	435,925	14,397
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
GRAND TOTALS 1909-68			6,383,935	171,520

Table 2. Ringing and recovery totals to 31st December 1968

Section 1. Species of which more than 100 have been ringed

	RINGED				RECOVERED	
	Juv/Adult	Pullus	1968 total	Grand total	1968	Grand total
Little Grebe	65	—	65	377	1	16
Leach's Petrel	460	—	460	1,489	11	19
Storm Petrel	9,897	55	9,952	38,586	66	161
Manx Shearwater	936	8,644	9,580	166,533	73	2,266
Fulmar	417	1,121	1,538	15,703	18	191
Gannet	23	2,191	2,214	32,681	91	1,727
Cormorant	4	1,954	1,958	13,376	236	2,603
Shag	107	2,656	2,763	33,213	303	2,727
Heron	2	379	381	5,895	50	928
Mallard	5,373	511	5,884	69,315	1,164	11,558
Teal	2,230	8	2,238	47,465	350	8,692
Garganey	15	—	15	323	2	48
Gadwall	34	12	46	348	7	59
Wigeon	413	—	413	3,384	40	603
Pintail	373	—	373	1,759	41	256
Shoveler	34	11	45	993	10	230
Scaup*	16	—	16	101	3	21
Tufted Duck	637	33	670	2,529	75	398
Pochard	41	—	41	454	11	81
Eider	393	702	1,095	7,606	115	575
Shelduck	107	124	231	2,515	15	161
Grey Lag Goose	48	99	147	1,757	28	354
White-fronted Goose	—	—	—	582	4	186
Pink-footed Goose	1	—	1	11,825	45	3,222
Barnacle Goose	1	—	1	408	6	62
Canada Goose	1,330	264	1,594	4,566	271	620
Mute Swan	1,267	247	1,514	19,049	681	5,855
Bewick's Swan*	47	—	47	108	4	8
Buzzard	1	77	78	1,348	5	77
Sparrowhawk	29	96	125	1,810	5	241
Marsh Harrier	—	—	—	127	—	15
Hen Harrier	19	84	103	1,078	10	108
Montagu's Harrier	—	—	—	280	—	39
Peregrine	—	18	18	230	—	24
Merlin	9	43	52	1,004	1	125
Kestrel	80	565	645	5,584	71	681
Red Grouse	—	—	—	1,538	—	176
Black Grouse	—	—	—	104	1	11
Red-legged Partridge	3	—	3	123	—	20
Partridge	22	—	22	362	1	22
Water Rail	126	—	126	1,205	5	37
Corncrake	5	—	5	772	—	12
Moorhen	662	34	696	10,275	44	479
Coot	315	10	325	3,330	18	352
Oystercatcher	4,902	340	5,242	25,814	162	1,389
Lapwing	136	2,120	2,256	87,349	37	1,937
Ringed Plover	301	166	467	7,848	8	147
Little Ringed Plover	23	29	52	807	—	18
Grey Plover	183	—	183	1,094	4	24
Golden Plover	21	32	53	1,034	1	35
Turnstone	533	—	533	2,558	7	36
Snipe	752	20	772	10,575	34	580
Jack Snipe	47	—	47	840	1	35
Woodcock	20	12	32	5,957	2	468

*Newly promoted from section 2

	RINGED				RECOVERED	
	Juv/Adult	Pullus	1968 total	Grand total	1968	Grand total
Curlew	534	105	639	9,921	31	500
Whimbrel	41	—	41	218	1	5
Bar-tailed Godwit	125	—	125	459	1	13
Green Sandpiper	45	—	45	429	1	13
Wood Sandpiper	14	1	15	229	—	1
Common Sandpiper	379	35	414	7,211	5	76
Redshank	1,375	141	1,516	14,221	36	467
Spotted Redshank	6	—	6	136	1	7
Greenshank	37	4	41	390	—	10
Knot	9,709	—	9,709	16,281	93	162
Purple Sandpiper	25	—	25	280	—	2
Little Stint	3	—	3	536	—	12
Dunlin	9,644	10	9,654	61,583	121	756
Curlew Sandpiper	4	—	4	311	1	2
Sanderling	1,240	—	1,240	2,052	9	17
Ruff	48	—	48	1,037	1	35
Stone Curlew	—	2	2	392	—	22
Arctic Skua	2	50	52	1,765	2	53
Great Skua	—	1,093	1,093	10,358	23	231
Great Black-backed Gull	52	454	506	7,673	37	537
Lesser Black-backed Gull	67	4,141	4,208	58,723	162	2,443
Herring Gull	1,057	11,312	12,369	94,397	440	3,609
Common Gull	146	407	553	7,269	22	303
Black-headed Gull	1,038	6,708	7,746	108,640	300	4,838
Kittiwake	287	1,474	1,761	29,647	86	720
Common Tern	59	1,667	1,726	49,418	49	926
Arctic Tern	19	1,562	1,581	42,259	59	652
Roseate Tern	—	1,442	1,442	12,885	42	183
Little Tern	7	236	243	2,879	3	41
Sandwich Tern	21	3,734	3,755	67,006	160	1,451
Razorbill	759	384	1,143	18,178	26	551
Guillemot	159	232	391	12,302	24	466
Black Guillemot	25	152	177	1,339	2	15
Puffin	1,012	263	1,275	22,936	16	195
Stock Dove	22	111	133	2,729	8	199
Rock Dove	1	—	1	141	—	5
Woodpigeon	385	291	676	14,303	101	1,397
Turtle Dove	58	62	120	2,968	6	120
Collared Dove	538	25	563	1,905	25	96
Cuckoo	52	25	77	2,681	1	92
Barn Owl	15	162	177	2,035	36	325
Little Owl	32	65	97	2,291	7	203
Tawny Owl	37	193	230	3,981	15	291
Long-eared Owl	22	31	53	796	6	58
Short-eared Owl	2	13	15	560	1	47
Nightjar	4	11	15	586	1	16
Swift	6,873	107	6,980	61,970	120	1,291
Kingfisher	243	6	249	2,783	10	96
Green Woodpecker	30	—	30	833	2	45
Great Spotted Woodpecker	125	2	127	1,876	5	102
Lesser Spotted Woodpecker	19	—	19	181	—	2
Wryneck	74	—	74	944	—	13
Woodlark	1	7	8	543	—	2
Skylark	438	317	755	17,365	10	141
Swallow	27,544	10,675	38,219	398,055	388	3,392
House Martin	4,096	97	4,193	50,264	20	364
Sand Martin	64,155	41	64,196	435,424	1,506	10,462

	RINGED				RECOVERED	
	Juv/Adult	Pullus	1968 total	Grand total	1968	Grand total
Raven	1	190	191	1,725	9	173
Carrion/Hooded Crow	56	365	421	5,726	16	382
Rook	622	415	1,037	17,160	45	1,025
Jackdaw	191	173	364	13,182	36	821
Magpie	44	105	149	4,522	16	265
Jay	191	14	205	3,843	28	324
Chough	—	11	11	372	1	29
Great Tit	6,412	3,081	9,493	137,111	140	2,187
Blue Tit	21,574	5,655	27,229	308,066	367	5,111
Coal Tit	1,208	458	1,666	16,714	13	186
Crested Tit*	23	—	23	103	—	—
Marsh Tit	507	85	592	7,704	1	61
Willow Tit	866	20	886	5,572	10	34
Long-tailed Tit	2,778	8	2,786	13,696	18	132
Nuthatch	124	118	242	4,552	7	115
Treecreeper	731	56	787	5,406	10	33
Wren	5,919	88	6,007	38,906	44	252
Dipper	96	279	375	7,347	4	87
Bearded Tit	681	5	686	4,509	27	178
Mistle Thrush	609	225	834	16,720	41	591
Fieldfare	1,505	—	1,505	9,488	28	179
Song Thrush	11,188	2,961	14,149	214,507	378	6,097
Redwing	5,413	10	5,423	34,740	61	471
Ring Ouzel	148	87	235	3,053	7	55
Blackbird	37,221	4,539	41,760	471,622	1,804	17,918
Wheatear	899	154	1,053	24,887	6	134
Stonechat	250	283	533	5,686	5	45
Whinchat	468	288	756	10,711	2	50
Redstart	1,346	856	2,202	26,934	10	160
Black Redstart	61	—	61	1,003	1	22
Nightingale	105	47	152	4,522	1	21
Bluethroat	31	—	31	345	1	3
Robin	9,182	874	10,056	156,220	215	3,585
Grasshopper Warbler	357	22	379	2,610	—	5
Reed Warbler	7,382	548	7,930	38,947	101	371
Marsh Warbler	33	9	42	226	—	—
Sedge Warbler	12,110	413	12,523	68,062	52	228
Melodious Warbler	6	—	6	148	—	—
Icterine Warbler	24	—	24	219	—	2
Blackcap	4,369	163	4,532	29,311	27	150
Barred Warbler	52	—	52	431	—	—
Garden Warbler	2,210	69	2,279	17,892	2	47
Whitethroat	10,205	800	11,005	102,345	55	456
Lesser Whitethroat	1,274	33	1,307	12,016	7	65
Dartford Warbler	—	—	—	155	—	1
Willow Warbler	15,718	2,292	18,010	144,170	51	387
Chiffchaff	6,343	157	6,500	43,880	9	136
Wood Warbler	59	320	379	3,641	—	13
Yellow-browed Warbler	25	—	25	150	—	1
Goldcrest	2,674	15	2,689	21,975	11	49
Firecrest	142	—	142	609	—	1
Spotted Flycatcher	1,211	600	1,811	25,080	15	179
Pied Flycatcher	1,211	2,923	4,134	31,232	15	141
Red-breasted Flycatcher	21	—	21	231	—	—
Dunnock	13,042	943	13,985	152,573	170	1,964
Meadow Pipit	1,320	721	2,041	49,331	10	469
Tree Pipit	146	115	261	5,837	1	11

*Newly promoted from section 2

	RINGED				RECOVERED	
	Juv/Adult	Pullus	1968 total	Grand total	1968	Grand total
Rock/Water Pipit	395	46	441	11,903	6	94
Pied/White Wagtail	2,937	633	3,570	39,770	84	1,108
Grey Wagtail	226	189	415	4,609	1	40
Yellow Wagtail ssp.	2,056	150	2,206	24,702	19	224
Waxwing	9	—	9	356	—	17
Great Grey Shrike	6	—	6	122	—	3
Red-backed Shrike	31	23	54	2,925	—	23
Starling	23,211	1,045	24,256	519,190	1,049	19,908
Hawfinch	19	4	23	383	1	6
Greenfinch	27,065	534	27,599	271,017	657	5,933
Goldfinch	3,371	189	3,560	28,484	39	382
Siskin	138	—	138	2,718	5	39
Linnet	8,475	1,310	9,785	132,462	69	1,051
Twite	234	113	347	3,802	3	23
Redpoll	2,505	39	2,544	15,111	17	203
Bullfinch	4,859	182	5,041	45,209	116	973
Crossbill	1	13	14	601	—	6
Chaffinch	12,776	284	13,060	168,593	145	1,921
Brambling	2,393	—	2,393	21,255	13	138
Yellowhammer	2,482	124	2,606	33,745	21	268
Corn Bunting	185	7	192	2,091	—	24
Cirl Bunting	4	5	9	220	—	1
Reed Bunting	6,570	490	7,060	58,637	50	380
Snow Bunting	38	—	38	3,125	1	25
House Sparrow	22,505	1,137	23,642	268,806	438	4,276
Tree Sparrow	5,962	1,081	7,043	71,273	28	373

Section 2—Species of which fewer than 100 have been ringed

(1968 total, grand total, 1968 recoveries and grand total recoveries are given in that order)

Black-throated Diver	—	3	—	—	Hobby	18	92	—	6
Great Northern Diver	—	3	—	—	Red-footed Falcon	—	1	—	—
Red-throated Diver	11	41	1	4	Ptarmigan	—	3	—	—
Great Crested Grebe	4	83	2	4	Capercaillie	—	3	—	—
Red-necked Grebe	—	2	—	—	Quail	—	14	—	1
Slavonian Grebe	1	5	—	—	Pheasant	—	75	1	5
Cory's Shearwater	—	1	—	—	Spotted Crake	4	26	—	—
Wilson's Petrel	—	2	—	—	Little Crake*	1	1	—	—
Little Bittern	1	5	—	—	Kentish Plover	—	1	—	—
Bittern	5	55	—	8	Dotterel	10	63	—	1
Red-crested Pochard	—	16	—	5	Solitary Sandpiper	—	3	—	—
Mandarin Duck	—	8	—	—	Black-tailed Godwit	22	59	1	2
Goldeneye	1	36	—	7	Long-billed Dowitcher	—	1	—	—
Long-tailed Duck	—	10	—	2	Temminck's Stint	1	5	—	—
Velvet Scoter	—	4	—	1	Least Sandpiper	—	2	—	—
Common Scoter	—	18	—	3	Semipalmated Sandpiper	—	3	—	—
Red-breasted Merganser	4	29	—	2	White-rumped Sandpiper	—	6	—	—
Goosander	10	90	2	15	Pectoral Sandpiper	3	25	—	—
Smew	1	3	—	—	Stilt Sandpiper	—	1	—	—
Bean Goose	—	1	—	1	Western Sandpiper	—	1	—	—
Brent Goose	—	13	1	2	Buff-breasted Sandpiper	—	5	—	1
Whooper Swan	2	39	1	6	Avocet	—	2	—	—
Goshawk	—	1	—	—	Grey Phalarope	1	48	—	—
Kite	8	9	1	1	Red-necked Phalarope	13	41	—	—
Rough-legged Buzzard	—	1	—	—	Pomarine Skua	—	2	—	1
Golden Eagle	10	77	1	6	Glaucous Gull	2	13	—	1
Osprey	5	7	1	2	Iceland Gull	—	1	—	—

*Added to the list in 1968

Little Gull	—	8	—	1	Greenish Warbler	3	30	—	—
Sabine's Gull	—	1	—	—	Bonelli's Warbler	—	13	—	—
Black Tern	—	6	—	—	Arctic Warbler	2	20	—	—
Gull-billed Tern	—	1	—	—	Pallas's Warbler	10	18	—	—
Little Auk	1	25	—	2	Dusky Warbler	1	6	—	—
Scops Owl	1	2	—	—	Radde's Warbler	2	7	—	—
Snowy Owl	3	8	—	—	Richard's Pipit	3	14	—	—
Roller*	1	1	—	—	Tawny Pipit	1	7	—	—
Hoopoe	2	18	—	—	Olive-backed Pipit	—	2	—	—
Short-toed Lark	1	7	—	—	Pechora Pipit	—	3	—	—
Shore Lark	—	32	—	1	Red-throated Pipit	1	7	—	—
Red-rumped Swallow	—	1	—	—	Citrine Wagtail	—	4	—	—
Golden Oriole	2	9	—	—	Lesser Grey Shrike	—	7	—	2
Nutcracker	9	10	—	—	Woodchat Shrike	6	62	—	—
Brown Thrasher	—	1	—	—	Red-eyed Vireo	—	2	—	—
Black-throated Thrush	—	1	—	—	Myrtle Warbler	—	1	—	—
Dusky Thrush	—	2	—	—	Blackpoll Warbler*	1	1	—	—
American Robin	—	2	—	—	Northern Waterthrush	—	2	—	—
Siberian Thrush	—	1	—	—	Yellowthroat	—	1	—	—
Olive-backed Thrush	—	1	—	—	Bobolink	—	1	—	—
Grey-cheeked Thrush	1	4	—	1	Slate-coloured Junco	—	1	—	—
Desert Wheatear	—	2	—	—	Rose-coloured Starling	1	3	—	—
Black-eared Wheatear	—	3	—	—	Baltimore Oriole	—	5	—	—
Pied Wheatear	1	2	—	—	Summer Tanager	—	1	—	—
Thrush Nightingale	1	7	—	—	Tanager sp.	—	1	—	—
Rufous Bush Chat	—	1	—	—	Arctic Redpoll	—	4	—	—
Cetti's Warbler	3	6	—	—	Serin	—	3	—	—
River Warbler	—	1	—	—	Scarlet Grosbeak	2	46	—	—
Savi's Warbler	1	4	—	—	Rose-breasted Grosbeak	—	2	—	—
Lanceolated Warbler	—	2	—	—	Pine Grosbeak	—	1	—	—
Pallas's Grasshopper Warbler	—	1	—	—	Parrot Crossbill	—	42	—	—
Moustached Warbler	—	1	—	—	Rufous-sided Towhee	—	1	—	—
Great Reed Warbler	—	13	—	—	Black-headed Bunting	1	3	—	—
Paddyfield Warbler	—	1	—	—	Yellow-breasted Bunting	1	6	—	—
Aquatic Warbler	4	55	—	—	Ortolan Bunting	3	43	—	—
Thick-billed Warbler	—	1	—	—	Cretzschmar's Bunting	—	1	—	—
Olivaceous Warbler	1	6	—	—	Rustic Bunting	—	11	—	1
Booted Warbler	1	3	—	—	Little Bunting	1	19	—	—
Orphean Warbler	—	1	—	—	Fox Sparrow	—	1	—	—
Sardinian Warbler	1	3	—	—	White-throated Sparrow	—	3	—	—
Subalpine Warbler	2	19	—	—	Song Sparrow	—	2	—	—
Spectacled Warbler*	1	1	—	—	Lapland Bunting	3	87	—	—

*Added to the list in 1968

Selected list of recoveries reported during 1968

The following list is highly selective. To indicate the quantity and the nature of the material omitted, the total number of recoveries is stated in brackets after the scientific name of each species, followed (but not in all cases) by the minimum movement to qualify for inclusion and the longest time lapse between ringing and recovery. All foreign recoveries are either given in full or mentioned in the summaries. Species which produced only local movements—generally less than 20 miles—are left out, but the individual totals thus omitted are listed in table 2.

Ordinal numbers in brackets after the names of foreign countries (and the Channel Islands) show the number of British-ringed recoveries of the species concerned in those countries since the start of the ringing scheme in 1909. For example, the entry **Faeroe Islands (2nd)** under **Storm Petrel** indicates that the

bird concerned was only the second British-ringed Storm Petrel to be recovered in the Faeroe Islands (though it should be noted that the numbering has to follow the sequence of publication rather than chronological order owing to varying delays in the reporting of rings found). Absence of any number means that there have been more than 20 recoveries of the species in the country.

Key to symbols 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.
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;
trs.—caught at the first named locality and transported before release.
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 species usually by ringing locality from north to south. Ringing details are given on the first line and recovery data on the second.

Red-throated Diver *Gavia stellata* (1: $\frac{5}{12}$ year)

5034571	pull.	21.7.68	Whale Firth: 60°37′N. 1°07′W. Yell (Shetland) MRP
	×	29.12.68	Port Joinville: 46°43′N. 2°21′W. (Vendée) **France (1st)**

Storm Petrel *Hydrobates pelagicus* (66: 100 miles: 9$\frac{11}{12}$ years)

653676	ad.	24.8.65	Foula: 60°08′N. 2°05′W. (Shetland) BEG
	v	18.7.68	Hirta, St Kilda, Outer Hebrides 275m. SW.
666738	ad.	9.8.67	Foula BEG
	v	29.7.68	Mykineshólmur: 62°06′N. 7°40′W. **Faeroe Islands (2nd)**
666297	ad.	27.8.67	Foula BEG
	v	28.7.68	Mykineshólmur, **Faeroe Islands (3rd)**
676148	ad.	21.7.68	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	v	26.7.68	Grunnigeo, Fetlar (Shetland) 8om. NNE.
674480	f.g.	10.8.67	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	v	6.6.68	Inishtearaght, Blasket Isles (Kerry) 230m. W.
671184	pull.	15.9.67	Skokholm
	×	0.12.68	Lacanau Océan: 45°00′N. 1°12′W. (Gironde) **France (5th)**
652365	ad.	28.7.66	Annet: 49°54′N. 6°22′W. Isles of Scilly SABO
	v	19.6.68	Skokholm 135m. NNE.
670010	ad.	22.8.67	Annet SABO
	v	18.7.68	Skokholm 135m. NNE.

Manx Shearwater *Puffinus puffinus* (73: 12 years)

EC56785	pull.	7.9.64	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	×	24.9.68	Rio Grande: 32°03′S. 52°08′W. **Brazil**
ED06361	pull.	10.9.66	Skokholm
	0	2.7.68	Porturlin, Raheen (Mayo) 255m. NW.
ED27967	pull.	30.8.67	Skokholm
	×	10.11.68	Manzanilla: 10°31′N. 61°01′W. Trinidad, **West Indies (1st)**
ED33360	pull.	5.9.67	Skokholm
	+	6.9.68	Stavfjorden: *c.* 61°30′N. 5°00′E. (Sogn og Fjordane) **Norway (1st)**

Recoveries in western Irish counties other than Kerry are very unusual. The unpublished foreign recoveries comprise four in **French waters** (April, May, August and September) and two off **Spain** (September).

Fulmar *Fulmarus glacialis* (18: 300 miles: 11$\frac{3}{12}$ years)

AT80866	pull.	7.8.64	Foula: 60°08′N. 2°05′W. (Shetland) BEG
	0	14.9.68	Eysturhøvdi: 62°17′N. 6°17′W. (Svinoy) **Faeroe Islands (12th)**
AT77288	pull.	10.8.61	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	×	(24.5.68)	Sutton-on-Sea (Lincoln) 430m. SSE.
SS39248	pull.	11.8.65	Fair Isle
	+	10.6.67	Sandstad: 63°31′N. 9°06′E. (Sør Trøndelag) **Norway (11th)**
3054727	pull.	14.8.58	Eynhallow: 59°08′N. 3°08′W. (Orkney) AU
	×	5.5.68	Tara, Portaferry (Down) 340m. SSW.
SS40312	pull.	11.8.65	Gairsay: 59°05′N. 2°58′W. (Orkney) AU
	0	1.8.68	Mezen': 65°50′N. 44°17′E. (Arkhangel) **U.S.S.R. (4th)**
SS70859	pull.	5.8.67	Tarbet Ness: 57°52′N. 3°46′W. (Ross) AJW
	0	11.6.68	*at sea off* Torsvåg: *c.* 70°55′N. 19°30′E. (Troms) **Norway (12th)**

Four others were recovered aboard fishing vessels in the North Sea.

Gannet *Sula bassana* (91: 12$\frac{9}{12}$ years)

1047742	pull.	1.7.66	Ailsa Craig: 55°13′N. 5°07′W. (Ayr) RAJ
	×	(10.12.68)	Lido degli Angeli: 40°17′N. 17°40′E. (Taranto) **Italy**

Fifty recoveries in usual localities abroad will be tabulated in a future report.

Cormorant *Phalacrocorax carbo* (236: 11$\frac{7}{12}$ years)

Fifteen recoveries on the Northumbrian coast in late May and June were almost certainly attributable to neurotoxin poisoning associated with an abnormal abundance of dinoflagellates—the so-called 'red tide' (for a detailed account see *Brit. Birds,* 61: 381-404). Thirty-three recoveries in **France** and nine in **Spain** will be tabulated in a future report.

Shag *Phalacrocorax aristotelis* (303: 15$\frac{11}{12}$ years)

1052295	pull.	8.6.65	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	0	9.9.68	Ramsholmer: *c.* 59°30′N. 5°10′E. (Rogaland) **Norway**

There were nine recoveries in **France,** between July and February. The outstanding feature was the abundance of poisonous dinoflagellates in Northumbrian waters (see Cormorant) and 109 recoveries in May, 30 in June and three in July were probably attributable to this cause.

Heron *Ardea cinerea* (50: 150 miles: 2$\frac{10}{12}$ years)

1063867	pull.	25.5.68	Ranworth: 52°40′N. 1°30′E. (Norfolk) JFWB
	×	24.9.68	San Roque: *c.* 36°15′N. 5°27′W. (Cádiz) **Spain (7th)**
1063876	pull.	25.5.68	Ranworth, JFWB
	×	29.12.68	Picquigny: 49°57′N. 2°09′E. (Somme) **France**
1063534	pull.	8.5.67	Wickhampton: 52°35′N. 1°36′E. (Norfolk) JFWB
	×	3.2.68	Wimborne, Spettisbury (Dorset) 200m. SW.
1063064	pull.	4.5.67	Boyton: 52°04′N. 1°29′E. (Suffolk) PRC
	×	(21.1.68)	Powburn, Alnwick (Northumberland) 260m. NW.
1010471	pull.	27.5.68	Rye: 50°57′N. 0°44′E. (Sussex) DBO
	+	17.9.68	Boismont: 50°09′N. 1°41′E. (Somme) **France**

Mallard *Anas platyrhynchos* (1,164: 300 miles: 12$\frac{1}{12}$ years)

Mallard ringed as juveniles at Peakirk, 52°39′N. 0°13′W. (Northampton), were recovered as follows:

Ringed		*Recovered*	
GM00172	10.10.63	11.8.68	Monkstown, Passage West (Cork) 345m. W.
GM60523	13.12.66	4.1.68	Strichen (Aberdeen) 350m. NNW.
GM64343	14.8.67	16.11.68	Mullingar (Westmeath) 300m. WNW.
GM66167	8.9.67	9.7.68	Lough Carra (Mayo) 375m. WNW.
GM84440	14.10.67	29.9.68	Durnish Lough (Donegal) 350m. WNW.
GM69112	juv.	6.9.67	Nacton: 52°01′N. 1°15′E. (Suffolk)
	+	19.12.68	Annacloy (Down) 325m. NW.

A total of 185 recoveries from foreign localities do not call for comment and will be tabulated in a future report.

Teal *Anas crecca* (350: 10 years)

EC31887	juv. ♂	20.10.66	Peakirk: 52°39′N. 0°17′W. (Northampton)
	+	10.3.68	Larache: 35°11′N. 6°10′W. **Morocco (3rd)**
EC30350	juv.	7.11.62	Abberton: 51°50′N. 0°53′E. (Essex)
	×	*c.*26.8.68	Hoy (Orkney) 510m. NW.

A total of 118 recoveries abroad or showing movement to Ireland will be tabulated in a future report.

Garganey *Anas querquedula* (2: $\frac{8}{12}$ year)

ED78144	ad. ♂	8.8.68	Frodsham: 53°18′N. 2°44′W. (Cheshire) MRG
	+	7.9.68	Salters Lode, Downham Market (Norfolk) 140m. ESE.
EC74452	juv. ♂	28.7.67	Abberton: 51°50′N. 0°53′E. (Essex)
	+	29.3.68	Marina di Pietrasanta: 43°57′N. 10°10′E. (Lucca) **Italy (15th)**

Gadwall *Anas strepera* (7: 15 miles: 1$\frac{1}{12}$ years)

AT83389	1stW.♂	22.9.67	Dersingham: 52°51′N. 0°29′E. (Norfolk)
	v	21.10.67	Narford, Narborough (Norfolk) 12m. SE.
	+	3.11.68	Brêmes: 50°51′N. 1°58′E. (Pas de Calais) **France (10th)**
SS20204	pull. ♂	25.7.68	Minsmere: 52°14′N. 1°37′E. (Suffolk) HEA
	+	17.11.68	Villafranco: 37°08′N. 6°08′W. (Sevilla) **Spain (1st)**
938904	f.g. ♀	14.3.56	Slimbridge: 51°44′N. 2°25′W. (Gloucester)
	/?/	1.8.56	Nowe Dolno: 54°10′N. 19°24′E. (Gdańsk) **Poland (3rd)**

Wigeon *Anas penelope* (40: 6$\frac{10}{12}$ years)

AT83984	juv. ♂	25.10.65	Abberton: 51°50′N. 0°53′E. (Essex)
	+	24.8.68	Narym: 58°55′N. 81°36′E. (Tomsk) **U.S.S.R.**

This recovery was unusually far to the east. A further 21 foreign recoveries will be tabulated in a future report.

Pintail *Anas acuta* (41: 12$\frac{1}{12}$ years)

SS70196	juv. ♂	3.10.67	Nacton: 52°01′N. 1°15′E. (Suffolk)
	+	0.6.68	Yar-Sale: 66°51′N. 70°54′E. (Tumen) **U.S.S.R.**
SS70326	juv. ♂	15.10.67	Nacton
	/?/	15.3.68	Giurgiu: 43°53′N. 25°58′E. (Bucharest) **Romania (1st)**
SS02680	juv. ♂	26.9.67	Slimbridge: 51°44′N. 2°25′W. (Gloucester)
	+	30.11.68	Venezia 45°27′N. 12°20′E. **Italy (3rd)**

The recovery in the U.S.S.R. was unusually far to the east. Sixteen recoveries in more usual localities abroad will be tabulated in a future report.

Shoveler *Anas clypeata* (10: 60 miles: 4 years)

AT78070	ad.	3.9.66	Sutton Bridge: 52°44′N. 0°11′E. (Lincoln) C&PM
	+	0.11.67	Sueca: 39°13′N. 0°19′W. (Valencia) **Spain (12th)**
AT78066	juv.	20.8.66	Sutton Bridge C&PM
	+	20.9.68	Berezovo: 63°55′N. 65°02′E. (Tumen) **U.S.S.R.**

Shovelers ringed at Abberton, 51°50′N. 0°53′E. (Essex), were recovered as follows:

Ringed		*Recovered*	
*AT83868**	15.8.64	*c.* 10.9.68	Biesbosch: 51°45′N. 4°48′E. (Noord Brabant) **Netherland (18th)**
SS21033	4.6.65	30.5.66	Abberton
		14.1.68	Elche: 38°16′N. 0°41′W. (Alicante) **Spain (13th)**
*AT83970**	16.7.65	11.2.68	Rochefort: 45°57′N. 0°58′W. (Charente Maritime) **France**
SS21237	14.7.67	16.11.68	St Médard: 44°54′N. 0°42′W. (Gironde) **France**
SS21248	22.7.67	7.1.68	Vilarinho: 40°41′N. 8°37′W. (Beira Litoral) **Portugal (2nd)**
SS21256	14.8.67	20.3.68	Baie d'Authie: 50°20′N. 1°35′E. (Somme) **France**
YE3677	1.7.68	13.11.68	Vendays-Montalivet: 45°21′N. 1°04′W. (Gironde) **France**

*Ringed as adult; the remainder were ringed as pulli or juveniles

Scaup *Aythya marila* (3: 10 miles: 1$\frac{4}{12}$ years)

AJ88564	f.g. ♀	18.3.67	Newburgh: 57°19′N. 2°01′W. (Aberdeen) AU
	+	7.8.68	Lake Svartárvatn: 65°21′N. 17°15′W. (Pingeyjar Sýsla) **Iceland (2nd)**
GM80509	1stW. ♂	21.1.68	Newburgh AU
	+	10.5.68	Plesetsk: 62°43′N. 40°17′E. (Arkhangelsk) **U.S.S.R. (3rd)**

Tufted Duck *Aythya fuligula* (75: 9$\frac{7}{12}$ years)

AJ26424	1stW. ♂	5.1.63	Newburgh: 57°19′N. 2°01′W. (Aberdeen) WT
	×	30.3.68	Sölveviken: 56°01′N. 14°34′E. (Blekinge) **Sweden (17th)**
SS46532	ad. ♀	15.6.66	Loch Leven: 56°12′N. 3°20′W. (Kinross)
	+	13.10.68	Yarensk: 62°12′N. 49°05′E. (Arkhangelsk) **U.S.S.R.**
SS46955	juv. ♂	9.1.68	Deeping St James: 52°40′N. 0°17′W. (Lincoln)
	×	24.11.68	Surendorf: 54°28′N. 10°05′E. (Schleswig-Holstein) **Germany (3rd)**

SS78110	f.g. ♂	29.3.68	Deeping St James
	×	5.5.68	Marby: 60°12′N. 19°40′E. (Åland) **Finland (17th)**

Tufted Ducks ringed at Abberton, 51°50′N. 0°53′E. (Essex), were recovered as follows:

Ringed		*Recovered*	
*AT84000**	2.2.66	11.8.68	St Omer: 50°45′N. 2°15′E. (Pas de Calais) **France (7th)**
SS21146	16.1.67	1.10.68	Saltvik: 60°16′N. 20°05′E. (Åland) **Finland (18th)**
SS21153	28.3.67	23.5.68	Degerby: 60°02′N. 20°23′E. (Åland) **Finland (19th)**
SS21169	27.4.67	5.1.68	Espel: 52°44′N. 5°39′E. (Overijssel) **Netherlands (7th)**
SS21191	12.5.67	14.1.68	Etang de Berre: 43°28′N. 5°10′E. (Bouches du Rhône) **France (8th)**

*Ringed as juvenile; the remainder were ringed as adults

Eleven Tufted Ducks ringed at Loch Leven, Kinross, between June and September were recovered in autumn and winter in north and central Ireland.

Pochard *Aythya ferina* (11: 100 miles: $7\frac{7}{12}$ years)

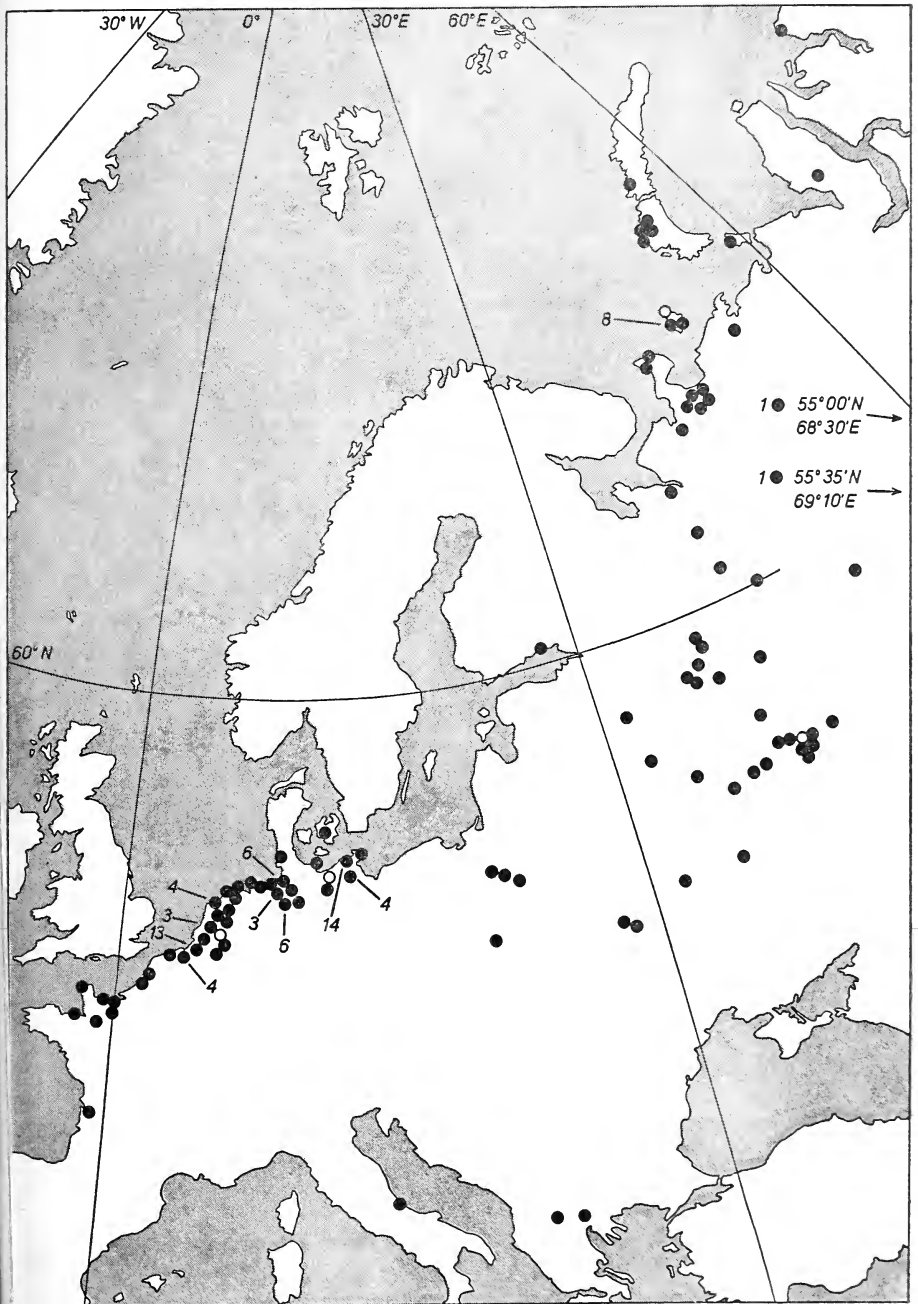
GM25351	ad. ♂	27.11.65	Deeping St James: 52°40′N. 0°17′W. (Lincoln)
	+	5.5.68	Tykocin: 53°13′N. 22°46′E. (Białystok) **Poland (4th)**
GM25364	f.g. ♂	6.1.66	Deeping St James
	×	25.5.68	Mariehamn: 60°05′N. 19°55′E. (Åland) **Finland (1st)**
GM60001	juv. ♂	22.9.66	Deeping St James
	×	(3.2.68)	Muge: 39°06′N. 8°42′W. (Ribatejo) **Portugal (1st)**
GM87046	f.g. ♂	19.2.68	Deeping St James
	+	10.5.68	Nivshera: 62°23′N. 52°51′E. (Komi) **U.S.S.R. (9th)**
AJ34317	ad. ♂	8.5.61	Abberton: 51°50′E. 0°53′E. (Essex)
	+	14.12.68	Lac de Grand Lieu: 47°05′N. 1°40′W. (Loire Atlantique) **France (8th)**
GM53201	ad. ♂	24.1.67	Abberton
	+	13.4.68	Kirovo-Chepetsk: 58°35′N. 50°01′E. (Kirov) **U.S.S.R. (10th)**

Eider *Somateria mollissima* (115: $10\frac{3}{12}$ years)

The majority of 48 Eiders found oiled in the Firth of Tay in March and early April had come from Aberdeenshire. Sixteen recoveries near the Farne Islands and the adjacent coast of Northumberland coincided with the abundance of dinoflagellates (see Cormorant). Only two recoveries reported during the year showed movement of more than 100 miles.

Shelduck *Tadorna tadorna* (15: 100 miles: $5\frac{9}{12}$ years)

AJ60383	ad. ♂	4.3.63	Newburgh: 57°19′N. 2°01′W. (Aberdeen) AU
	×	(27.12.68)	Juist: 53°41′N. 7°01′E. Frisian Islands, **Germany (14th)**
AJ60385	ad. ♂	7.3.63	Newburgh AU
	×	15.1.68	Calais: 50°57′N. 1°52′E. (Pas de Calais) **France (8th)**
AJ86805	ad. ♂	26.3.63	Newburgh AU
	×	*early* 68	Bad St Peter: 54°18′N. 8°37′E. (Schleswig-Holstein) **Germany (15th)**
AJ92588	pull.	15.7.65	Grainthorpe Haven: 53°28′N. 0°07′E. (Lincoln) CRG
	×	4.10.68	Norden: 53°37′N. 7°10′E. (Aurich) **Germany (16th)**
AE1451	pull.	22.7.67	Bainton: 52°38′N. 0°23′W. (Northampton) JMM
	×	20.1.68	Cardiff (Glamorgan) 140m. SW.



Map 1. Foreign recoveries of 156 White-fronted Geese *Anser albifrons*. Recoveries in this report are marked by open circles and all previous ones by solid circles (*drawn by* R. *C. Faulkner*)

AJ51962	juv.	16.8.66	Brownsea Island: 50°41′N. 1°58′W. (Dorset) PBO
	+	10.1.68	Hendaye-Plage: 43°22′N. 1°46′W. (Basses Pyrénées) **France (9th)**

Grey Lag Goose *Anser anser* (28: 14$\frac{10}{12}$ years)

143427	ad.	22.11.53	Solway Firth (Dumfries) *c.* 54°58′N. 3.30′W.
	+	20.9.68	Hananger: 58°05′N. 6°42′E. (Vest Agder) **Norway (3rd)**

The only other foreign recovery of this species reported in 1968 was in **Iceland** in October.

White-fronted Goose *Anser albifrons* (4: 17$\frac{8}{12}$ years)

130059	ad.	25.2.51	Slimbridge: 51°44′N. 2°25′W. (Gloucester)
	+	0.11.68	Utrecht: 52°10′N. 5°05′E. **Netherlands**
SWT8	1stW.	22.2.52	Slimbridge
	+	13.4.68	Izhevskoye: 54°33′N. 40°52′E. (Ryazan) **U.S.S.R.**
SWT203	1stW. ♀	17.2.53	Slimbridge
	×A	15.7.68	River Peschanka: 69°06′N. 50°02′E. Kolguev (Arkhangel) **U.S.S.R.**
SWT409	ad. ♂	9.3.59	Slimbridge
	+	18.12.68	Hohen Sprenz: 53°55′N. 12°12′E. (Schwerin) **Germany**

Barnacle Goose *Branta leucopsis* (6: 5$\frac{8}{12}$ years)

1063103	1stW. ♀	7.4.66	Inishkea: 54°08′N. 10°11′W. (Mayo) DC
	×	15.5.68	Saudhárkrókur: 65°45′N. 19°39′W. (Skagafjardar Sýsla) **Iceland (1st)**

In addition, two Barnacle Geese ringed on the Caerlaverock reserve, Dumfries, in 1963 were recovered in **Spitsbergen** in August.

Canada Goose *Branta canadensis* (271: 13$\frac{1}{12}$ years)

No fewer than 89 of the recoveries were of birds moving between the Beauly Firth and Yorkshire. The only other recoveries showing substantial movements were of geese from Westmorland controlled near Birmingham.

Mute Swan *Cygnus olor* (681: 150 miles: 9$\frac{10}{12}$ years)

Z21421	2ndW.	23.8.68	Shoreham-by-Sea: 50°50′N. 0°16′W. (Sussex) ABW
	v	(27.12.68)	Baie de Somme: 50°13′N. 1°38′E. (Somme) **France (4th)**

Whooper Swan *Cygnus cygnus* (1: 2$\frac{3}{12}$ years)

Zo8019	1stW.	14.1.66	Gartocharn: 56°32′W. (Dunbarton)
	×	*c.*20.4.68	Rumworth, Bolton (Lancashire) 190m. SE.

Bewick's Swan *Cygnus bewickii* (4: 3 years)

Zjj12	1stW.	23.12.65	Colchester: 51°53′N. 0°53′E. (Essex) AJW
	×	29.12.68	Calais: 50°57′N. 1°52′E. (Pas de Calais) **France (1st)**
Go12	2ndW. ♂	5.12.66	Slimbridge: 51°44′N. 2°25′W. (Gloucester)
	v	9.11.68	Ramelton (Donegal) 315m. NW.
Go28	2ndW. ♀	15.2.67	Slimbridge
	×	18.11.68	Woserow: 53°49′N. 13°44′E. (Neubrandenburg) **Germany (1st)**

Z20842	ad. ♀	7.12.67	Slimbridge
	×	(14.11.68)	Carnlough (Antrim) 270m. NW.

Kite *Milvus milvus* (1 : $\frac{4}{12}$ year)

HW08412	pull.	31.5.68	Central Wales NC
	×	(7.10.68)	Combe, Woodstock (Oxford)

Hen Harrier *Circus cyaneus* (10: 100 miles: 11 years)

SS36884	pull.	1.7.66	Rousay: 59°10′N. 3°02′W. (Orkney) EB
	×	19.5.68	Spitalburn, Banchory (Kincardine) 155m. S.
SS20062	ad. ♀	26.7.67	Harray: 59°03′N. 3°15′W. (Orkney) EB
	+	(9.12.68)	Lanesborough (Longford) 410m. SW.
SS20077	pull.	1.7.68	Harray EB
	×	1.12.68	*near* Craigton (Angus) *c.* 170m. S.

Osprey *Pandion haliaetus* (1 : $\frac{5}{12}$ year)

M1256	pull.	14.7.68	Scotland DNW
	/?/	*c.*22.12.68	Orio: 43°16′N. 2°07′W. (Guipúzcoa) **Spain (2nd)**

Kestrel *Falco tinnunculus* (71 : 150 miles: 7$\frac{2}{12}$ years)

3100435	pull.	17.6.68	Boat of Garten: 57°15′N. 3°45′W. (Inverness) DNW
	+	8.10.68	Le Houssay: 48°33′N. 3°18′E. (Siene et Marne) **France**
3100438	pull.	17.6.68	Boat of Garten DNW
	v	2.10.68	Conington, Ramsey (Huntingdon) 360m. SE.
3100443	pull.	24.6.68	Rothiemurchus: 57°10′N. 3°50′W. (Inverness) DNW
	+	24.10.68	Berastegui: 43°07′N. 1°59′W. (Guipúzcoa) **Spain (5th)**
ED48536	pull.	7.7.68	Ewes: 55°12′N. 3°00′W. (Dumfries) KB
	+	13.10.68	Blévy: 48°38′N. 1°12′E. (Eure et Loire) **France**
ED15481	pull.	12.6.67	Bentpath: 55°10′N. 3°00′W. (Dumfries) KB
	×	20.1.68	Kexby, Gainsborough (Lincoln) 150m. SE.
ED48538	pull.	9.7.68	Bentpath KB
	×	*c.*30.10.68	Exhall, Coventry (Warwick) 200 m. SSE.
3035732	pull.	30.6.68	Great Hatfield: 53°52′N. 0°10′W. (York) JESW
	×	*c.*10.12.68	Ferndale, Rhondda (Glamorgan) 200m. SW.
3045553	pull.	17.6.68	Uppingham: 52°35′N. 0°43′W. (Rutland) AEL
	+	29.9.68	Blévy, **France**
3018048	pull.	21.6.66	Dungeness: 50°55′N. 0°59′E. (Kent)
	+	7.12.68	Epouville: 49°34′N. 0°13′E. (Seine Maritime) **France**
ED82155	pull.	25.6.68	Dungeness
	×	9.11.68	Eu: 50°03′N. 1°25′E. (Seine Maritime) **France**

The two Kestrels from Boat of Garten belonged to the same brood.

Partridge *Perdix perdix* (1 : $\frac{4}{12}$ year)

SS32763	1stW. ♀	27.1.68	Hoddesdon: 51°47′N. 0°00′ (Hertford) RMRG
	×	27.5.68	Stanford le Hope (Essex) 25m. SE.

Water Rail *Rallus aquaticus* (5 : 5 miles: $\frac{4}{12}$ year)

2001306	f.g.	6.1.68	Clifton: 52°55′N. 1°11′W. (Nottingham) HMD
	×	27.3.68	Voxtrup: 52°15′N. 8°07′E. (Niedersachsen) **Germany (2nd)**

ED10160	1stW.	7.1.68	Minsmere: 52°14′N. 1°37′E. (Suffolk) HEA
	×	24.9.68	Usedom: 53°53′N. 13°55′E. (Rostock) **Germany (3rd)**

Moorhen *Gallinula chloropus* (44: 40 miles: 5 $\frac{3}{12}$ years)

943267	juv.	15.10.66	Copeland: 54°40′N. 5°32′W. (Down)
	×	1.5.68	Langbank, Port Glasgow (Renfrew) 90m. NNE.
SS61670	f.g.	12.12.66	Wrangle: 53°02′N. 0°07′E. (Lincoln) WAC
	+	6.3.68	Ville Issey: 48°44′N. 5°38′E. (Meuse) **France (4th)**
SS61742	f.g.	18.10.67	Peakirk: 52°39′N. 0°13′W. (Northampton) WAC
	×	18.5.68	Poppendammergouw: 52°24′N. 4°59′E. (Noord Holland) **Netherlands (4th)**
AJ86696	1stW.	26.11.67	Hoddesdon: 51°47′N. 0°00′ (Hertford) RMRG
	×	21.7.68	Drejø: 54°59′N. 10°26′E. (Fyn) **Denmark (5th)**
AJ86019	1stW.	3.1.65	Maidstone: 51°17′N. 0°31′E. (Kent) MKRG
	×	(17.4.68)	Bekkelaget: 59°53′N. 10°46′E. (Akershus) **Norway (1st)**
SS78833	1stW.	10.12.67	Poole Harbour: 50°42′N. 2°00′W. (Dorset) FRC
	×	20.6.68	Bad Schwartau: 53°55′N. 10°41′E. (Schleswig-Holstein) **Germany (1st)**

Coot *Fulica atra* (18: 175 miles: 8 $\frac{8}{12}$ years)

GM36731	1stW. ♂	13.10.67	Deeping St James: 52°40′N. 0°17′W. (Lincoln) WAC
	+	15.1.68	Port Maubert: 45°26′N. 0°46′W. (Charente Maritime) **France**
AJ78991	f.g.	12.2.63	Shrawley: 52°17′N. 2°17′W. (Worcester) WT
	+	16.3.68	Bockum-Hövel: 51°42′N. 7°45′E. (Nordrhein-Westfalen) **Germany (12th)**
GM07406	juv.	6.1.64	Abberton: 51°50′N. 0°53′E. (Essex)
	+	0.5.67	Rychnowskie: 53°40′N. 17°24′E. (Koszalin) **Poland (3rd)**
GM23494	ad.	8.1.66	Abberton
	+	*Aug/Sep* 1968	*unknown locality*, **Denmark (16th)**
GM34910	f.g	10.2.66	Abberton
	×	23.12.68	De Lier: 51°58′N. 4°15′E. (Zuid Holland) **Netherlands**
GM53972	ad.	8.3.68	Abberton
	+	21.11.68	Schweriner See: 53°43′N 11°28′E. (Mecklenburg) **Germany (13th)**

Oystercatcher *Haematopus ostralegus* (162: 11 years)

Eighty-one recoveries abroad reported during 1966-68 are summarised in table A.

Table A. Countries and months of recoveries of Oystercatchers

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	?
Iceland (6)	–	–	–	1	–	2	3	–	–	–	–	–	–
Faeroe Islands (25)	–	–	2	11	5	2	2	1	1	1	–	–	–
Norway (15)	–	–	1	1	6	1	5	1	–	–	–	–	–
Germany (1)	–	–	1	–	–	–	–	–	–	–	–	–	–
Netherlands (2)	–	–	1	–	–	–	–	–	–	–	–	1	–
France (25)	4	2	–	–	–	1	–	10	5	–	1	1	1
Spain (5)	–	1	–	1	–	–	–	–	–	3	–	–	–
Portugal (2)	–	–	–	–	–	–	–	1	1	–	–	–	–

NOTE. The tables A-H are subject to error in cases where it has been necessary to assume that the date of recovery was approximately that of the letter reporting it, whereas the bird may have been dead for some time before being found

Lapwing *Vanellus vanellus* (37: 10$\frac{10}{12}$ years)

DS24973	f.g.	4.8.67	Sutton Bridge: 53°44′N. 0°11′E. (Lincoln) DAW
	0	1.6.68	*near* Arkhangel: 64°32′N. 40°40′E. **U.S.S.R. (9th)**
DS08091	f.g.	27.9.65	*near* Sittingbourne: 51°23′N. 0°43′E. (Kent) MKRG
	×	10.5.68	Novyye Dorosini: 50°57′N. 25°01′E. (Ukraine) **U.S.S.R. (10th)**
2010039	f.g.	9.9.61	Ewhurst: 51°09′N. 0°26′W. (Surrey) L&JW
	+	*autumn* 68	Dukhovshchina: 55°10′N. 32°25′E. (Smolensk) **U.S.S.R. (11th)**
2082282	pull.	7.6.67	Rye Harbour: 50°56′N. 0°46′E. (Sussex) RHC
	+	(7.8.68)	Larache: 35°10′N. 6°08′W. **Morocco (11th)**

Six recoveries in **France,** one in **Spain** and two in **Portugal** do not call for comment.

Ringed Plover *Charadrius hiaticula* (8: 15 miles: 5 years)

BH14918	juv.	28.8.68	Middleton: 54°00′N. 2°55′W. (Lancashire) MBRG
	+	0.12.68	Baie de Goulven: 48°38′N. 4°18′W. (Finistère) France
BC95647	pull.	8.6.67	Chesil Beach: 50°37′N. 2°31′W. Weymouth (Dorset) PBO
	+	1.12.68	Lannilis: 48°35′N. 4°32′W. (Finistère) **France**

Grey Plover *Pluvialis squatarola* (4: 10 miles: 4$\frac{7}{12}$ years)

2037578	ad.	15.1.64	Benington: 53°00′N. 0°05′E. (Lincoln) WAC
	+	15.8.68	Frejlev Enghaven: 54°42′N. 11°50′E. (Lolland) **Denmark (5th)**

Golden Plover *Pluvialis apricaria* (1: 2 years)

2072763	ad.	22.9.65	Cockersands: 53°59′N. 2°52′W. (Lancashire) MBRG
	+	10.10.67	Portonovo: 44°32′N. 11°44′E. (Bologna) **Italy (1st)**

Turnstone *Arenaria interpres* (7: 30 miles: 7$\frac{10}{12}$ years)

CK59299	ad.	13.4.68	Heacham: 52°55′N. 0°30′E. (Norfolk) WWRG
	+	12.7.68	Norajik: 65°50′N. 37°01′W. (Angmagssalik) **Greenland (5th)**
60463X	f.g.	30.9.60	St Agnes: 49°53′N. 6°21′W. Isles of Scilly
	×	28.7.68	**Greenland (6th)** ice cap, 66°29′N. 46°17′W.

Snipe *Gallinago gallinago* (34: 60 miles: 11$\frac{9}{12}$ years)

CS98503	f.g.	21.1.68	Butley Creek: 52°07′N. 1°27′E. Orford (Suffolk) PAB
	+	0.12.68	Ølgod: 55°49′N. 8°37′E. (Jylland) **Denmark (9th)**
P13414	ad.	25.11.56	Abberton: 51°50′N. 0°53′E. (Essex)
	+	29.8.68	Fet: 59°55′N. 11°10′E. (Akershus) **Norway (1st)**
CK43347	ad.	14.10.67	Abberton
	+	18.1.68	Alcácer do Sal: 38°22′N. 8°30′W. (Baixo Alentejo) **Portugal (12th)**
CK43883	ad.	8.4.68	Abberton
	/?/	20.7.68	Niemenkylä: 63°20′N. 25°38′E. (Keski Suomi) **Finland (2nd)**
CS88158	f.g.	25.11.67	Hersham: 51°22′N. 0°25′W. (Surrey) HRG
	+	16.1.68	Sarón: 43°19′N. 3°51′W. (Santander) **Spain**
CV68239	f.g.	25.2.67	Burham: 51°20′N. 0°29′E. (Kent) MKRG
	×	10.7.68	Suinula: 61°55′N. 24°48′E. (Häme) **Finland (3rd)**

In addition, there were four recoveries in **France,** all in winter.

Jack Snipe *Lymnocryptes minimus* (1 : 1 $\frac{3}{12}$ years)

CV44574	f.g.	15.10.66	Walney: 54°05′N. 3°15′W. (Lancashire)
	+	14.1.68	Lanzós: 43°19′N. 7°40′W. (Lugo) **Spain (2nd)**

Woodcock *Scolopax rusticola* (2 : $\frac{7}{12}$ year)

EC71858	f.g.	22.10.68	Bardsey: 52°46′N. 4°48′W. (Caernarvon)
	+	3.11.68	Inchigeelagh (Cork) 190m. WSW.
DS27783	f.g.	10.3.68	Kynance: 49°57′N. 5°15′W. (Cornwall) NBE
	+	1.11.68	Braine l'Alleud: 50°41′N. 4°22′E. (Brabant) **Belgium (2nd)**

Curlew *Numenius arquata* (31 : 12 $\frac{9}{12}$ years)

SS40774	f.g.	21.3.66	West Kirby: 53°22′N. 3°10′W. (Cheshire) MRG
	×	7.7.68	Luopajärvi: 62°35′N. 22°45′E. (Vaasa) **Finland (5th)**
SS11485	f.g.	10.4.64	Point of Air: 53°21′N. 3°19′W. (Flint) MRG
	×	28.5.68	Myckle: 64°45′N. 20°50′E. (Västerbotten) **Sweden (2nd)**
AT78022	ad.	1.8.63	Blithfield Reservoir: 52°49′N. 1°56′W. (Stafford) C&PM
	×	5.6.68	Frillesås: 57°20′N. 12°15′E. (Halland) **Sweden (3rd)**
AT85510	f.g.	23.2.64	East Tilbury: 51°28′N. 0°26′E. (Essex) ABO
	+	1.10.68	Nørre: 55°28′N. 9°53′E. (Fyn) **Denmark (6th)**

In addition, there was one recovery in Morbihan, **France.**

Whimbrel *Numenius phaeopus* (1 : $\frac{9}{12}$ year)

ED51765	f.g.	4.8.67	Cooling: 51°30′N. 0°32′E. (Kent) CS
	+	3.5.68	Plesetsk: 62°43′N. 40°17′E. (Arkhangel) **U.S.S.R. (2nd)**

Black-tailed Godwit *Limosa limosa* (1 : 9 years)

P10207	f.g.	18.8.59	Terrington: 52°47′N. 0°17′E. (Norfolk) WWRG
	v (= ♂)	21.8.68	Butley Creek, Orford (Suffolk) 70m. SE.

Green Sandpiper *Tringa ochropus* (1 : 1 year)

CS20331	f.g.	13.8.67	Shingle Street: 52°03′N. 1°27′E. (Suffolk) PRC
	+	20.8.68	Saumur: 47°16′N. 0°05′W. (Maine et Loire) **France (3rd)**

Common Sandpiper *Tringa hypoleucos* (5 : 40 miles : 8 $\frac{11}{12}$ years)

BA61169	pull.	14.6.65	Gouthwaite: 54°08′N. 1°48′W. (York) SS&W
	+	14.7.68	Gouberville: 49°41′N. 1°19′W. (Manche) **France (11th)**
BC00379	juv.	3.9.66	Sutton Bridge: 52°44′N. 0°11′E. (Lincoln) C&PM
	+	(7.12.68)	Puentedeume: 43°24′N. 8°10′W. (Coruña) **Spain (4th)**
BA05599	juv.	14.8.61	Elm Park: 51°32′N. 0°11′E. Romford (Essex) RRS
	v	2.5.68	Lillo: 51°18′N. 4°18′E. (Antwerpen) **Belgium (3rd)**

Redshank *Tringa totanus* (36: 100 miles: 14 $\frac{5}{12}$ years)

DS07717	ad.	23.4.66	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	×	14.1.68	Bradwell-on-Sea (Essex) 545m. SSE.
P19040	ad.	10.8.60	Holbeach: 52°54′N. 0°04′E. (Lincoln) WWRG
	× A	29.8.68	Seaburn, Sunderland (Durham) 155m. NW.
DS46483	f.g.	26.11.67	Walton: 51°58′N. 1°21′E. (Suffolk) PRC
	×	16.6.68	Mordon, Sedgefield (Durham) 215m. NW.

There were six recoveries in **France** as follows: Nord (August), Somme (July and August) and Charente Maritime (February, March and September).

Spotted Redshank *Tringa erythropus* (1 : 1$\frac{8}{12}$ years)

DS08187	ad.	16.7.66	Kemsley: 51°23′N. 0°43′E. Sittingbourne (Kent) MKRG
	+	19.4.68	Salina Bay: 35°58′N. 14°26′E. **Malta (1st)**

There are only two previous foreign recoveries, in France and Denmark.

Knot *Calidris canutus* (93 : 100 miles: 6$\frac{10}{12}$ years)

CR05414	f.g.	23.11.68	Hilbre: 53°23′N. 3°14′W. (Cheshire) HiBO
	v	20.12.68	Brownsea, Poole Harbour (Dorset) 195m. SSE.
CR36395	f.g.	31.3.68	West Kirby: 53°22′N. 3°10′W. (Cheshire) LRG
	+	*end* 10.68	Cosqueville: 49°42′N. 1°24′W. (Manche) **France (5th)**
CV36062	f.g.	22.1.66	West Kirby JM
	×	24.11.68	Zuid Sloe: 51°27′N. 3°40′E. (Zeeland) **Netherlands (1st)**
CV48546	ad.	16.9.66	Point of Air: 53°21′N. 3°19′W. (Flint) MRG
	×	15.12.68	Dollymount (Dublin) 115m. W.
CX25661	ad.	3.9.63	Holbeach: 52°54′N. 0°04′E. (Lincoln) WWRG
	×	24.5.68	Ellenborgen: 55°03′N. 8°26′E. Sylt, **Germany (2nd)**
CK08919	1stW.	14.1.62	Dawlish Warren: 50°35′N. 3°27′W. (Devon) DC
	v	23.11.68	Hilbre (Cheshire) 195m. N.

In addition, there were 26 movements between the Wash and Morecambe Bay and three between the Wash and Wirral. There has been a vast increase in the ringing of Knot in recent years, and it is interesting to note that before 1968 there had been only 69 recoveries.

Dunlin *Calidris alpina* (121 : 250 miles: 7$\frac{5}{12}$ years)

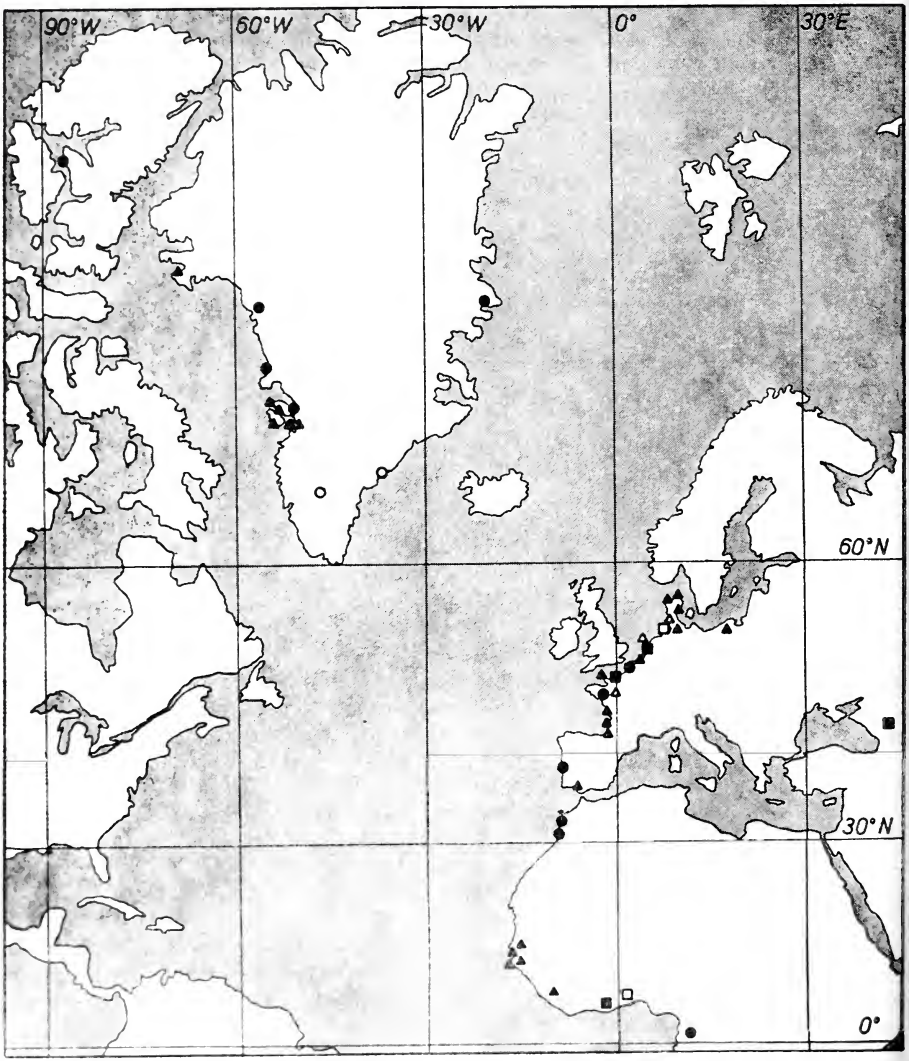
BH57264	pull.	1.7.68	Lamb Hoga: 60°35′N. 0°55′W. Fetlar (Shetland) DWO
	v	8.9.68	Cherry Cobb Sands, Humber (York) 480m. S.
34067X	1stW.	14.1.61	Holywood: 54°39′N. 5°50′W. (Down) TE
	+	13.5.68	Dolgoshchel'ye: 66°03′N. 43°28′E. (Arkhangel) **U.S.S.R. (14th)**
BE30523	f.g.	9.5.67	West Kirby: 53°22′N. 3°10′W. (Cheshire) MRG
	×	2.5.68	Essaouira: 31°30′N. 9°48′W. **Morocco (7th)**
CB34958	ad.	6.12.64	Benington: 53°00′N. 0°05′E. (Lincoln) WAC
	×	*mid* 1968	Dundrum (Down) 255m. WNW.
BB43303	ad.	6.10.68	Heacham: 52°55′N. 0°30′E. (Norfolk) WWRG
	v	14.12.68	North Slob (Wexford) 290m. W.
CA33250	1stW.	1.8.66	Ballycotton: 51°50′N. 8°01′W. (Cork) RGN
	×	7.4.68	Bouznika: 33°49′N. 7°10′W. **Morocco (8th)**
BA32569	ad.	12.3.64	Kemsley: 51°23′N. 0°43′E. Sittingbourne (Kent) MKRG
	v	10.8.65	Ottenby: 56°12′N. 16°24′E. (Öland) **Sweden**
	×	8.12.68	Elmley Ferry: 51°23′N. 0°45′E. (Kent)
BC98080	ad.	16.9.66	Harty: 51°22′N. 0°55′E. Sheppey (Kent) NKRG
	v	2.12 68	Hayle (Cornwall) 285m. WSW.

Twenty-three recoveries from well represented localities abroad will be tabulated in a future report.

Curlew Sandpiper *Calidris ferruginea* (1 : 4$\frac{7}{12}$ years)

CA41104	f.g.	5.10.63	Sutton Bridge: 52°44′N. 0°11′E. (Lincoln) WAC
	v	18.5.68	Radès: 36°46′N. 10°17′E. **Tunisia (1st)**

There is only one previous foreign recovery of this species, in the U.S.S.R.



Map 2. Foreign recoveries of eleven Turnstones *Arenaria interpres* (circles), 25 Knots *Calidris canutus* (triangles) and six Sanderlings *C. alba* (squares). Recoveries in this report are marked by open symbols and all previous ones by solid symbols (*drawn by* R. C. *Faulkner*)

Sanderling *Calidris alba* (9: 10 miles: 2 years)

BB30960	ad.	27.7.68	Snettisham: 52°53′N. 0°30′E. (Norfolk) WWRG
	×	29.11.68	Juist: 53°41′N. 7°01′E. East Frisian Islands, **Germany (1st)**
BE92815	ad.	12.8.68	Snettisham WWRG
	+	*c.* 5.11.68	Keta: 05°54′N. 1°00′E. **Ghana (2nd)**

Ruff *Philomachus pugnax* (1: $\frac{7}{12}$ year)

CV10162	1stW. ♀	12.8.67	Low Hauxley: 55°19′N. 1°33′W. (Northumberland) NRG
	+	21.3.68	Pisa: 43°43′N. 10°24′E. **Italy (7th)**

Arctic Skua *Stercorarius parasiticus* (2: 2 years)

AT80754	pull.	11.7.63	Foula: 60°08′N. 2°05′W. (Shetland) BEG
	×	2.8.65	Egedesminde: 68°40′N. 52°40′W. **Greenland (2nd)**
ED13289	pull.	18.7.68	Foula BEG
	()	8.12.68	*off* Cabo Bojador: *c.* 26°05′N. 14°50′W. **Spanish West Africa (1st)**

Great Skua *Stercorarius skua* (23: 7$\frac{2}{12}$ years)

Great Skuas ringed on Foula and Hermaness were recovered in the counties of Aberdeen, Northumberland, Durham and York. Published in full are recoveries from two less typical home localities and the first from the region of West Africa. Nine recoveries in more usual foreign localities will be tabulated in a future report.

HW01934	pull.	8.7.66	Foula: 60°08′N. 2°05′W. (Shetland) BEG
	×	5.6.68	Porth Neigwl (Caernarvon) 515m. SSW.
HW13575	pull.	22.7.67	Foula BEG
	v.	18.1.68	Wilsden, Bradford (York) 435m. S.
HW17621	pull.	8.7.68	Hermaness: 60°52′N. 0°53′W. Unst (Shetland) DCB
	()	30.8.68	Puerto del Rosaria: *c.* 28°30′N. 13°50′W. (Fuerteventura) **Canary Islands (1st)**

Great Black-backed Gull *Larus marinus* (37: 250 miles: 9 years)

HW06505	ad.	20.1.68	St Osyth: 51°49′N. 1°05′E. (Essex) AJW
	×	3.7.68	Tromsø: 69°40′N. 19°00′E. (Troms) **Norway (8th)**
HW17953	pull.	7.7.68	Mullion: 50°00′N. 5°15′W. (Cornwall) CJB
	×	28.9.68	Ile d'Yeu: 46°43′N. 2°20′W. (Vendée) **France (16th)**
HW00791	pull.	4.7.67	Annet: 49°54′N. 6°22′W. Isles of Scilly SABO
	+	6.1.68	Fuenterrabia: 43°21′N. 1°48′W. (Guipúzcoa) **Spain (2nd)**

Lesser Black-backed Gull *Larus fuscus* (162: 8$\frac{3}{12}$ years)

AJ81231	pull.	9.7.63	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	()	(19.8.68)	**'***off* **Iceland' (1st)**
GM38562	pull.	13.7.67	Skokholm
	v	3.8.68	Torshavn: 62°02′N. 6°47′W. (Streymoy) **Faeroe Islands (2nd)**

A further 67 in more usual foreign localities will be tabulated in a future report.

Herring Gull *Larus argentatus* (440: 11$\frac{1}{12}$ years)

There were seven foreign recoveries, in **Spain** (one), **Denmark** (two) and **France** four). Only 59 of those within the British Isles had moved over 100 miles.

Common Gull *Larus canus* (22: 150 miles: 5$\frac{11}{12}$ years)

AT81173	2ndW.	2.11.62	Tetney Lock: 53°29′N. 0°01′W. (Lincoln) CRG
	+	(9.10.68)	Vatnefjorden: 62°37′N. 6°37′E. (Møre og Romsdal) **Norway (16th)**
EC28478	ad.	6.2.65	Benington: 53°00′N. 0°05′E. (Lincoln) C&PM
	×	18.5.68	Brusand: 58°31′N. 5°45′E. (Rogaland) **Norway (17th)**

EC77902	1stW.	24.12.65	Deeping St James: 52°40′N. 0°17′W. (Lincoln) WAC
	×	14.6.68	Søllested: 54°49′N. 11°17′E. (Lolland) **Denmark (8th)**
EC77948	ad.	14.1.66	Deeping St James WAC
	×	25.3.68	Creil: 52°46′N. 5°36′E. IJsselmeer **Netherlands (2nd)**
AT78666	ad.	26.1.63	Holland-on-Sea: 51°48′N. 1°13′E. (Essex) THW
	+	27.2.68	Hvilsager: 56°22′N. 10°21′E. (Jylland) **Denmark (9th)**

Black-headed Gull *Larus ridibundus* (300: 16$\frac{4}{12}$ years)

3019584	pull.	12.6.67	Besthorpe: 53°11′N. 0°46′W. (Nottingham) HMD
	×	(1.4.68)	Port Etienne: 20°54′N. 17°01′W. **Mauritania (1st)**

This recovery was exceptionally far to the south. The remaining foreign recoveries were as follows. Ringed as pulli: **Denmark** (one), the **Netherlands** (one), **Spain** (one) and **Portugal** (two). Ringed as full-grown: **Denmark** (eight), **Sweden** (ten), **Finland** (nine), **Germany** (one) and the **Netherlands** (one).

Kittiwake *Rissa tridactyla* (86: 14$\frac{6}{12}$ years)

2059004	pull.	9.7.60	Farne Islands: 55°37′N. 1°37′W. (Northumberland)
	×	*c.* 7.2.68	Vinaroz: 40°29′N. 0°28′E. (Castellón) **Spain (13th)**
EC35490	pull.	29.6.64	Farne Islands
	+	11.1.68	*off* Malgrat: *c.* 41°40′N. 2°50′E. (Barcelona) **Spain (14th)**
EC11603	ad.	18.5.65	North Shields: 55°01′N. 1°26′W. (Northumberland) JCC
	×	20.12.68	Nojals-et-Clottes: 44°43′N. 0°46′E. (Dordogne) **France**

The first two recovery localities listed above are in the Mediterranean, and the third is far inland. Sixteen recoveries from more usual localities abroad will be tabulated in a future report.

Common Tern *Sterna hirundo* (49: 9$\frac{5}{12}$ years)

R27710	ad.	17.5.59	Copeland: 54°40′N. 5°32′W. (Down)
	×	26.10.68	Kow Swamp: 35°57′S. 144°16′E. (Victoria) **Australia (1st)**

Evidence from both ringing and other sources suggests that the Common Tern winters in Africa, mainly north of the equator, but there is one earlier recovery of a Swedish-ringed Common Tern in Australia. In addition to the above, a total of 23 Common Terns were recovered abroad in 1968: these records, together with eleven from 1966 and 28 from 1967, are summarised in table B.

Table B. Countries and months of recoveries of Common Terns

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Belgium (1)	–	–	–	–	–	1	–	–	–	–	–	–
France (3)	–	–	–	–	–	–	–	1	1	–	–	1
Portugal (2)	–	–	–	–	–	–	–	1	1	–	–	–
Morocco (1)	–	–	–	–	–	–	–	–	–	1	–	–
Spanish West Africa (1)	–	–	–	–	–	–	–	–	–	–	1	–
Mauritania (1)	1	–	–	–	–	–	–	–	–	–	–	–
Sénégal (7)	–	1	–	1	1	1	–	–	1	–	1	1
Guinea (2)	–	–	–	–	–	–	–	–	–	–	2	–
Sierra Leone (11)	1	1	–	1	3	–	1	–	1	–	3	–
Liberia (3)	–	1	1	–	1	1	–	–	–	–	1	–
Ivory Coast (3)	1	–	–	–	–	–	–	–	–	1	–	1
Ghana (23)	2	3	3	2	–	1	–	–	2	–	3	7
Togo (1)	–	–	–	–	–	–	–	–	–	–	–	1
Nigeria (1)	–	–	–	–	–	–	–	–	–	–	1	–

See footnote to table A

Arctic Tern *Sterna paradisaea* (59: 18 $\frac{11}{12}$ years)

CX65951	ad.	26.6.67	Coquet: 55°20′N. 1°32′W. (Northumberland) JCC
	×	(12.6.68)	Spey Bay (Moray) 170m. NNE.

Some 40 of the recoveries, all on the coast of Northumberland, coincided with the abundance of dinoflagellates (see Cormorant). Five foreign recoveries in African localities will be tabulated in a future report.

Roseate Tern *Sterna dougallii* (42: 3 $\frac{2}{12}$ years)

The following recovery is unusual in that it comes from an inland locality. A further 41, including 32 from **Ghana,** will be tabulated in a future report.

CK34638	pull.	29.6.65	Farne Islands: 55°37′N. 1°37′W. (Northumberland)
	×	12.9.68	Afife: 06°04′N. 0°55′E. (Volta) **Ghana**

Little Tern *Sterna albifrons* (3: 5 miles: $\frac{2}{12}$ year)

CG38714	pull.	9.7.68	Montrose: 56°43′N. 2°29′W. (Angus) DWO
	×	(16.9.68)	Puerto de Santa Maria: 36°36′N. 6°14′W. (Cádiz) **Spain (1st)**

Sandwich Tern *Sterna sandvicensis* (160: 9 $\frac{1}{12}$ years)

A total of 114 recoveries from Europe and Africa will be tabulated in a future report.

Razorbill *Alca torda* (26: 8 $\frac{6}{12}$ years)

SS59193	pull.	9.7.67	Great Saltee: 52°07′N. 6°35′W. (Wexford) DFM
	v	*c.* 18.1.68	Bahia de Pollensa: 39°52′N. 3°05′E. (Mallorca) **Balearic Islands (1st)**

A further eleven foreign recoveries, none in any way unusual, will be tabulated in a future report.

Guillemot *Uria aalge* (24: 9 $\frac{10}{12}$ years)

Seven overseas recoveries, from **Norway** (two), the **Netherlands** (one), the **Channel Islands** (one) and **France** (three) will be tabulated in a future report. Recoveries in home waters do not call for comment.

Black Guillemot *Cepphus grylle* (2: 50 miles: $\frac{1}{12}$ year)

ED57359	pull.	27.7.68	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	×	2.9.68	Weisdale Voe (Shetland) 55m. NNE.

Puffin *Fratercula arctica* (16: 100 miles: 12 $\frac{1}{12}$ years)

AT41312	ad.	20.7.56	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	+	8.9.68	Florø: 61°35′N. 5°00′E. (Sogn og Fjordane) **Norway (13th)**

Woodpigeon *Columba palumbus* (101: 50 miles: 10 $\frac{4}{12}$ years)

102386	ad.	17.1.66	Carlton: 52°10′N. 0°23′E. (Cambridge) MAFF
	×	28.4.68	Weybridge (Surrey) 63m. SW.

Turtle Dove *Streptopelia turtur* (6: 10 miles: 6 $\frac{1}{12}$ years)

DS14825	f.g.	4.9.66	Boughton: 52°35′N. 0°31′E. (Norfolk) GRMP
	+	14.9.68	Vielle St Girons: 43°57′N. 1°18′W. (Landes) France

2073768	ad.	16.7.63	Abberton: 51°50′N. 0°53′E. (Essex)
	+	(3.7.68)	Mairena del Alcor: 37°23′N. 5°44′W. (Sevilla) **Spain**
2082400	ad.	8.7.64	Abberton
	+	17.9.68	Esparza de Galar: 42°44′N. 1°39′W. (Navarra) **Spain**
2082461	ad.	10.5.67	Abberton
	+	24.9.68	Tarbes: 43°14′N. 0°05′E. (Hautes Pyrénées) **France**
DS43045	1stW.	30.8.68	Dungeness: 50°55′N. 0°59′E. (Kent)
	+	*autumn* 68	Valverde: 38°19′N. 6°32′W. (Badajóz) **Spain**

Collared Dove *Streptopelia decaocto* (25: 10 miles: 2$\frac{11}{12}$ years)

ED48725	f.g.	25.2.68	Ellesmere Port: 53°17′N. 2°54′W. (Cheshire) MRG
	+	5.10.68	Galway City 250m. W.
2049056	f.g.	7.11.66	Slimbridge: 51°44′N. 2°25′W. (Gloucester) WT
	×	24.1.68	Lelant, Hayle (Cornwall) 170m. SW.
3088707	ad.	17.4.66	Avonmouth: 51°31′N. 2°42′W. (Gloucester) PJC
	v	9.8.68	Wexford City 170m. WNW.
ED14029	1stS.	17.6.67	Avonmouth CL
	×	8.8.68	Helensburgh (Dunbarton) 325m. NNW.
ED01247	juv.	9.9.67	Broadstairs: 51°22′N. 1°27′E. (Kent) SBBO
	()	2.8.68	Trafford Park, Manchester (Lancashire) 210m. NW.
ED01257	juv.	30.9.67	Broadstairs SBBO
	+	10.4.68	Petersfield (Hampshire) 100m. WSW.
ED00089	ad.	21.2.68	Lydd: 50°57′N. 0°55′E. (Kent) DBO
	×	23.4.68	Parce: 47°51′N. 0°12′W. (Sarthe) **France (3rd)**

Barn Owl *Tyto alba* (36: 50 miles: 4$\frac{6}{12}$ years)

Not only were there many more recoveries of Barn Owls in 1968 than in any previous year, but there was also apparently more movement. Nine recoveries indicated movement of more than 20 miles, of which the two most distant are published in full.

GM41079	pull.	10.6.67	*near* Thornhill: 55°15′N. 3°46′W. (Dumfries) NSRG
	×	17.1.68	Penrith (Cumberland) 50m. SE.
GM36427	pull.	17.8.67	Geddington: 52°26′N. 0°40′W. (Northampton) DH
	×	17.10.68	Ashill, Watton (Norfolk) 60m. E.

Long-eared Owl *Asio otus* (6: 10 miles: 4 years)

AJ19595	f.g.	5.11.63	Isle of May: 56°11′N. 2°33′W. (Fife)
	×A	(9.3.68)	Blaxton, Doncaster (York) 190m. SSE.
AJ95514	f.g.	16.4.66	North Somercotes: 53°28′N. 0°08′E. (Lincoln) PG
	×A	*c.* 1.6.68	Eina: 60°34′N. 10°41′E. (Opland) **Norway (2nd)**

Short-eared Owl *Asio flammeus* (1: 2 years)

AD4303	f.g.	6.11.66	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	×	(11.11.68)	Inversnaid, Aberfoyle (Stirling) 285m. NW.

Swift *Apus apus* (120: 130 miles: 11$\frac{11}{12}$ years)

SE41480	f.g.	16.7.67	Hindley: 53°32′N. 2°35′W. (Lancashire) MRG
	×	(6.9.68)	Oslo: 59°56′N. 10°45′E. (Akershus) **Norway (1st)**

SC94997	ad.	7.7.65	Marston: 52°59′N. 0°41′W. (Lincoln) WMP
	+	15.9.68	Masalfasar: 39°34′N. 0°24′W. (Valencia) **Spain (9th)**
SE04039	ad.	21.5.67	Westwood Park: 52°16′N. 2°11′W. (Worcester) GHG
	+	24.1.68	*near* Kakenge: 04°54′S. 21°55′E. (Kasai) **Congo (5th)**
SC87156	ad.	17.7.66	Hoddesdon: 51°47′N. 0°00′ (Hertford) RMRG
	+	*c.* 1.6.68	Ngoso: 04°46′S. 19°18′E. (Kasai) **Congo (6th)**
SC62873	ad.	9.7.64	Hoddesdon RMRG
	+	10.5.68	Puerto de Santa Maria: 36°36′N. 6°14′W. (Cádiz) **Spain (10th)**
SE12528	ad.	17.5.67	Weston Turville: 51°47′N. 0°46′W. (Buckingham) B&S
	+	20.9.68	Boundji: 01°05′S. 15°18′E. **Congo (7th)**
SC95545	f.g.	29.7.65	Beddington: 51°23′N. 0°08′W. (Surrey) AMH
	+	4.4.68	*near* Idiofa: 05°00′S. 19°38′E. (Kinshasa) **Congo (8th)**
SE74574	ad.	23.6.68	Beddington AMH
	×	(19.8.68)	Villamartin: 36°52′N. 5°38′W. (Cádiz) **Spain (11th)**

The number of African recoveries of Swifts is growing at an impressive rate. SC87156 is of particular interest, not only because of the summer date, but also because the bird was shot with a bow and arrow.

Kingfisher *Alcedo atthis* (10: 30 miles: 2 years)

SE33411	1stS.	25.5.67	Walcot: 52°42′N. 2°32′W. Wellington (Shropshire) CEW
	×	(26.11.68)	Crowton, Northwich (Cheshire) 38m. N.
SE32301	juv.	24.6.67	Walcot JML
	×	4.5.68	Tal y Bont, Caerhun (Caernarvon) 65m. NW.
SE00855	ad. ♂	15.7.67	Totton: 50°56′N. 1°29′W. (Hampshire) JWH
	×	20.1.68	Whyke, Chichester (Sussex) 32m. ESE.

Green Woodpecker *Picus viridis* (2: 5 miles: $2\frac{7}{12}$ years)

2039133	1stW.	2.10.65	Cheddington: 51°52′N. 0°40′W. (Buckingham) HMG
	×	(27.5.68)	Little Barford (Bedford) 28m. NE.

Great Spotted Woodpecker *Dendrocopos major* (5: 5 miles: $4\frac{9}{12}$ years)

CR93328	ad.♂	2.11.68	Bamburgh: 55°36′N. 1°42′W. (Northumberland) BRS
	×	17.11.68	Haddington (East Lothian) 45m. NW.
CR02624	juv. ♂	15.9.68	Spurn Point: 53°35′N. 0°06′E. (York)
	×	26.12.68	East Markham. Tuxford (Nottingham) 47m. WSW.
2076953	f.g. ♂	14.12.63	Hadley: 52°43′N. 2°29′W. (Shropshire) FBC
	×	(25.9.68)	Buglawton, Congleton (Cheshire) 33m. NNE.

CR93328 and CR02624 were both identified as belonging to the northern race *Dendrocopos m. major*.

Skylark *Alauda arvensis* (10: 5 miles: $5\frac{6}{12}$ years)

BC23644	f.g.	6.2.66	Elm Park: 51°32′N. 0°11′E. (Essex) RRS
	+	9.11.67	St Christoly: 45°21′N. 0°50′W. (Gironde) **France (3rd)**

Swallow *Hirundo rustica* (388: $6\frac{2}{12}$ years)

HJ59262	juv.	2.8.67	Denton: 53°26′N. 2°07′W. (Lancashire) JER
	v	12.5.68	Lac Kelbia: 35°50′N. 10°12′E. (Soussa) **Tunisia (2nd)**

HE29578	juv.	7.8.66	Shotton: 53°12′N. 3°02′W. (Flint) MRG
	×	18.5.68	Lulemino: 54°26′N. 16°58′E. (Koszalin) **Poland (1st)**
HN19986	juv.	8.9.67	Dawley: 52°39′N. 2°28′W. (Shropshire) PD
	×	19.4.68	*off* **Angola (1st)** (*'between* Cabinda and Luanda')

The remaining foreign recoveries are summarised in table C. It is of interest that no fewer than 15 of the 27 birds reported in November were said to have died as a result of abnormally cold weather in the **Transvaal.**

Table C. Countries and months of recoveries of Swallows

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
North Sea (1)	–	–	–	–	1	–	–	–	–	–	–	–
Netherlands (1)	–	–	–	–	–	–	1	–	–	–	–	–
Belgium (1)	–	–	–	–	1	–	–	–	–	–	–	–
Channel Islands (1)	–	–	–	–	1	–	–	–	–	–	–	–
France (7)	–	–	–	2	2	–	–	–	1	2	–	–
South Africa (58)	9	14	5	–	–	–	–	–	–	–	27	3

See footnote to table A

House Martin *Delichon urbica* (20: 50 miles: 2 $\frac{11}{12}$ years)

HB93201	ad.	3.7.66	Anderby Creek: 53°16′N. 0°20′E. Alford (Lincoln) HBRG
	×	23.5.68	Potter Heigham (Norfolk) 60m. SE.

Sand Martin *Riparia riparia* (1,506: 7 $\frac{10}{12}$ years)

HJ88051	f.g.	28.7.67	Cannich: 57°26′N. 4°37′W. (Inverness) WMM
	v	27.5.68	Tønsberg: 59°16′N. 10°25′E. (Vestfold) **Norway (1st)**
HC21414	ad.	7.7.67	Bamburgh: 55°36′N. 1°42′W. (Northumberland) BRS
	×	14.7.68	Vinkel: 56°25′N. 9°33′E. (Jylland) **Denmark (2nd)**
HK18056	juv.	19.7.67	Burgh Castle: 52°36′N. 1°40′E. Yarmouth (Norfolk) JFWB
	v	30.4.68	Lac Kelbia: 35°50′N. 10°12′E. (Soussa) **Tunisia (3rd)**
HE37182	juv.	9.7.66	Harrold: 52°12′N. 0°37′W. (Bedford) PJW
	v	6.7.67	Brompton on Swale (York) 15om. N.
	v	23.7.67	Brompton on Swale
	×	5.4.68	Rongères: 46°30′N. 2°03′E. (Indre) **France**

The remaining overseas recoveries are summarised in table D.

Table D. Countries and months of recoveries of Sand Martins

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
North Sea (2)	–	–	–	1	1	–	–	–	–	–	–	–
Belgium (3)	–	–	–	3	–	–	–	–	–	–	–	–
Netherlands (1)	–	–	–	–	–	–	1	–	–	–	–	–
Channel Islands (2)	–	–	–	–	2	–	–	–	–	–	–	–
France (46*)	–	–	–	18	11	–	2	13	2	–	–	–
Spain (2)	–	–	–	–	–	–	–	–	2	–	–	–

*Includes eleven controlled in 1967, but not reported until 1968
See footnote to table A

No fewer than 141 of the recoveries were third (or subsequent) handlings of birds previously reported: HE37182 is a particularly interesting example. Fewer long distance movements were reported within Great Britain and Ireland (only 21 over 200 miles) and the ringing effort was concentrated at relatively few major centres.

PLATE 61. Golden Eagle *Aquila chrysaetos*, Hebrides, June 1967 (*D. A. P. C. &*
(pages 443-444)

PLATE 62. Above, adult Kittiwake *Rissa tridactyla* with two well-feathered young showing the black bands on hind-neck and wings, Farne Islands, July 1962. Below, Gull-billed Tern *Gelochelidon nilotica* at nest, Denmark, May 1965 (*D. A. P. Cooke*)

PLATES 63 and 64 (*overleaf*). Three flight studies. Above, Swallow *Hirundo rustica*, Cheshire, July 1962. Below, Storm Petrel *Hydrobates pelagicus*, Shetland, June 1963. Over, Barn Owl *Tyto alba* nearing nest with prey, Cheshire, July 1968 (*D. A. P. Cooke*)

PLATES 65 and 66. Above, male Merlin *Falco columbarius* with eggs, Denbighshire, June 1966. Below, Black-winged Stilt *Himantopus himantopus* by nest, Greece, May 1961. Upper right, displaying Ruff *Philomachus pugnax*, Denmark, May 1965. Lower, nine Oystercatchers *Haematopus ostralegus*, Cheshire, October 1964 (*D. A. P. Cooke*)

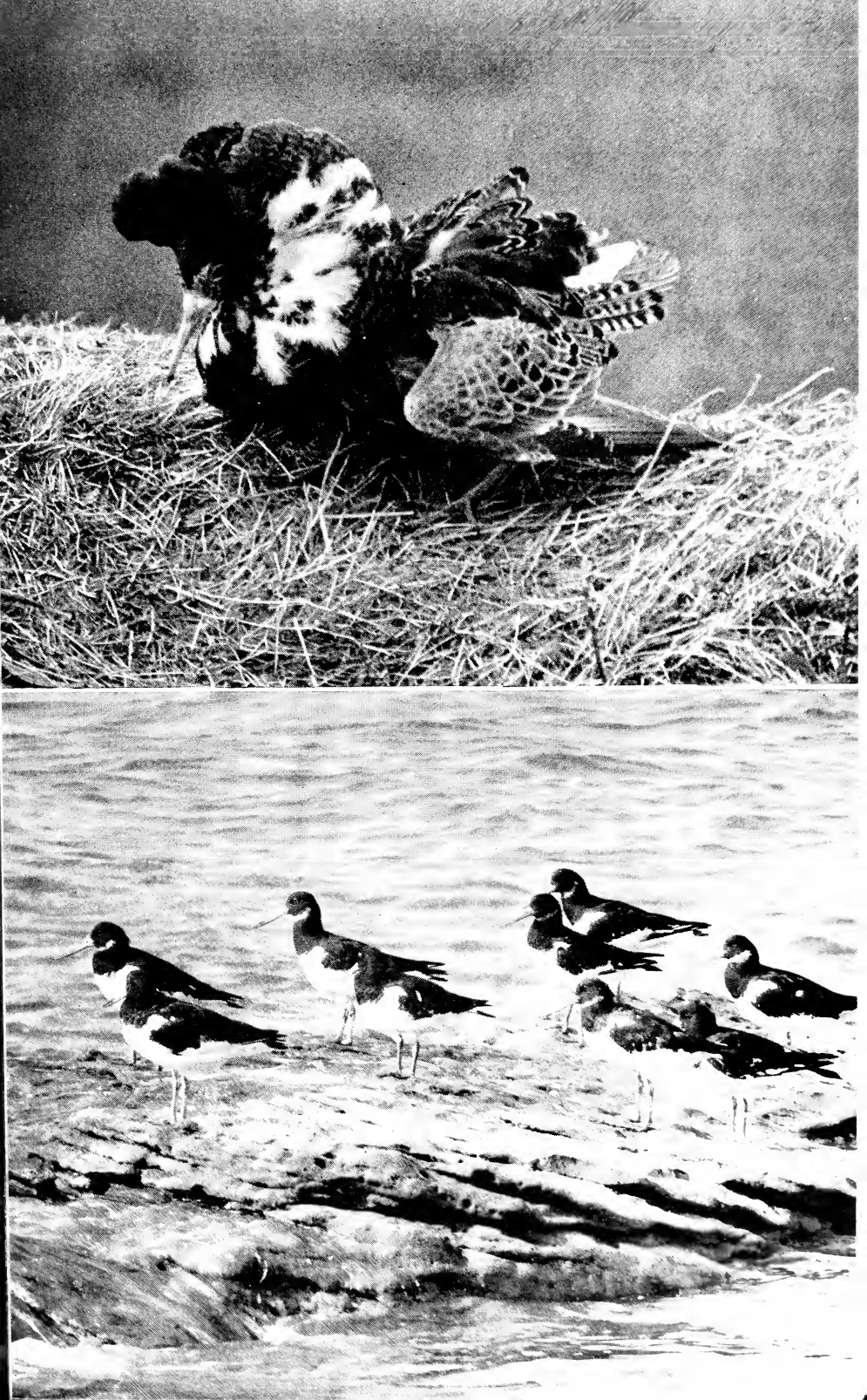


PLATE 67. Male Wheatear *Oenanthe oenanthe*, Denbigh, June 1968 (*D. A. P. Cooke*)

Carrion/Hooded Crow *Corvus corone* (16: 10 miles: 3 years)

SS74775	pull.	25.5.68	Oban: 56°25′N. 5°29′W. (Argyll) HMB
	+	(24.12.68)	Craighouse, Jura (Argyll) 42m. SW.
3101640	pull.	19.7.67	Paisley: 55°50′N. 4°26′W. (Renfrew) RAJ
	+	16.5.68	Kingussie (Inverness) 85m. N.

SS74775 was identified by the ringer as *C. c. cornix*, and 3101640 as *C. c. corone*.

Rook *Corvus frugilegus* (45: 30 miles: 8$\frac{1}{12}$ years)

SS51672	1stW.	4.12.67	Newburgh: 57°19′N. 2°01′W. (Aberdeen) AU
	×	7.1.68	Keithall, Inverurie (Aberdeen) 31m. W.

Jackdaw *Corvus monedula* (36: 25 miles: 9$\frac{1}{12}$ years)

3097004	ad.	3.5.64	Copeland: 54°40′N. 5°32′W. (Down)
	×	*c.* 5.7.68	Derrynawilt (Fermanagh) 72m. WSW.

Magpie *Pica pica* (16: 10 miles: 6 years)

ED00302	pull.	19.5.67	Whisby: 53°12′N. 0°39′W. (Lincoln) A&P
	+	19.7.68	Blyton Carr, Gainsborough (Lincoln) 17m. N.

Jay *Garrulus glandarius* (28: 15 miles: 12$\frac{1}{12}$ years)

3080908	f.g.	13.5.62	Hendon: 51°35′N. 0°14′W. (Middlesex) THW
	+	21.7.68	Marlow Common (Buckingham) 23m. W.

Great Tit *Parus major* (140: 30 miles: 8$\frac{3}{12}$ years)

BE25728	pull.	21.6.67	Goyt Valley: 53°18′N. 1°59′W. (Derby) S&B
	×	(11.5.68)	Overton, Wrexham (Denbigh) 45m. SW.
BC95326	1stW. ♀	11.3.67	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	×	29.10.68	Voorburg: 52°04′N. 4°18′E. (Zuid Holland) **Netherlands (3rd)**
AX72364	1stW. ♂	5.11.66	Cambridge: 52°12′N. 0°07′E. SJT
	v	17.3.67	Ingatestone (Essex) 35m. SSE.
	×	(1.2.68)	Cambridge
BA76132	1stW. ♀	2.12.64	Tring: 51°48′N. 0°40′W. (Hertford) BTO
	v	25.3.68	Meopham (Kent) 50m. SE.
BE88420	f.g.	21.1.68	Tunbridge Wells: 51°08′N. 0°15′E. (Kent) BAF
	v	14.4.68	Witton, North Walsham (Norfolk) 115m. NNE.

Blue Tit *Parus caeruleus* (367: 30 miles: 11 years)

91968	f.g.	19.1.68	Durham: 54°47′N. 1°34′W. JCC
	×	(1.12.68)	Thorpe Perrow, Bedale (York) 35m. S.
HH83227	ad.	27.12.66	Hornsea: 53°55′N. 0°10′W. (York) JESW
	×	16.3.68	Ampleforth (York) 40m. WNW.
HJ68072	pull.	16.6.67	Burnley: 53°48′N. 2°14′W. (Lancashire) W&M
	v	16.10.68	Possingworth Park, Uckfield (Sussex) 215m. SE.
HB75173	1stW. ♀	13.2.66	Nuneaton: 52°32′N. 1°28′W. (Warwick) HL
	v	29.5.68	Derry Hill, Chippenham (Wiltshire) 80m. SSW.
HK32172	juv.	5.8.67	Port Ham: 51°52′N. 2°16′W. (Gloucester) SVRG
	×	3.3.68	King's Norton, Birmingham (Warwick) 38m. NNE.

HN90117	1stW. ♀	27.1.68	High Wycombe: 51°38′N. 0°45′W. (Buckingham) PJE
	×	(7.4.68)	Horley (Surrey) 40m. SE.
SE11284	pull.	21.5.67	Osterley: 51°29′N. 0°21′W. (Middlesex) DGH
	v	10.11.68	Wyboston (Bedford) 47m. N.

Long-tailed Tit *Aegithalos caudatus* (18: 15 miles: 3 10/12 years)

AN26314	juv.	5.7.64	Armthorpe: 53°32′N. 1°03′W. (York) PH
	×	(30.3.68)	Eaton, Retford (Nottingham) 17m. SSE.
PE3370	f.g.	25.8.67	Boughton: 52°35′N. 0°30′E. (Norfolk) MRP
	×	15.2.68	Bridgham Heath, Thetford (Norfolk) 17m. ESE.

Wren *Troglodytes troglodytes* (44: 20 miles: 4 11/12 years)

P99830	f.g.	21.10.67	Hilbre: 53°23′N. 3°14′W. (Cheshire) HiBO
	×	20.3.68	Holt, Wrexham (Denbigh) 25m. SE.
PA2336	f.g.	22.10.67	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	×	*c.* 12.1.68	North Mundham, Chichester (Sussex) 165m. SSW.
PA2354	f.g.	23.10.67	Gibraltar Point
	×	20.6.68	Grassington, Skipton (York) 115m. NW.
P61235	f.g.	10.10.65	Lane End: 51°37′N. 0°50′W. (Buckingham) SBRG
	×	29.2.68	Hautebut: 50°08′N. 1°29′E. (Somme) **France (5th)**
P95823	juv.	1.7.67	Winchester: 51°04′N. 1°19′W. (Hampshire) GRMP
	×	3.1.68	Glisy: 49°52′N. 2°24′E. Amiens (Somme) **France (6th)**

Bearded Tit *Panurus biarmicus* (27: 2 11/12 years)

HH69874	f.g. ♀	24.9.67	Walberswick: 52°18′N. 1°37′E. (Suffolk) DBC
	v	21.1.68	King's Lynn (Norfolk) 60m. WNW.
HJ01191	juv. ♂	12.7.67	Minsmere: 52°14′N. 1°37′E. (Suffolk) HEA
	v	27.10.68	Brancaster (Norfolk) 65m. NW.
HK87517	f.g. ♀	12.9.67	Minsmere HEA
	v	21.1.68	Thatcham, Newbury (Berkshire) 130m. WSW
HK87735	f.g. ♂	20.9.67	Minsmere HEA
	v	3.12.67	Thatcham

The remaining long-distance movements were between regularly frequented sites in Suffolk, Kent and Hampshire.

Mistle Thrush *Turdus viscivorus* (41: 50 miles: 4 5/12 years)

CV59023	ad.	13.4.66	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	+	11.11.68	Grand: 48°23′N. 5°29′E. (Vosges) **France (16th)**
CS42050	f.g.	10.12.67	Skelton: 54°43′N. 2°51′W. (Cumberland) GTF
	×	(15.5.68)	Boston Spa (York) 80m. SE.
CA78146	f.g.	9.5.64	Tattershall: 53°07′N. 0°11′W. (Lincoln) RKS
	+	0.11.67	Blangy: 49°56′N. 1°38′E. (Seine Maritime) **France (17th)**
CB36497	f.g.	8.1.65	Cliffe: 51°28′N. 0°30′E (Kent) B&K
	×	14.7.68	Windlesham (Surrey) 50m. W.

Fieldfare *Turdus pilaris* (28: 4 11/12 years)

CS46895	1stW. ♀	10.12.67	Lincoln: 53°14′N. 0°33′W. GPS
	+	21.1.68	Mellid: 42°55′N. 8°01′W.(Coruña) **Spain (5th)**

CX82574	1stW.	31.10.66	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	/?/	14.1.68	Miloslawice: 52°44′N. 17°18′E. (Poznan) **Poland (1st)**
CV43167	f.g.	5.11.66	Burham: 51°20′N. 0°29′E. (Kent) MKRG
	+	7.1.68	Lido di Jésolo: 45°31′N. 12°30′E. (Venezia) **Italy (13th)**

The remaining foreign recoveries are summarised in table E.

Table E. Countries and months of recoveries of Fieldfares

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
France (6)	1	1	–	1	–	–	–	–	–	1	1	1
Belgium (2)	1	–	–	–	–	–	–	–	–	1	–	–
Denmark (2)	1	–	–	–	–	–	–	–	–	1	–	–
Norway (8)	–	–	–	1	1	2	–	2	1	1	–	–
Sweden (4)	–	–	–	–	3	–	–	1	–	–	–	–
Finland (2)	–	–	–	–	1	1	–	–	–	–	–	–

See footnote to table A

Song Thrush *Turdus philomelos* (378: 9$\frac{6}{12}$ years)

CB86269	f.g.	2.10.65	Bamburgh: 55°36′N. 1°42′W. (Northumberland) BRS
	×	20.3.68	Grosseto: 42°46′N. 11°06′E. **Italy (1st)**

The remaining recoveries are summarised in table F.

Table F. Countries and months of recoveries of Song Thrushes

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	?
Great Britain													
0-2 miles (284)	12	17	30	33	53	57	36	18	8	9	7	4	–
3-10 miles (27)	2	2	5	3	6	4	–	1	–	1	1	2	–
11-100 miles (46)	5	2	7	9	5	3	4	1	2	–	4	3	1
100+ miles (3)	–	–	1	–	1	1	–	–	–	–	–	–	–
Denmark (2)	–	–	–	2	–	–	–	–	–	–	–	–	–
Netherlands (1)	–	–	1	–	–	–	–	–	–	–	–	–	–
Belgium (1)	–	–	–	–	–	–	–	–	–	–	1	–	–
France (6)	1	1	–	1	–	–	–	–	–	1	1	1	–
Spain (5)	3	–	1	–	–	–	–	–	–	–	–	1	–
Portugal (2)	–	–	–	–	–	–	–	–	–	–	–	2	–

See footnote to table A

Redwing *Turdus iliacus* (61: 6$\frac{2}{12}$ years)

46004S	f.g.	8.12.61	Peterhead: 57°30′N. 1°46′W. (Aberdeen) AU
	×	24.2.68	Acrise, Folkestone (Kent) 46om. SSE.
CV45703	f.g.	20.2.66	Barrow: 54°07′N. 3°14′W. (Lancashire) KP
	+	(8.9.67)	Keda: 41°36′N. 41°56′E. (Georgia) **U.S.S.R. (19th)**
CS32004	1stW.	29.1.67	Cleethorpes: 53°34′N. 0°02′W. (Lincoln) CRG
	+	26.2.68	Shtora: 33°48′N. 35°50′E. **Lebanon (3rd)**
CV39097	f.g.	18.10.66	Tetney Lock: 53°29′N. 0°01′W. (Lincoln) CRG
	+	15.1.68	Makhindzhauri: 41°40′N. 41°43′E. (Georgia) **U.S.S.R. (20th)**
CS23535	1stW.	29.1.67	Frankby: 53°23′N. 3°08′W. (Cheshire) CFF
	+	3.1.68	Kobuleti: 41°48′N. 41°47′E. (Georgia) **U.S.S.R. (21st)**
CV52790	f.g.	7.1.67	High Wycombe: 51°38′N. 0°45′W. (Buckingham) SBRG
	+	0.11.68	Domus di Maria: 38°57′N. 8°51′E. (Cagliari) **Sardinia (2nd)**

The remaining foreign recoveries are summarised in table G.

Table G. Countries and months of recoveries of Redwings

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Italy (4)	2	1	–	–	–	–	–	–	–	1	–	–
Portugal (3)	1	2	–	–	–	–	–	–	–	–	–	–
Spain (6)	3	1	–	–	–	–	–	–	–	–	1	1
France (11)	2	3	3	–	–	–	–	–	–	–	–	3
Belgium (5)	–	–	–	–	1	–	–	–	–	2	2	–
Germany (2)	–	1	1	–	–	–	–	–	–	–	–	–
Norway (1)	–	–	–	–	–	–	–	–	–	1	–	–
Sweden (1)	–	–	–	1	–	–	–	–	–	–	–	–
Finland (6)	–	–	–	–	–	2	2	–	1	1	–	–

See footnote to table A

Ring Ouzel *Turdus torquatus* (7: 5 miles: 3$\frac{2}{12}$ years)

CC08314	f.g.	2.10.65	Graythorp: 54°40′N. 1°15′W. (Durham) PR
	+	13.10.68	Calamocha: 40°54′N. 1°18′W. (Teruel) **Spain (8th)**
CA08278	ad. ♂	29.10.64	Spurn Point: 53°35′N. 0°06′E. (York)
	+	21.1.68	Marie-sur-Tinée: 44°02′N. 7°08′E. (Alpes Maritimes) **France**
CV14360	1stW. ♂	29.9.66	Spurn Point
	×	10.12.68	Amizmiz: 31°14′N. 8°14′W. (Marrakech) **Morocco (3rd)**
CV78405	1stW. ♀	25.9.68	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	/?/	(16.12.68)	Manzanera: 40°04′N. 0°50′W. (Teruel) **Spain (9th)**
CR26459	1stW. ♂	9.10.68	Beachy Head: 50°44′N. 0°16′E. (Sussex) RHC
	×	(11.12.68)	Sées: 48°36′N. 0°10′E. (Orne) **France**

Blackbird *Turdus merula* (1,804: 9$\frac{4}{12}$ years)

All recoveries reported during 1968 are summarised in table H. Of these, foreign recoveries of Blackbirds ringed in the breeding season, together with the most northerly, north-easterly and easterly records, are of more than usual interest and are therefore published in full.

Table H. Countries and months of recoveries of Blackbirds

Country of recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	?
British Isles													
0-2 miles (1,476)	97	117	220	192	221	221	146	85	35	34	50	52	6
3-100 miles (127)	19	7	26	18	15	14	4	6	–	2	6	10	–
100 + miles (50)	8	8	10	2	1	3	1	–	–	2	10	5	–
Spain (2)	1	–	–	–	–	–	–	–	–	–	1	–	–
France (11)	4	–	1	–	–	–	–	–	–	–	3	3	–
Belgium (6)	–	–	1	1	–	–	–	–	–	–	1	3	–
Netherlands (8)	2	–	1	2	–	1	1	–	–	1	–	–	–
Germany (15)	2	–	4	2	1	2	3	1	–	–	–	–	–
Denmark (17)	1	1	2*	4	1	3	–	2	–	1	1	1	–
Norway (52)	–	–	–	8	3	3	10	6	5	14	3	–	–
Sweden (24)	1	–	4	6	4	2	2	1	–	2	1	–	1
Finland (14)	–	–	3	2	1	1	3	2	1	1	–	–	–
Baltic States (1)	–	–	–	–	–	–	–	1	–	–	–	–	–

*includes one 'Kattegat'. See footnote to table A

CB15384	f.g.	7.10.65	Isle of May: 56°11′N. 2°33′W. (Fife)
	v	10.12.65	Stiffkey (Norfolk) 26om. SE.
	v	7.2.66	Stiffkey
	×	12.9.68	Sandnessjöen: 66°01′N. 12°40′E. (Nordland) **Norway**
CA12710	ad. ♂	26.1.64	Carrowdore: 54°34′N. 5°33′W. (Down) CBO
	()	20.8.68	Daugmale: *c.* 56°50′N. 24°15′E. **Latvian S.S.R. (3rd)**

CV14243	ad. ♀	11.7.66	Spurn Point: 53°35′N. 0°06′E. (York)
	+	14.10.68	Vatland: 58°20′N. 6°17′E. (Rogaland) **Norway**
CV95176	1stW. ♂	9.3.67	Spurn Point
	×	16.7.68	Santonen: 65°02′N. 24°59′E. (Oulu) **Finland**
CB48955	pull.	2.5.65	Great Hallingbury: 51°50′N. 0°10′E. (Essex) RBN
	+	17.11.68	Moncontour: 46°53′N. 0°01′W. (Vienne) **France**
CX74801	ad. ♀	13.5.66	Elm Park: 51°32′N. 0°11′E. (Essex) RRS
	+	2.1.68	Limpias: 43°22′N. 3°25′W. (Santander) **Spain**

Wheatear *Oenanthe oenanthe* (6: 5 miles: 4$\frac{8}{12}$ years)

BE48678	juv.	14.7.68	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	v	31.8.68	Isle of May (Fife) 230m. S.
BE51488	1stW.	31.8.68	Calf of Man: 54°03′N. 4°49′W.
	+	15.11.68	Puerto de Santa Maria: 36°36′N. 6°14′W. (Cádiz) **Spain**
BC64101	juv.	2.7.66	Inishvickillane: 52°03′N. 10°36′W. (Kerry) C&K
	+	5.3.68	Ceuta: 35°53′N. 5°19′W. **Morocco (6th)**
BC60200	juv.	9.7.68	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	/?/	*autumn* 68	Chiclana: 39°26′N. 6°09′W. (Cádiz) **Spain**
HR86819	1stW.	16.10.68	Portland Bill: 50°31′N. 2°27′W. (Dorset)
	+	6.11.68	Augette: 43°23′N. 5°00′E. (Bouches du Rhône) **France**

Stonechat *Saxicola torquata* (5: 5 miles: 2$\frac{1}{12}$ years)

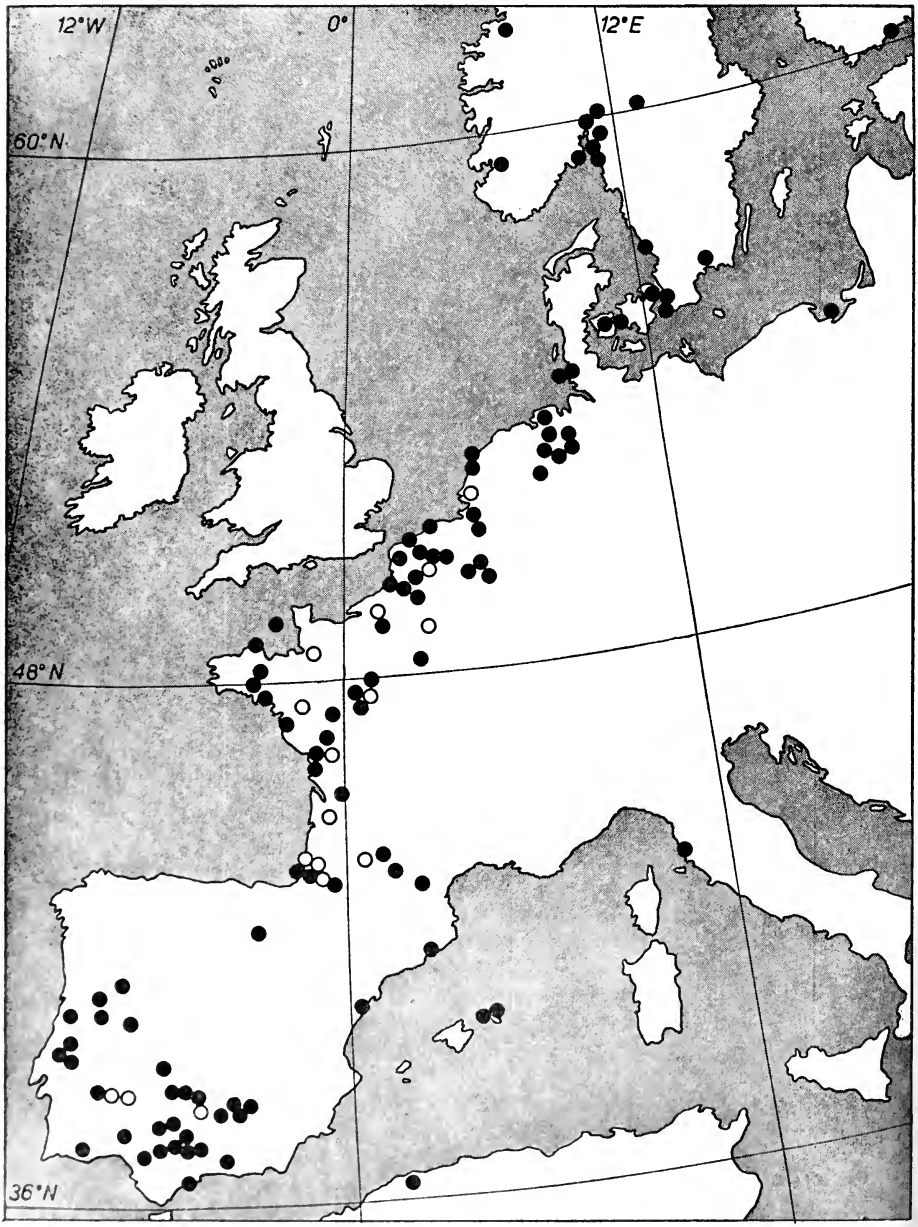
HK95703	1stW. ♂	14.9.67	Calf of Man: 54°03′N. 4°49′W.
	×	3.11.68	Sale (Cheshire) 110m. ESE.
HH50610	1stW. ♂	24.10.66	Minsmere: 52°14′N. 1°37′E. (Suffolk) HEA
	×	23.3.68	Biddulph (Stafford) 165m. WNW.

Whinchat *Saxicola rubetra* (2: $\frac{2}{12}$ year)

HB80101	pull.	16.6.68	Todburn: 55°15′N. 1°45′W. (Northumberland) TTRG
	×	8.9.68	Briviesca: 42°33′N. 3°19′W. (Burgos) **Spain (12th)**
SE77262	pull.	27.6.68	Appleby: 54°35′N. 2°30′W. (Westmorland) WR
	v	19.8.68	Wytham (Berkshire) 200m. SSE.

Redstart *Phoenicurus phoenicurus* (10: 30 miles: 2$\frac{1}{12}$ years)

HS30690	1stW. ♂	12.9.68	Donna Nook: 53°28′N. 0°10′E. (Lincoln) RM
	×	(21.9.68)	Market Harborough (Leicester) 80m. SW.
HH40621	1stW. ♀	29.8.66	Huttoft Bank: 53°17′N. 0°20′E. (Lincoln) HBRG
	+	15.10.68	Albondón: 36°50′N. 3°12′W. (Granada) **Spain**
HS12234	1stW. ♂	19.9.68	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	+	*c.* 5.10.68	Oignies: 50°28′N. 2°59′E. (Pas de Calais) **France (11th)**
HK05798	pull.	29.5.68	Bromyard: 52°11′N. 2°30′W. DGB
	v	23.8.68	East Boldre, Brockenhurst (Hampshire) 100m. SSE.
HC95440	pull.	9.6.67	Weston Birt: 51°37′N. 2°11′W. (Gloucester) EJMB
	× (=♀)	5.5.68	Waltham Abbey (Essex) 95m. E.
HC68486	1stW. ♂	29.9.66	Dungeness: 50°55′N. 0°59′E. (Kent)
	()	26.9.68	El Gara: 33°15′N. 7°17′W. (Casablanca) **Morocco (5th)**
HH35425	1stW. ♂	24.8.67	Beachy Head: 50°44′N. 0°16′E. (Sussex) BHRS
	v	21.4.68	Parkhill, Lyndhurst (Hampshire) 80m. W.
HJ84898	1stW. ♀	14.9.68	Low Hauxley: 55°19′N. 1°33′W. (Northumberland) NRG
	()	(2.10.68)	Orléansville: 36°11′N. 1°21′E. **Algeria (2nd)**



Map 3. Foreign recoveries of 118 Robins *Erithacus rubecula*. Recoveries in this report are marked by open circles and all previous ones by solid circles (*drawn by R. C. Faulkner*)

HP30412	pull.	6.6.68	Caton: 54°04′N. 2°43′W. (Lancashire) MBRG
	+	30.9.68	Andújar: 38°02′N. 4°03′W. (Jaén) **Spain**

Black Redstart *Phoenicurus ochruros* (1 : 1$\frac{3}{12}$ years)

HN14495	f.g.	3.10.67	Dungeness: 50°55′N. 0°59′E. (Kent)
	+	*Jan/Feb* 1968	Torremolinos: 36°38′N. 4°30′W. (Málaga) **Spain (3rd)**

Nightingale *Luscinia megarhynchos* (1 : 2$\frac{9}{12}$ years)

BA45055	f.g.	14.8.65	Dungeness: 50°55′N. 0°59′E. (Kent)
	v	11.5.68	Assington, Sudbury (Suffolk) 75m. N.

Bluethroat *Luscinia svecica* (1 : 1$\frac{11}{12}$ years)

HH59455	1stW. ♂	21.9.66	Slapton Ley: 50°17′N. 3°39′W. (Devon)
	v	14.9.68	Slapton Ley

It is often considered that such Continental species as the Bluethroat reach the British Isles only as drift migrants. This recovery suggests the possibility of a regular small-scale migration through Britain.

Robin *Erithacus rubecula* (215 : 150 miles : 6$\frac{4}{12}$ years)

Robins ringed at Low Hauxley, 55°19′N. 1°33′W. (Northumberland), were recovered as follows:

Ringed		*Recovered*	
HB32252	10.4.66	11.4.68	Store Faerder: 59°04′N. 10°32′E. (Vestfold) **Norway (6th)**
HB32280	10.4.66	(17.4.68)	Ubeda: 38°01′N. 3°22′W. (Jaén) **Spain**
HB32318	13.4.66	(30.12.68)	Burbure: 50°32′N. 2°28′E. (Pas de Calais) **France**
HB32329	17.4.66	(2.2.68)	Gerona: 41°59′N. 2°49′E. **Spain**
HH11683	14.10.66	25.4.68	Falsterbo: 55°23′N. 12°50′E. (Malmöhus) **Sweden (5th)**
HB62648	ad.	13.4.66	Spurn Point: 53°35′N. 0°06′E. (York)
	×	*mid* 9.68	Hjelset: 62°46′N. 7°30′E. (Møre og Romsdal) **Norway (7th)**
HK83925	1stW.	15.9.68	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	×	29.10.68	Campo Frío: 37°45′N. 6°35′W. (Huelva) **Spain**
HC82389	f.g.	29.11.66	Sway: 50°47′N. 1°37′W. (Hampshire) EC
	v	3.3.67	Sway
	v	8.12.67	Sway
	×	20.5.68	Gainsborough (Lincolnshire) 185m. NNE.
HH17245	f.g.	13.9.67	Tresco: 49°57′N. 6°20′W. Isles of Scilly JCR
	×	17.5.68	Shrewsbury (Shropshire) 245m. NE.

The remarkable series of Low Hauxley birds exemplifies ringing at its most informative best. The history of the Sway Robin, on the other hand, *suggests* the possibility of an interesting annual winter movement, but without being conclusive.

Reed Warbler *Acrocephalus scirpaceus* (101 : 100 miles : 7 years)

HR71447	juv.	25.8.68	Lincoln: 53°14′N. 0°33′W. GPS
	×	(24.9.68)	Linford, Tilbury (Essex) 125m. SSE.
HJ03252	juv.	26.8.67	Oulton Broad: 52°28′N. 1°43′E. (Suffolk) RSB
	v	25.5.68	St Elooi's-Vijve: 50°54′N. 3°24′E. (West Flanders) **Belgium (1st)**
HB89814	juv.	25.7.67	Marsworth: 51°50′N. 0°40′W. (Hertford) BTO
	v	28.7.68	Barton upon Humber (Lincoln) 130m. N.

HH64300	juv.	24.8.67	Brent Reservoir: 51°34′N. 0°15′W. (Middlesex) THW
	v	4.7.68	Shotton (Flint) 165m. NW.
HP86106	ad.	15.8.68	Chew Lake: 51°20′N. 2°38′W. (Somerset) CVRS
	/?/	15.12.68	Plencia: 43°24′N. 2°56′W. (Vizcaya) **Spain (9th)**
HC17038	ad.	12.6.66	Stodmarsh: 51°19′N. 1°13′E. (Kent) SBBO
	+	(24.9.68)	Beire: 42°28′N. 1°38′W. (Navarra) **Spain (10th)**
HP77292	f.g.	18.8.68	Sandwich Bay: 51°17′N. 1°20′E. (Kent)
	+	3.9.68	Idiazabal: 43°01′N. 2°10′W. (Guipúzcoa) **Spain (11th)**
HJ14381	pull.	13.6.67	Frensham: 51°10′N. 0°48′W. (Surrey) PGD
	v	3.6.68	Thorpe, Egham (Surrey) 20m. NE.
	v	10.8.68	Minsmere (Suffolk) 105m. NE. (from Thorpe)
HK53565	ad.	13.7.67	Chichester: 50°50′N. 0°48′W. (Sussex) CHI
	v	30.7.68	Barton upon Humber (Lincoln) 195m. N.

In addition, there were seven recoveries in **Portugal,** six in September and one in October.

Sedge Warbler *Acrocephalus schoenobaenus* (52: 150 miles: $3\frac{11}{12}$ years)

HK23580	ad.	28.4.68	Copeland: 54°40′N. 5°32′W. (Down)
	v	4.8.68	St Sampson: 49°29′N. 2°32′W. (Guernsey) **Channel Islands (1st)**
HR21326	juv.	21.8.68	Sprotborough: 53°32′N. 1°11′W. (York) BMB
	v	3.9.68	Murston, Sittingbourne (Kent) 170m. SE.
HR51999	juv.	30.8.68	Shotton: 53°12′N. 3°02′W. (Flint) MRG
	×	16.9.68	Brixham (Devon) 195m. S.
HJ07359	pull.	9.6.67	Holme: 52°58′N. 0°33′E. (Norfolk) HBO
	v	13.8.67	Le Migron: 45°48′N. 0°23′W. (Charente Maritime) **France**
HH69466	juv.	7.9.67	Walberswick: 52°18′N. 1°38′E. (Suffolk) DBC
	×	(19.4.68)	Imini: 31°01′N. 7°15′W. (Marrakech) **Morocco (2nd)**
HK24405	ad.	23.7.67	Hollesley: 52°03′N. 1°26′E. (Suffolk) PRC
	×	10.4.68	Zarauz: 43°17′N. 2°10′W. (Guipúzcoa) **Spain (4th)**
HE81104	juv.	21.8.66	Weston Turville: 51°47′N. 0°46′W. (Buckingham) SBRG
	×	*c.* 22.7.68	Arney, Enniskillen (Fermanagh) 330m. WNW.
HA13935	ad.	6.5.67	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	×	20.6.68	Banbridge (Down) 190m. NNW.
HN10372	juv.	19.7.68	Abingdon: 51°41′N. 1°17′W. (Berkshire) CMR
	×	31.7.68	Montsoreau: 47°13′N. 0°04′E. (Maine et Loire) **France**
HK02142	f.g.	7.9.67	Coate Reservoir: 51°34′N. 1°47′W. (Wiltshire) GLW
	×	16.5.68	Helgoland: 54°11′N. 7°55′E. **Germany (1st)**
HC15715	juv.	16.9.66	Elm Park: 51°32′N. 0°11′E. (Essex) RRS
	×	5.5.68	Tours: 47°23′N. 0°41′E. (Indre et Loire) **France**
HJ58773	ad.	29.7.67	Lower Shorne: 51°25′N. 0°26′E. (Kent) CS
	v	29.6.68	Fairburn, Castleford (York) 180m. NW.
HC47205	ad.	22.7.66	Chew Lake: 51°20′N. 2°38′W. (Somerset) CVRS
	×	(21.6.68)	Cawdor (Nairn) 430m. N.
HP86324	juv.	20.8.68	Chew Lake CVRS
	0	26.9.68	Chipiona: 36°44′N. 6°26′W. (Cádiz) **Spain (5th)**
HK53168	juv.	8.7.67	Chichester: 50°50′N. 0°48′W. (Sussex) CHI
	×	(3.8.68)	Rigside, Douglas (Lanark) 350m. NW.

HK53276	juv.	15.9.67	Chichester CHI
	v	4.5.68	Kilconquhar Loch, Elie (Fife) 380m. NNW.
HE72119	juv.	25.7.67	Chichester CHI
	v	(17.4.68)	Eu: 50°03′N. 1°25′E. (Seine Maritime) **France**
HP20654	juv.	16.9.68	Chichester CHI *07.00 hours*
	×	19.9.68	Anglet: 43°29′N. 1°32′W. (Basses Pyrénées) **France**
AX12084	1stW.	8.8.65	Beachy Head: 50°44′N. 0°16′W. (Sussex) BHRS
	×	16.4.68	Reus: 41°10′N. 1°06′E. (Tarragona) **Spain (6th)**

HP20654 weighed 19.5 grams at the time of ringing and may well have reached 20.0 grams before leaving Britain at dusk. A typical summer weight for the species would be 11.0 grams.

Blackcap *Sylvia atricapilla* (27: 100 miles: 2 $\frac{10}{12}$ years)

HJ83612	ad. ♂	14.11.67	Beal: 55°41′N. 1°54′W. (Northumberland) NRG
	×	30.7.68	Vieux Thann: 47°48′N. 7°08′E. (Haut Rhin) **France (10th)**
HS29043	ad. ♀	5.9.68	Hornsea: 53°55′N. 0°10′W. (York) JESW
	+	29.10.68	Fatarella: 41°10′N. 0°28′E. (Tarragona) **Spain**
AC95781	f.g. ♀	1.10.65	Spurn Point: 53°35′N. 0°06′E. (York)
	/?/	(19.2.68)	Pátrai: 38°14′N. 21°44′E. (Akhaia) **Greece (1st)**
HBJ1291	ad. ♀	3.9.66	Sandbach: 53°09′N. 2°22′W. (Cheshire) G&W
	+	(10.2.68)	Pegalajar: 37°45′N. 3°39′W. (Jaén) **Spain**
HR68412	1stW. ♂	19.10.68	Bardsey: 52°46′N. 4°48′W. (Caernarvon)
	×	(7.12.68)	Penryn (Cornwall) 180m. S.
HJ01435	juv.	29.7.67	Minsmere: 52°14′N. 1°37′E. (Suffolk) HEA
	+	26.4.68	Capdepera: 39°43′N. 3°25′E. (Mallorca) **Balearic Islands (1st)**
HK46726	1stW. ♂	20.8.67	Springfield: 51°44′N. 0°30′E. (Essex) RWR
	0	12.1.68	Lastours: 43°20′N. 2°23′E. (Aude) **France (11th)**
HK44235	f.g.	4.10.68	Cape Clear: 51°26′N. 9°31′W. (Cork)
	+	7.12.68	Marchena: 37°20′N. 5°24′W. (Sevilla) **Spain**
HE63100	1stS. ♂	29.4.67	Kempton Park: 51°25′N. 0°23′W. (Middlesex) HRG
	+	0.12.68	Cagliari: 39°14′N. 9°07′E. **Sardinia (1st)**
HJ05955	ad. ♂	13.5.67	Wokingham: 51°25′N. 0°51′W. (Berkshire) MJDH
	×	3.4.68	Ain-Sebaa: 33°40′N. 7°30′W. (Casablanca) **Morocco (7th)**
HN15258	ad. ♂	28.10.67	Lundy: 51°12′N. 4°40′W. (Devon)
	×	5.7.68	Berg: 50°48′N. 5°29′E. (Limburg) **Belgium (1st)**
SE48176	juv.	22.7.67	Burgess Hill: 50°57′N. 0°08′W. (Sussex) JAW
	×	16.4.68	Juscorps: 46°13′N. 0°23′W. (Deux Sèvres) **France (12th)**
HR10105	f.g. ♂	24.4.68	Dungeness: 50°55′N. 0°59′E. (Kent)
	v	2.5.68	Knokke sur Mer: 51°21′N. 3°17′E. (West Flanders) **Belgium (2nd)**

Garden Warbler *Sylvia borin* (2: 5 miles: 2 $\frac{11}{12}$ years)

AX02927	f.g.	14.8.65	Isle of May: 56°11′N. 2°33′W. (Fife)
	0	(8.8.68)	Lisbon: 38°45′N. 9°10′W. (Estremadura) **Portugal (3rd)**

Whitethroat *Sylvia communis* (55: 100 miles: 4 $\frac{8}{12}$ years)

AX02608	ad. ♀	15.5.65	Isle of May: 56°11′N. 2°33′W. (Fife)
	×	0.7.67	Saugon: 45°11′N. 0°30′W. (Gironde) **France**
HK94861	ad. ♀	15.5.68	Isle of May
	×	3.6.68	Epping (Essex) 330m. SSE.

HN19153	ad. ♀	28.4.68	Fleshwick: 54°07′N. 4°45′W. Isle of Man RC
	×	*c.* 18.5.68	Ballinakill (Leix) 135m. SW.
AR67518	1stW.	2.9.65	Walney: 54°05′N. 3°15′W. (Lancashire)
	+	15.9.68	Lezo-Gainchurizqueta: 43°19′N. 1°52′W. (Guipúzcoa) **Spain**
HK95978	ad. ♀	8.5.68	Calf of Man: 54°03′N. 4°49′W.
	×	25.9.68	Urrugne: 43°22′N. 1°42′W. (Basses Pyrénées) **France**
HP91523	ad. ♂	27.7.68	Swillington: 53°47′N. 1°25′W. (York) AF
	×	28.9.68	Estella: 42°41′N. 2°02′W. (Navarra) **Spain**
AX71972	ad. ♀	8.9.67	South Cave: 53°46′N. 0°35′W. (York) DBYC
	×	12.5.68	Northampton 105m. S.
HN97969	pull.	13.6.68	Rhosneigr: 53°14′N. 4°31′W. (Anglesey) AEM
	v	20.8.68	Purbrook, Portsmouth (Hampshire) 225m. SE.
HH82106	1stW.	1.9.67	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	×	30.4.68	Castillon: 44°51′N. 0°02′W. (Gironde) **France**
HK32348	juv.	17.7.67	King's Stanley: 51°43′N. 2°16′W. (Gloucester) SVRG
	×	25.10.68	Safi: 32°20′N. 9°17′W. **Morocco (6th)**
HB17811	ad. ♂	1.6.68	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	v	18.7.68	Bardsey (Caernarvon) 75m. NNE.
	v	26.7.68	Bardsey
AX14029	ad. ♂	28.6.65	Thatcham: 51°24′N. 1°15′W. (Berkshire) WJEI
	/?/	21.10.67	St. Léonard: 48°22′N. 0°05′W. (Sarthe) **France**
HJ45052	ad. ♀	25.8.67	Sandwich: 51°17′N. 1°20′E. (Kent) SBBO
	×	(5.5.68)	Billingborough (Lincoln) 130m. NW.
HH34531	1stW.	26.8.67	Beachy Head: 50°44′N. 0°16′E. (Sussex) BHRS
	×	(1.7.68)	Glentham, Market Rasen (Lincoln) 185m. N.
HP03798	1stW.	2.9.68	Beachy Head BHRS
	+	10.9.68	Lasse: 43°09′N. 1°16′W. (Basses Pyrénées) **France**

Whitethroats ringed at Dungeness, 50°55′N. 0°59′E. (Kent), were recovered as follows:

Ringed		*Recovered*	
N90543	7.5.64	21.10.68	Elgueta: 43°08′N. 2°29′W. (Guipúzcoa) **Spain**
HC68726	4.5.67	(8.5.68)	Ashwell, Chedworth (Gloucester) 140m. WNW.
HN14154	8.9.67	(4.1.68)	Thiaroye: 14°44′N. 17°23′W. **Sénégal (3rd)**
HN14162	9.9.67	20.9.68	Bilbao: 43°15′N. 2°55′W. (Vizcaya) **Spain**
HN14405	21.9.67	18.5.68	Barnby, Newark (Nottingham) 170m. NW.

The second and third recoveries in the main list are striking examples of 'overshoot' followed, apparently, by a correction. This is the first year for 13 years that no recovery has been reported from Portugal.

Lesser Whitethroat *Sylvia curruca* (7: 40 miles: $3\frac{7}{12}$ years)

HH31141	juv.	5.8.67	Abberton: 51°50′N. 0°53′E. (Essex)
	v	(6.10.68)	Kallimasiá: 38°17′N. 26°05′E., Chios, **Greece (1st)**
HK00667	juv.	22.7.68	Abberton
	+	(12.9.68)	Vicenza: 45°30′N. 11°38′E. **Italy (19th)**
P41780	f.g.	15.8.64	Chichester: 50°48′N. 0°48′W. (Sussex) CHI
	v	3.4.68	Paralimni: 35°01′N. 33°59′E. **Cyprus (1st)**
HH80611	juv.	5.7.67	East Boldre: 50°47′N. 1°33′W. (Hampshire) NDP
	+	10.9.68	Grumelle del Monte: 45°38′N. 9°52′E. (Bergamo) **Italy (20th)**

With very few exceptions, the autumn recoveries reported in the past have been

from northern Italy, while those in spring have come from the Levant. The reports from Greece and Cyprus thus help to extend our knowledge of the routes taken in both autumn and spring.

Willow Warbler *Phylloscopus trochilus* (51: 100 miles: $4\frac{11}{12}$ years)

PC4061	1stW.	18.8.68	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	v	22.8.68	Fair Isle
	v	27.8.68	Low Hauxley (Northumberland) 29om. S.
PR2232	juv.	29.7.68	Port Elphinstone: 57°16′N. 2°23′W. (Aberdeen) CO
	×	28.8.68	Wangford, Beccles (Suffolk) 365m. SE.
P99046	juv.	27.8.67	Kilconquhar: 56°13′N. 2°50′W. (Fife) DWO
	/?/	3.9.68	Burgau: 37°04′N. 8°46′W. (Algarve) **Portugal**
PJ0116	juv.	13.7.68	Seaton Delaval: 55°04′N. 1°31′W. (Northumberland) BC&H
	v	16.8.68	St Pryve-St Mesmin: 47°53′N. 1°52′E. (Loiret) **France (17th)**
PJ6525	f.g.	4.9.68	Grune Point: 54°54′N. 3°21′W. (Cumberland) RS
	+	30.9.68	San Sebastian: 43°19′N. 1°59′W. (Guipúzcoa) **Spain**
PB1105	ad.	24.4.67	Spurn Point: 53°35′N. 0°06′E. (York)
	×	17.6.68	Langholm (Dumfries) 165m. NW.
PB1254	f.g.	27.8.67	Spurn Point
	×	*c.* 25.6.68	Pass of Killiecrankie (Perth) 265m. NW.
AX63355	pull.	11.6.67	Freshfield: 53°34′N. 3°05′W. Formby (Lancashire) DJL
	v	22.4.68	Dungeness (Kent) 25om. SE.
PK0008	f.g.	4.8.68	Hilbre: 53°23′N. 3°14′W. (Cheshire) HiBO
	v	16.8.68	Mussegros: 49°18′N. 1°28′E. (Eure) **France (18th)**
AX34175	juv.	6.8.67	Hackenthorpe: 53°20′N. 1°22′W. (York) SNHS
	+	13.4.68	Al Hoceima: 35°14′N. 3°56′W. **Morocco (7th)**
PB0309	ad.	28.4.67	Warsop: 53°13′N. 1°09′W. (Nottingham) EJM
	×	17.4.68	Gatteville: 49°41′N. 1°18′W. (Manche) **France (19th)**
AX31072	f.g.	13.8.66	Friskney: 53°04′N. 0°11′E. (Lincoln) JRM
	×	17.5.68	Reeth (York) 125m. NW.
HB22831	f.g.	9.9.65	Walberswick: 52°18′N. 1°38′E. (Suffolk) DBC
	×	(25.10.68)	Bègles: 44°48′N. 0°32′W. (Gironde) **France (20th)**
PC0118	juv.	29.7.68	Walberswick DBC
	+	3.9.68	El Escorial: 40°35′N. 4°08′W. (Madrid) **Spain**
SE80318	f.g.	30.7.68	Lexden: 51°53′N. 0°51′E. (Essex) MSJS
	×	23.8.68	Posada de Llanera: 43°26′N. 5°51′W. (Oviedo) **Spain**
PJ6969	pull.	30.5.68	Ashridge: 51°48′N. 0°34′W. Tring (Hertford) D&R
	+	30.8.68	Tolosa: 43°08′N. 2°04′W. (Guipúzcoa) **Spain**
P71234	ad.	29.4.67	Skokholm: 51°42′N. 5°16′W. (Pembroke)
	+	10.9.68	*near* Oldroēs: *c.* 41°10′N. 8°20′W. (Douro Litoral) **Portugal**
P61493	pull.	3.6.66	Lane End: 51°37′N. 0°50′W. (Buckingham) SBRG
	v	30.3.68	Ranville: 49°14′N. 0°15′W. (Calvados) **France**
PH0284	ad.	27.8.67	Childerditch: 51°36′N. 0°21′E. (Essex) RWR
	×	(14.7.68)	Bo'ness (West Lothian) 340m. NW.
PR2310	ad	8.9.68	Walton Reservoirs: 51°24′N. 0°25′W. (Surrey) HRG
	×	29.9.68	Vitoria: 42°51′N. 2°40′W. (Alava) **Spain**
P90962	ad	19.4.67	Lundy: 51°12′N. 4°40′W. (Devon)
	×	19.4.68	Corbally, Thurles (Tipperary) 17om. NW.

HJ16742	juv.	21.8.67	Possingworth Park: 50°58′N. 0°12′E. (Sussex) GRM
	+	21.4.68	Motrico: 43°18′N. 2°23′W. (Guipúzcoa) **Spain**
HB55142	f.g.	8.9.68	Bryantspuddle: 50°45′N. 2°16′W. (Dorset) FRC
	+	22.9.68	Guecho: 43°21′N. 3°00′W. (Vizcaya) **Spain**
N18068	f.g.	15.4.63	Selsey: 50°44′N. 0°48′W. (Sussex) CJM
	+	4.4.68	San Sebastian, **Spain**

Several of the recoveries in this impressive list provide interesting evidence of the direction of movement through Great Britain and Ireland, while PC4061, PJ6525, PK0008, PR2310 and HB55142 all offer information about the rate of passage.

Chiffchaff *Phylloscopus collybita* (9: 50 miles: 1$\frac{4}{12}$ years)

PK2216	f.g.	29.8.68	Millwood: 54°07′N. 3°14′W., Barrow (Lancashire) KBB
	v	16.9.68	Beachy Head (Sussex) 275m. SE.
HR88611	f.g.	7.9.68	Weston Turville: 51°47′N. 0°46′W. (Buckingham) B&S
	+	30.9.68	Irun: 43°20′N. 1°48′W. (Guipúzcoa) **Spain**
PJ8767	juv.	4.7.65	Lane End: 51°37′N. 0°50′W. (Buckingham) SBRG
	×	0.11.66	Chipiona: 36°44′N. 6°26′W. (Cádiz) **Spain**

Goldcrest *Regulus regulus* (11: 10 miles: 1$\frac{6}{12}$ years)

AX43907	f.g. ♀	24.9.66	Isle of May: 56°11′N. 2°33′W. (Fife)
	v	19.4.68	Katwijk-aan-Zee: 52°12′N. 4°24′E. (Zuid Holland) **Netherlands (1st)**
PA2426	f.g. ♀	25.10.67	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	v	13.10.68	High Halstow (Kent) 115m. S.
PA7963	f.g. ♂	10.10.67	Bardsey: 52°46′N. 4°48′W. (Caernarvon)
	v	23.2.68	Upton by Chester (Cheshire) 85m. ENE.
PC8676	f.g. ♂	12.10.67	Lundy: 51°12′N. 4°40′W. (Devon)
	v	24.3.68	Combwich (Somerset) 67m. E.
PB2176	f.g. ♀	10.11.67	Sandwich Bay: 51°17′N. 1°20′E. (Kent)
	×	9.3.68	Waterlooville (Hampshire) 105m. WSW.

Spotted Flycatcher *Muscicapa striata* (15: 30 miles: 7$\frac{11}{12}$ years)

HJ41920	ad.	1.6.68	Seaton Delaval: 55°04′N. 1°31′W. (Northumberland) BC&H
	×	(14.9.68)	Rioux: 45°38′N. 0°43′W. (Charente Maritime) **France (8th)**
HJ75606	pull.	5.8.67	Knaresborough: 54°01′N. 1°28′W. (York) KRS
	v	30.6.68	Wynyard Park, Billingham (Durham) 40m. NNE.
HH85308	ad.	16.5.67	Spurn Point: 53°35′N. 0°06′E. (York)
	×	*c.* 8.6.68	Eastleach, Lechlade (Gloucester) 155m. SW.
HR51997	ad.	30.8.68	Connah's Quay: 53°13′N. 3°03′W. (Flint) MRG
	+	25.9.68	Zaragoza: 41°40′N. 0°55′W. **Spain**
HK54469	pull.	5.7.68	Stoke Hammond: 51°57′N. 0°43′W. (Buckingham) CJM
	+	0.10.68	Entroncamento: 39°28′N. 8°28′W. (Ribatejo) **Portugal (11th)**
HJ37357	pull.	16.6.67	Parkend: 51°46′N. 2°33′W. (Gloucester) PRE
	×	18.9.68	Carcavelos: 38°41′N. 9°20′W. (Estremadura) **Portugal (12th)**
HP81416	juv.	1.8.68	Winchester: 51°04′N. 1°19′W. (Hampshire) GRMP
	+	15.9.68	Higuera: 37°58′N. 3°59′W. (Jaén) **Spain**

Pied Flycatcher *Ficedula hypoleuca* (15: 30 miles: 2$\frac{11}{12}$ years)

HS54499	f.g.	6.10.68	Bamburgh: 55°36′N. 1°42′W. (Northumberland) **BRS**
	+	(7.11.68)	Chiclana: 36°26′N. 6°09′W. (Cádiz) **Spain (15th)**

AS23375	f.g.	15.8.65	Spurn Point: 53°35′N. 0°06′E. (York)
	v	20.5.68	Helgoland: 54°11′N. 7°55′E. **Germany (1st)**
670804	pull.	14.6.68	Llangerniew: 53°12′N. 3°41′W. (Denbigh) AEM
	+	7.9.68	La Coruña: 43°22′N. 8°24′W. **Spain (16th)**
HR08852	pull.	17.6.68	Cilcain: 53°11′N. 3°14′W. (Flint) MRG
	×	*early* 9.68	Freás de Eirás: 42°11′N. 8°02′W. (Orense) **Spain (17th)**
HJ24125	pull.	11.6.67	Llanferres: 53°08′N. 3°13′W. (Denbigh) MRG
	×	1.4.68	Al Hoceima: 35°14′N. 3°56′W. **Morocco (4th)**
HS63133	f.g.	16.9.68	Holme: 52°58′N. 0°33′E. (Norfolk) HBO
	+	6.10.68	Los Arcos: 42°34′N. 2°11′W. (Navarra) **Spain (18th)**
HJ37123	pull.	12.6.67	Parkend: 51°46′N. 2°33′W. (Gloucester) PRE
	×	6.5.68	Minehead (Somerset) 53m. SW.

Dunnock *Prunella modularis* (170: 10 miles: 6 $\frac{10}{12}$ years)

AN51667	f.g.	4.11.67	Newburgh: 57°19′N. 2°01′W. (Aberdeen) AU
	×	(3.6.68)	Strathdon (Aberdeen) 40m. WSW.
AX53842	f.g.	20.11.66	West Hartlepool: 54°41′N. 1°13′W. (Durham) PR
	v	22.9.68	Isle of May (Fife) 115m. NW.
HJ59450	f.g.	21.7.67	Calf of Man: 54°03′N. 4°49′W.
	v	27.10.68	Walney (Lancashire) 63m. E.
HN32295	f.g.	22.10.67	Attenborough: 52°54′N. 1°14′W. (Nottingham) ARG
	×	23.5.68	Rushden (Northampton) 50m. SE.
HE33959	f.g.	10.12.67	Red Hill: 52°12′N. 1°48′W. (Warwick) JAH
	×	(19.4.68)	Hovingham, Malton (York) 140m. NNE.
HK30394	ad.	10.3.68	Mucking: 51°30′N. 0°26′E. (Essex) VSW
	×	4.4.68	Barnet (Hertford) 30m. WNW.

Meadow Pipit *Anthus pratensis* (10: 2 $\frac{1}{12}$ years)

AS57015	pull.	4.6.67	Muggleswick: 54°52′N. 1°56′W. Consett (Durham) ND&N
	+	0.10.67	Empoli: 43°42′N. 10°57′E. (Firenze) **Italy (4th)**
HH82391	f.g.	25.9.67	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	×	20.11.67	Alicante: 38°21′N. 0°29′W. **Spain**

Recoveries of Meadow Pipits in eastern Spain are very unusual. In addition to the above, there were single recoveries in the **French** department of Gironde and in the **Spanish** provinces of Vizcaya, Santander and Cádiz. The paucity of foreign recoveries is very striking, and the total absence of any from Portugal is without parallel in recent years.

Tree Pipit *Anthus trivialis* (1: $\frac{4}{12}$ year)

HN44034	ad.	11.5.68	Walberswick: 52°18′N. 1°38′E. (Suffolk) DBC
	×	2.10.68	Carcavelos: 38°41′N. 9°20′W. (Estremadura) **Portugal (8th)**

Rock Pipit *Anthus spinoletta* (6: 5 miles: 8 $\frac{11}{12}$ years)

BC14462	1stW.	13.8.66	Fair Isle: 59°32′N. 1°37′W. (Shetland)
	×	14.11.68	Thurso (Caithness) 95m. SW.

Pied/White Wagtail *Motacilla alba* (84: 100 miles: 4 $\frac{5}{12}$ years)

HN46454	ad. ♂	23.4.68	North Ronaldsay: 59°23′N. 2°26′W. (Orkney) KGW
	+	7.10.68	Santander: 43°28′N. 3°48′W. **Spain**
HR24165	pull.	26.7.68	Ae: 55°12′N. 3°35′W. (Dumfries) NSRG
	×	25.11.68	Bath (Somerset) 270m. S.

ANo9164	ad.	9.6.65	Auchenmalg: 54°50′N. 4°46′W. Glenluce (Wigtown) ADF
	×	*c.* 7.4.68	Long Burton, Sherbourne (Dorset) 280m. SSE.
650994	juv.	4.7.65	Knaresborough: 54° 01′N. 1°28′W. (York) KRS
	×	21.1.68	St Gâtien-des-Bois: 49°21′N. 0°11′E. (Calvados) **France**
HRo6463	juv.	2.8.68	Knaresborough KRS
	×	27.12.68	Réaumur: 46°43′N. 0°48′W. (Vendée) **France**
HR91902	juv.	4.7.68	Bickershaw: 53°31′N. 2°35′W. (Lancashire) LRG
	×	14.10.68	Romsey (Hampshire) 180m. SSE.
HR91361	juv.	12.7.68	Bickershaw LRG
	+	(2.12.68)	Tavira: 37°07′N. 7°39′W. (Algarve) **Portugal**
HR83897	juv.	8.7.68	Walcot: 52°42′N. 2°32′W. (Shropshire) JML
	+	17.11.68	Monchique: 37°19′N. 8°33′W. (Algarve) **Portugal**
HH38383	f.g.	4.2.67	Sparkhill: 52°27′N. 1°52′W. (Warwick) ELW
	×	23.5.68	Whitrope, Hawick (Roxburgh) 205m. NNW.
HN81216	f.g.	20.1.68	Sparkhill ELW
	×	(8.8.68)	Girvan (Ayr) 225m. NW.
HH48101	f.g.	29.10.66	Burham: 51°20′N. 0°29′E. (Kent) MKRG
	×	(26.3.68)	Buckden (York) 225m. NW.

HN46454, the first in the list, was identified as *Motacilla a. alba*.

Yellow Wagtail ssp. *Motacilla flava* (19: 70 miles: 4 $\frac{8}{12}$ years)

AX19232	juv.	23.8.65	Doncaster: 53°32′N. 1°07′W. (York) BMB
	v	28.9.68	Capbreton: 43°38′N. 1°26′W. (Landes) **France (9th)**
HE29272	juv.	17.8.66	Wigan: 53°33′N. 2°38′W. (Lancashire) MRG
	+	24.9.68	Irun: 43°20′N. 1°48′W. (Guipúzcoa) **Spain**
HK25662	juv.	26.7.67	Hindley: 53°32′N. 2°35′W. (Lancashire) MRG
	+	27.10.68	Gondomar: 41°08′N. 8°32′W. (Douro Litoral) **Portugal**
HP54460	juv.	1.8.68	Bickershaw: 53°31′N. 2°35′W. (Lancashire) LRG
	v	30.8.68	Chew Lake (Somerset) 150m. S.
ASo5913	juv.	3.9.64	Benacre: 52°21′N. 1°43′E. (Suffolk) AGH
	+	5.10.68	Faro: 37°01′N. 7°56′W. (Algarve) **Portugal**
HH31810	ad. ♂	17.4.68	Abberton: 51°50′N. 0°53′E. (Essex)
	v	21.9.68	Capbreton, **France (10th)**
HA42878	juv.	18.8.66	Stanford le Hope: 51°31′N. 0°26′E. (Essex) VSW
	0	15.3.68	Rich: 32°16′N. 4°30′W. Haut Atlas **Morocco (10th)**
HH18032	1stW. ♂	21.8.66	Thorpe: 51°25′N. 0°31′W. (Surrey) DAB
	+	(2.12.68)	Tavira: 37°07′N. 7°39′W. (Algarve) **Portugal**
HB87315	ad. ♂	8.4.66	Chew Lake: 51°20′N. 2°38′W. (Somerset) CVRS
	+	25.9.68	Ortuella: 43°19′N. 3°04′W. (Vizcaya) **Spain**
HP21846	f.g.	20.8.68	Chichester: 50°48′N. 0°48′W. (Sussex) CHI
	v	4.9.68	Capbreton, **France (11th)**

Starling *Sturnus vulgaris* (1,049: 12 $\frac{7}{12}$ years)

Published in full are the most northerly and easterly recoveries, and long-distance movements by juveniles. A further 133 foreign recoveries will be tabulated in a future report.

CV73991	1stW. ♂	11.10.66	Knaresborough: 54°01′N. 1°28′W. (York) KRS
	×	*c.* 10.10.68	*near* Kells (Meath) 220m. W.

CS73186	ad. ♂	7.11.67	Spurn Point: 53°35′N. 0°06′E. (York)
	×	0.6.68	Kirillov: 59°52′N. 38°25′E. (Vologda) **U.S.S.R.**
CS46592	juv.	5.8.67	Lincoln: 53°14′N. 0°33′W. GPS
	v	24.2.68	Wexford City 255m. WSW.
CX09200	1stW. ♂	12.1.63	Attenborough: 52°54′N. 1°14′W. (Nottingham) JASB
	×	10.5.68	Nokela: 64°59′N. 25°28′E. (Oulu) **Finland**
CS66436	juv. ♂	2.6.68	Hendon: 51°35′N. 0°14′W. (Middlesex) THW
	+	27.10.68	Damme: 51°15′N. 3°17′E. (West Flanders) **Belgium**

Greenfinch *Carduelis chloris* (657: 100 miles: $5\frac{3}{12}$)

BE95166	f.g. ♀	2.12.67	Skelton: 53°59′N. 1°07′W. (York) NCPM
	v	22.1.68	Waregem: 50°53′N. 3°26′E. (West Flanders) **Belgium (5th)**
BH08101	1stW. ♀	26.11.67	Coleby: 53°08′N. 0°33′W. (Lincoln) A&P
	×	26.1.68	Borth (Cardigan) 155m. WSW.
BC10178	f.g. ♂	24.12.67	White Sitch: 52°43′N. 2°18′W. (Stafford) PD
	×	27.3.68	Llanelly (Carmarthen) 103m. SW.
BB33157	ad. ♂	3.10.67	Minsmere: 52°14′N. 1°37′E. (Suffolk) HEA
	×	3.3.68	Eastbourne (Sussex) 115m. SSW.
BB33363	1stW. ♂	8.10.67	Minsmere HEA
	+	0.1.68	Armentières: 50°41′N. 2°53′E. (Nord) **France**
BB33379	1stW. ♀	8.10.67	Minsmere HEA
	×	13.1.68	Ledeberg: 51°02′N. 3°46′E. (East Flanders) **Belgium (6th)**
SC77914	1stW. ♂	20.11.67	Wytham: 51°47′N. 1°19′W. (Berkshire) ASC
	×	17.1.68	St Sampson: 49°29′N. 2°31′W. (Guernsey) **Channel Islands (1st)**
BC39562	1stW. ♂	18.3.67	Havering: 51°37′N. 0°11′E. Romford (Essex) MPT
	×	28.3.68	Oost Vlieland: 53°18′N. 5°04′E. Frisian Islands, **Netherlands (2nd)**
BE36346	1stW. ♀	17.9.67	Lyne: 51°23′N. 0°33′W. (Surrey) G&MG
	v	19.2.68	Carentan: 49°18′N. 1°14′W. (Manche) **France**
BE28254	1stW. ♀	10.2.67	Holt Pound: 51°11′N. 0°51′W. (Hampshire) CSF
	×	24.5.68	Quarndon (Derby) 120m. NNW.

Goldfinch *Carduelis carduelis* (39: 50 miles: $3\frac{9}{12}$ years)

HJ75893	juv.	10.9.67	Knaresborough: 54°01′N. 1°28′W. (York) KRS
	×	23.4.68	Connah's Quay (Flint) 82m. SW.
AH25650	ad. ♂	13.7.64	Peakirk: 52°39′N. 0°13′W. (Northampton) WAC
	×	(5.5.68)	Huttons Ambo, Malton (York) 105m. NNW.
AH93990	pull.	13.6.64	Newington: 51°39′N. 1°08′W. (Oxford) OOS
	×	25.10.66	Cordoba: 37°53′N. 4°46′W. **Spain**

Recoveries in the south of Spain are infrequent. In addition to the above, there were seven in northern and central **Spain,** four in western **France,** and two in **Belgium.**

Siskin *Carduelis spinus* (5: $1\frac{7}{12}$ years)

HH66834	ad. ♂	3.4.67	Weybridge: 51°22′N. 0°28′W. (Surrey) DAB
	v	25.1.68	Lichtaart: 51°12′N. 4°55′E. (Antwerpen) **Belgium**

There were three other recoveries in **Belgium,** all in the bird-catching season 1st October-15th November. Outside this period they are very unusual.

Linnet *Acanthis cannabina* (69: 100 miles: 5 3/12 years)

HR32401	f.g. ♀	14.10.68	Calf of Man: 54°03′N. 4°49′W.
	()	*c.* 15.11.68	Waterford City, 155m. SW.
HK26290	juv.	30.7.67	Freshfield: 53°34′N. 3°05′W. (Lancashire) MRG
	×	*c.* 1.5.68	Friskney, Boston (Lincoln) 135m. ESE.
HH18191	ad.	30.4.68	Blakeney Point: 52°59′N. 0°59′E. (Norfolk) RGHC
	×	(15.9.68)	Thorpe, Chertsey (Surrey) 125m. SW.

Eighteen recoveries in **France** and seven in **Spain** will be tabulated in a future report.

Twite *Acanthis flavirostris* (3: 25 miles: 5/12 year)

HH86884	f.g. ♂	12.10.67	Spurn Point: 53°35′N. 0°06′E. (York)
	+	4.2.68	Etaples: 50°31′N. 1°39′E. (Pas de Calais) **France (1st)**
HJ86259	pull.	20.6.67	Buxton: 53°15′N. 1°55′W. (Derby) S&B
	+	19.11.67	Astico: 45°37′N. 11°37′E. (Vicenza) **Italy (1st)**

The recovery in Italy is quite extraordinary and reminiscent of the Italian recovery of a British-ringed Snow Bunting in November 1962. Incidentally, the species was named correctly by the hunter.

Redpoll *Acanthis flammea* (17: 10 miles: 4 6/12 years)

HN46435	ad. ♂	20.4.68	North Ronaldsay: 59°22′N. 2°25′W. (Orkney) KGW
	v	25.4.68	Fair Isle (Shetland) 30m. ENE.
P43526	1stW. ♂	26.8.64	Ford: 55°38′N. 2°05′W. (Northumberland) PRE
	×	12.2.68	Bugnicourt: 50°18′N. 3°09′E. (Nord) **France (11th)**
HK86608	juv.	25.8.67	Craster: 55°28′N. 1°35′W. (Northumberland) AAB
	v (=♀)	5.5.68	Middelkerke: 51°11′N. 2°50′E. (West Flanders) **Belgium**
HB45899	f.g.	27.9.65	Keir: 55°14′N. 3°48′W. Thornhill (Dumfries) NSRG
	v (=♂)	6.10.68	Donna Nook, North Somercotes (Lincoln) 195m. SE.
HR23610	juv.	5.8.68	Keir NSRG
	v	16.11.68	Temple Grafton, Alcester (Warwick) 225m. SSE.
HJ40192	ad.	21.3.68	Mill Green: 51°41′N. 0°23′E. Ingatestone (Essex) JOB
	v	23.4.68	Follifoot, Harrogate (York) 175m. NW.

In addition, seven Redpolls were recovered in **Belgium** in the hunting season 1st October-15th November.

Chaffinch *Fringilla coelebs* (145: 100 miles: 7 7/12 years)

AR50606	f.g. ♀	9.10.64	Spurn Point: 53°35′N. 0°06′E. (York)
	×	28.4.68	Abergavenny (Monmouth) 180m. SW.
HJ38994	ad. ♂	25.11.67	Elm Park: 51°32′N. 0°11′E. (Essex) RRS
	×	30.12.68	Binz: 54°24′N. 13°37′E. (Rostock) **Germany**
HB12781	f.g. ♂	12.3.66	Cobham: 51°24′N. 0°25′E. (Kent) NKRG
	×	18.8.68	Långö: 63°50′N. 22°55′E. (Vaasa) **Finland (7th)**

The recovery in Germany is the most easterly so far reported from south of the Baltic. A further 30 foreign recoveries will be tabulated in a future report.

Brambling *Fringilla montifringilla* (13: 75 miles: 1 3/12 years)

HE93673	1stW. ♂	20.11.66	Hinstock: 52°51′N. 2°28′W. (Shropshire) JML
	v	20.2.68	Cessange: 49°36′N. 6°06′E. **Luxembourg (1st)**

HH10301	f.g. ♀	15.1.67	Mintlyn: 52°44′N. 0°48′E. (Norfolk) JFWB
	×	27.2.68	St Martin: 50°43′N. 1°38′E. (Pas de Calais) **France (15th)**
HH10767	f.g. ♂	5.2.67	Mintlyn JFWB
	×	30.1.68	Moss: 59°26′N. 10°40′E. (Østfold) **Norway (4th)**
HK34261	f.g. ♂	24.2.68	Mintlyn JFWB
	/?/	16.9.68	Lautiosaari: 65°47′N. 24°34′E. (Lappi) **Finland (1st)**

In addition, there were four recoveries in **Belgium,** in October, November (two) and December.

Yellowhammer *Emberiza citrinella* (21: 10 miles: 5 $\frac{11}{12}$ years)

H74716	1stW. ♀	15.2.62	Minsmere: 52°14′N. 1°37′E. (Suffolk) HEA
	×	(23.1.68)	Stowmarket (Suffolk) 27m. W.
AS69971	f.g. ♀	12.9.65	Frensham: 51°10′N. 0°48′W. (Surrey) PGD
	v	11.2.68	Wickham, Fareham (Hampshire) 24m. SW.

Reed Bunting *Emberiza schoeniclus* (50: 40 miles: 5 $\frac{6}{12}$ years)

HN17025	f.g. ♂	1.1.68	Astley: 53°31′N. 2°26′W. (Lancashire) MRG
	v	9.4.68	Appleby (Westmorland) 72m. N.
HH96477	f.g.	22.1.67	Neston: 53°18′N. 3°04′W. (Cheshire) MRG
	v	4.9.68	Rampside, Barrow (Lancashire) 55m. N.
HK57664	f.g. ♀	6.2.68	Hadley: 52°43′N. 2°29′W. (Shropshire) FBC
	v	25.4.68	Knutsford (Cheshire) 45m. NNE.

Snow Bunting *Plectrophenax nivalis* (1: $\frac{4}{12}$ year)

BE90565	1stW. ♀	18.11.67	Donna Nook: 53°28′N. 0°10′W. (Lincoln) CRG
	×	0.4.68	Butt of Lewis, Outer Hebrides 425m. NW.

House Sparrow *Passer domesticus* (438: 30 miles: 9 $\frac{2}{12}$ years)

BC4615-	f.g.	0.3.67	Spurn Point: 53°35′N. 0°06′E. (York)
	v	6.5.68	Ellerton (York) 45m. WNW.
BC46177	juv.	25.6.67	Spurn Point
	×	15.2.68	Sterndale Moor, Buxton (Derby) 85m. WSW.
AX05250	f.g. ♀	25.8.65	Tetney Lock: 53°29′N. 0°01′W. (Lincoln) CRG
	×	4.2.68	Redmile (Leicester) 50m. SW.
AR46272	1stW. ♀	10.10.64	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	v	(25.7.68)	Lincoln 37m. WNW.
BH19379	1stW. ♀	16.1.68	Carlton: 52°10′N. 0°23′E. (Cambridge) MAFF
	×	16.5.68	Walpole Highway, King's Lynn (Norfolk) 40m. NNW.

Sterndale Moor, the recovery locality of BC46177, is 1,200 feet above sea level—a remarkable place for the bird to be in mid-winter.

Tree Sparrow *Passer montanus* (28: 30 miles: 5 $\frac{9}{12}$ years)

HH82440	f.g.	7.10.67	Gibraltar Point: 53°06′N. 0°21′E. (Lincoln)
	v	17.2.68	Elm Park, Romford (Essex) 105m. S.
SC78852	f.g.	27.3.64	Lane End: 51°37′N. 0°50′W. (Buckingham) SBRG
	×A	3.3.68	Broxbourne (Hertford) 33m. ENE.
HA23253	ad.	17.7.65	Cliffe: 51°28′N. 0°30′E. (Kent) NKRG
	×A	9.3.68	Warborough (Oxford) 70m. W.

Robert Spencer, British Trust for Ornithology, Beech Grove, Tring, Hertfordshire

KEY TO RINGERS' INITIALS IN LIST OF RECOVERIES

HEA	H. E. Axell
AAB	Mrs A. A. Booth
BMB	B. M. Baxter
CJB	C. J. Booth
DAB	D. A. Bullock
DCB	D. C. Bishop
DGB	D. G. Boddington
EB	E. Balfour
EJMB	E. J. M. Buxton
HMB	H. M. Bowen
JASB	J. A. S. Borrett
JFWB	J. F. W. Bruhn
JOB	J. O. Brinkley
KB	K. Bruce
KBB	K. Brown
PAB	P. A. Banks
RSB	R. S. Briggs
ASC	A. S. Cheke
DC	D. Cabot
DBC	Dingle Bird Club
DBYC	D. B. Cutts
EC	E. Cohen
FBC	F. B. Clemson
FRC	F. R. Clafton
JCC	J. C. Coulson
NC	Nature Conservancy
PJC	P. J. Chadwick
PRC	P. R. Catchpole
RC	R. Cripps
RGHC	R. G. H. Cant
RHC	R. H. Charlwood
WAC	W. A. Cook
HMD	H. M. Dobinson
PD	P. G. Deans
PGD	P. G. Davis
NBE	N. B. Exelby
PJE	P. J. Edwards
PRE	P. R. Evans
TE	T. Ennis
AF	A. Frudd
ADF	A. D. Flintham
CFF	C. F. Farnell
CSF	C. S. Finbow
GTF	G. T. Flock
MAFF	Ministry of Agriculture, Fisheries & Food
ARG	Attenborough Ringing Group
BEG	Brathay Exploration Group
CRG	Cleethorpes Ringing Group
GHG	G. H. Green
HBRG	Huttoft Ringing Group
HMG	H. Mayer-Gross
HRG	Hersham Ringing Group
LRG	Leigh Ringing Group
MBRG	Morecambe Bay Ringing Group
MKRG	Mid-Kent Ringing Group
MRG	Merseyside Ringing Group
NKRG	North Kent Ringing Group
NRG	Northumbria Ringing Group
NSRG	North Solway Ringing Group
PG	P. Goodlad
RMRG	Rye Meads Ringing Group
SBRG	South Bucks Ringing Group
SVRG	Severn Vale Ringing Group
TTRG	Tyne-Tweed Ringing Group
WWRG	Wash Wader Ringing Group
AGH	A. G. Hurrell
AMH	A. M. Hutson
DH	D. Holman
DGH	D. G. Harris
JAH	J. A. Hardman
JWH	J. W. Hibberd
MJDH	M. J. D. Hirons
PH	P. Hurt
CHI	Chichester Ringing Group
WJEI	W. J. E. Indge
RAJ	R. A. Jeffrey
AEL	A. E. Land
CL	C. Lachlan
HL	H. Lapworth
JML	J. M. Langford
AEM	A. E. Male
CJM	C. J. Mead
DFM	D. F. Musson
EJM	E. J. Mackrill
GRM	G. R. Mountfort
JM	J. R. Mullins
JMM	J. M. McMeeking
JRM	J. R. Marshall
NCPM	N. C. P. Marsden
RM	R. Moat
WMM	W. M. Morrison
RBN	R. B. Norden
RGN	R. G. Newell
ABO	A. B. Old
BTO	British Trust for Ornithology
CO	C. Ogston
CBO	Copeland Bird Observatory
DBO	Dungeness Bird Observatory
DWO	D. W. Oliver
HBO	Holme Bird Observatory
HiBO	Hilbre Bird Observatory
PBO	Portland Bird Observatory
SABO	St Agnes Bird Observatory
SBBO	Sandwich Bay Bird Obs.
GRMP	G. R. M. Pepler
KP	K. Parkes
MRP	M. R. Payne
NDP	N. D. Pullen
WMP	W. M. Peet
CMR	C. M. Reynolds
JCR	J. C. Rolls
JER	J. E. Robson
PR	P. Reid
RWR	R. W. Readman
WR	R. W. Robson
BHRS	Beachy Head Ringing Station
BRS	Bamburgh Ringing Station
CS	C. Sharr
GPS	G. P. Shaw
KRS	Knaresborough Ringing Station
MSJS	M. S. J. Snoxell
OOS	Oxford Orn. Soc.
RS	R. Stokoe
RKS	R. K. Summerfield
RRS	Romford Ringing Station
SNHS	Sorby Nat. Hist. Soc.
MPT	M. P. Taylor
SJT	Mrs S. J. Tyler
WT	Wildfowl Trust
AU	Aberdeen University
ABW	A. B. Watson
AJW	A. J. Waller
CEW	C. E. Wright
DAW	Mrs D. A. Watson
DNW	The Hon D. N. Weir
ELW	E. L. Watterson
GLW	G. L. Webber
JAW	J. A. Wigzell
JESW	J. E. S. Walker
KGW	K. G. Walker
PJW	P. J. Wilkinson
THW	T. H. Watson
VSW	V. S. Wiseman
A&P	Atkin & Prince
BC&H	Belshaw, Colley & Hawkey
B&K	Boddy & Kiddie
B&S	Bevan & Southam
C&K	Cork & Kerry Seabird Group
C&PM	C. & P. Minton
D&R	Dymond & Rogers
G&MG	G. & M. Gush
G&W	Goodin & Whalley
L&JW	L. & J. Weller
ND&N	Northumberland, Durham & Newcastle N.H.S.
S&B	Sorensen & Burgess
SS&W	Sanderson, Summersgill & Walker
W&M	Watts & McConville

British bird-photographers

12 D. A. P. Cooke

Plates 61-67

Born in Cheshire in January 1922, David Cooke was encouraged by his father to take an early interest in wildlife. At Wallasey Grammar School he began to dabble also in photography. By the time he left school the 1939-45 war had begun and he volunteered for aircrew service in 1941. After training in Rhodesia and South Africa, and a period in the latter country as an instructor, he achieved his wish to be posted to Bomber Command. Later he commanded a Bomb Disposal Unit.

The war over, he read Medicine at Liverpool University and, after graduating in 1952 and holding the usual hospital posts, he settled in general practice in Ellesmere Port, Cheshire. It was not until 1950 that his interest in natural history and photography began to revive, and even then his attempts at still photography were so unsatisfactory that he abandoned this field in favour of cine work. In 1958, however, he came under the influence of the late Guy Farrar who rekindled his interest: 'Any success I may have achieved is in very large part due to his guidance and instruction.' Through Farrar he joined the Nature Photographic Society in 1958 and was elected to the Zoological Photographic Club in 1960. He feels greatly indebted to these two organisations and all the other members of them: 'They have been a constant source of help and inspiration.' He became Honorary Secretary of the Z.P.C. after Farrar's death in 1963 and he still holds this position.

He joined the Royal Photographic Society in 1959, being elected an Associate in 1961 and a Fellow in 1963; he has exhibited regularly at the R.P.S. since 1958. A number of his photographs are in the National Collection of Natural History Photographs. He has served on the Nature Conservancy's advisory committee on photography since 1964, and also on its photographic advisory panel (which considers applications to photograph Schedule 1 birds) since its inception in 1967. He has been a Fellow of the Royal Society for the Protection of Birds since 1953 and a Member of the British Ornithologists' Union since 1958. He takes an active part in the salvage of injured birds and a large number have been returned to the wild after treatment. David's other hobbies include a keen interest in swimming and he was captain of that sport at university.

David acknowledges the photographic help he has received from friends expert in technical fields. Through their kindness and generosity he has been able to get his ideas translated into practical terms: 'It is on this account that each bird photographer's equipment, while in

general similar to others, is in fact unique. The photo-electric trips and slave units, like the maintenance of dangerous high-voltage flash, are beyond my capabilities and I am extremely grateful to my skilled friends who have made and repaired these units for me.'

For nearly all his photography David uses 'either a very ancient quarter-plate Lancaster or a slightly less ancient Sanderson Hand and Stand which has been modified by the addition of a "swing-back".' Originally he used quarter-plate cut film, but now most of his work is done on roll film. He says that he has been tempted on a number of occasions by the lightness and wide range of available lenses to try 35 mm, but 'it just does not give me the quality of result that I try to produce in black-and-white' and in this series the displaying Ruff *Philomachus pugnax* (plate 66a) is the only one taken on 35 mm. He uses mainly a lens of 8½ inches focal length, but occasionally others of 14 inches and 135 mm.

Some of David's photography has been done in or near to his native Cheshire. Examples here are the Swallow *Hirundo rustica* (plate 63a), the first of three flight-studies in this selection, and the Merlin *Falco columbarius* (plate 65a) and Wheatear *Oenanthe oenanthe* (plate 67) in north Wales. With the Dee Estuary almost on his doorstep, too, it is not surprising that, in addition to nest photography, he has concentrated on waders at high tide, typified here by the party of nine Oystercatchers *Haematopus ostralegus* (plate 66b).

Like many bird-photographers, however, David has achieved many of his best results on special expeditions. He has made three such trips abroad. In Denmark in 1959 and 1965 he photographed, among other species, the Gull-billed Tern *Gelochelidon nilotica* (plate 62b) and the displaying Ruff already mentioned, while in Greece in 1961 his successes included the Black-winged Stilt *Himantopus himantopus* (plate 65b). There, too, he and Harold Platt were the first British photographers to photograph breeding Spur-winged Plovers *Vanellus spinosus* in Europe (*Brit. Birds,* 58: plates 9-10). Other trips have been to the Highlands, Shetland, the Outer Hebrides, Anglesey, the Norfolk Broads, and also the Farne Islands where he took the charming study of a Kittiwake *Rissa tridactyla* and its two black-banded young (plate 62a). Of these areas, his favourites are the Scottish islands and his magnificent Golden Eagle *Aquila chrysaetos* (plate 61) was obtained in the Outer Hebrides.

Another outstanding result, this time from Shetland, is his Storm Petrel *Hydrobates pelagicus* (plate 63b) which he photographed at night on the cliff edge, using high speed flash and an infra-red photo-electric trip with a 135 mm lens. The same techniques produced his beautiful study of a Barn Owl *Tyto alba* returning to its nest with prey (plate 64). This last shot speaks for itself and for the heights which David Cooke has now reached. ERIC HOSKING

Notes

Copulatory behaviour of juvenile Black-headed Gull During the latter half of July 1969 I noticed an apparently weak juvenile Black-headed Gull *Larus ridibundus* in the breeding colony of 300 pairs of this species on the reserve of the Royal Society for the Protection of Birds at Minsmere, Suffolk. It was unable to fly strongly, and usually stood or sat with markedly drooping wings and lowered head. On 29th July P. J. Makepeace and I were watching this bird from a hide while it sat at the water's edge in its usual drooping attitude, when it was joined by another recently fledged juvenile Black-headed Gull which proceeded to walk round it with the stiff gait, partly opened and lowered wings and erect neck typical of a courting adult male. The weak bird's attitude could be recognised as unwittingly rather characteristic of a soliciting female, but the sexual display of the other juvenile, which was presumably a male, evoked only head turning; the female, if it were one, did not stand, raise her tail or contract her neck. (Incidentally, we noticed no significant size difference between the two.) After about a minute, the juvenile male mounted and went through the motions of attempting coition, depressing his tail against the other's at either side. He gave up after some 20 seconds, but followed with another sequence of display and mounting before flying away. The weak bird then rose and, without any tail-shuffling or preening, also flew off.

H. E. Axell

Minsmere Bird Reserve, Westleton, Suffolk

Professor N. Tinbergen comments: 'Neither I nor (to the best of my knowledge) my co-workers have ever observed a copulation attempt by a Black-headed Gull in the plumage of a recently fledged juvenile, but our observations of individuals of this age have never been systematic or prolonged. Such early incipient sexual behaviour is not rare among birds, however: on several occasions, for instance, I have seen newly fledged Song Thrushes *Turdus philomelos* go through the introductory phases of the male's copulatory behaviour, including the peculiar soft song, fluffing of the ventral feathers and incomplete mounting.' Eds

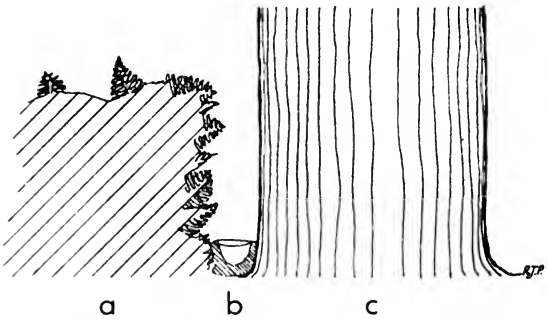
Magpie nesting on ground In July 1968, near Ainsdale, Lancashire, I found an empty nest of a Magpie *Pica pica* on top of a low dune thickly covered with poplar scrub. It was well hidden and difficult to reach. Although the structure as a whole was supported by the surrounding vegetation, its base was actually touching the sand. The entire nest, including the dome, was built of very sharp conifer twigs (perhaps the commonest components of nests of this species

along the Ainsdale dune system) and the lining included some dead plants of sea holly *Eryngium maritimum*. I have found the latter in other nests of Magpies in this area of Lancashire, but only woven into the dome.

CHRISTOPHER FELTON
54 Delfby Crescent, Southdene, Kirkby, Liverpool, Lancashire

Magpies nest at very variable heights from 80 feet up in the tops of trees down to only a foot or two above the ground in low bushes of bramble, thorn and gorse, these latter sites being quite regular in certain parts of Britain as, for example, at Dungeness, Kent. Nests touching the ground, however, seem rather rare, although they have been recorded in long heather on banks and even on cliff ledges in the Isle of Man. EDS

Treecreepers nesting on ground On 26th May 1969, in a small belt of coniferous trees in Scarcliffe Park Wood, Derbyshire, I watched a pair of Treecreepers *Certhia familiaris* taking food to their four small young in the nest. This nest, circular in shape and about the size of that of a Dunnock *Prunella modularis*, was on flat ground at the foot of a large Scots pine, between the tree bole and some dead bracken about a foot high (see diagram). Such a site appears to be unusual



Diagrammatic sketch to show position of nest of Treecreeper *Certhia familiaris* on ground: a, foot-high dead bracken; b, nest; c, pine bole (*sketch by Robin J. Prytherch*)

for this species. John Woodward, who erected a hide, but unfortunately photographed only the adults on the trunk and not the actual nest, tells me that the young duly fledged.

R. A. FROST
6 Langhurst Court, Ashgate, Chesterfield, Derbyshire

Two Dippers' nests only 18 inches apart For about 15 minutes on 8th May 1965 I watched two Dippers *Cinclus cinclus* building separate nests only 18 inches apart in the roots of a fallen willow on the Staffordshire bank of the River Dove. Both nests were more than half complete and each bird was working hard at its own. When I next visited the site on 20th June 1965, the two nests had been finished, but one was empty and the other contained three broken eggs. During

1962-64 three clutches of five eggs had been laid at this site and 15 young had reached the flying stage. PHILIP SHOOTER

153 Lower Market Street, Clay Cross, Chesterfield, Derbyshire

Female Blackbird carrying whole egg At about 8 p.m. on 4th May 1969, at Southport, Lancashire, I watched a female Blackbird *Turdus merula* alight on top of a wall about five feet away. Between her mandibles she was carrying a whole egg which she broke on top of the wall. The contents dropped between the wall and a fence built almost up against it, but the shell fell on the other side of the wall and I was able to recover it. It proved to be a Blackbird's egg, but I could not say whether or not it had been laid by this particular bird, or whether she would have eaten the contents of the egg if they had not dropped between the wall and the fence. JOHN E. ASHWORTH

8 Delta Park Avenue, Hesketh Bank, Preston PR4 6SD

We showed this note to Dr D. W. Snow, author of *A Study of Blackbirds* (1958), and he considered it most likely that the female Blackbird had taken the egg from another Blackbird's nest. At least one of the female Blackbirds in the population he studied at Oxford did this. The observation would have been even more interesting if it had been proved that the egg was one of her own, in view of the well-established records of egg-breaking and egg-eating by birds of prey at their own nests. EDS

Linnets blinded by bur-marigold seeds At Berwick Pond, Rainham, Essex, on 20th September 1969, many Linnets *Carduelis cannabina* and Goldfinches *C. carduelis* were feeding on the seeds of the trifid bur-marigold *Bidens tripartita,* and I trapped and ringed a number of each. Two of the Linnets that I handled were blind in one eye. In each case the eye and orbital ring had been impaled by bur-marigold seeds, which were still present and had been there for some considerable time, judging by the appearance of the injuries. Despite careful examination, I found no other seeds adhering to these or to any subsequent birds that I trapped. M. S. FREEMAN

60 Hall Lane, Upminster, Essex

Female House Sparrow attacking fledgling On 5th May 1967, at North Wembley, Middlesex, I noticed a small fledgling House Sparrow *Passer domesticus* on the ground ten feet below its nest being fed by an adult female, presumably its mother. Twice the fledgling appeared to collapse and each time the female pecked at it, raising it into an upright position again; when it collapsed a third time, however, she was unable to lift it and it lay gasping feebly at her. The adult then began to peck viciously at all parts of the fledgling, keeping up a

continuous loud chattering. She tore feathers from its breast, and blood appeared round its bill. After about a minute she left the young bird where it lay; it died soon afterwards. G. V. GEIGER

27 Victor Grove, Alperton, Wembley, Middlesex

Dr J. D. Summers-Smith, author of the monograph on *The House Sparrow* (1963), commented as follows: 'I can only suggest that the female no longer recognised the young bird as such from the way it was behaving and acted in this abnormal manner as a type of displacement reaction.' Derek Goodwin suggested that the adult's behaviour 'could perhaps be due either to aggression being aroused by the inappropriate responses of the fledgling or to the latter's weakness activating the tendency which some birds have to attack any helpless individual of their own species'. EDS

Reviews

The Red Book: Wildlife in Danger. By James Fisher, Noel Simon and Jack Vincent. Collins, London, 1969. 368 pages; 32 colour plates; 111 black-and-white drawings; end maps. 70s.

The justification for much government and privately inspired lunacy is that it is in the interests of the people; in the short term, therefore, anything may be sacrificed at the sacred altar of greater production and efficiency. As by-products of this attitude, we pollute the air, land and sea, we contaminate our foods, and we destroy our wild places and wildlife. To the general public, even now, action is needed only when the results of destruction and pollution can be seen to be affecting them. This callous cocoon of indifference is rarely breached and only recently has it become fashionable to take an active interest in what is happening to our environment. This book helps, for it shows what should be done and what can be done for wildlife which has become so rare that it is in danger of extinction.

It is an excellent example of a union of good background research, clear objective writing, the finest illustrations and first-class design and printing. The range of acknowledgements indicates the number of experts consulted, always a good sign in this type of compendium. Mammals and birds are dealt with in detail; reptiles, amphibians, fish and plants more generally. The facts are based mainly on the data collected by the Survival Service Commission of the International Union for the Conservation of Nature and contained in the loose-leaf sheets of the Red Data Book. This material has been selected, extended and specially illustrated for the present book. Each animal is separately dealt with in the form of a potted history, with its past and present status, the reasons for its decline and what can be or is

being done. It is neither deliberately pessimistic nor optimistic, and is as objective as the data allow. The general picture is clouded to some extent, however, by the inclusion of animals which are in the usual taxonomic turmoil and have been separated into races or subspecies. I would have liked some form of categories in which the most important animals in need of conservation could have been picked out. Surely it is more important to preserve a full species of something unique like the Blue Whale than an island race of the Wren. Or is it?

The headline animals where spectacular conservation measures have been taken, such as Arabian Oryx, Orang Utan, Père David's Deer, Whooping Crane and Néné, are well described. Equally satisfying are the rediscoveries of species thought to have been extinct, including Leadbeater's Possum, Crested Shelduck, Takahé (*Notornis*), Noisy Scrub Bird and Puerto Rico Whip-poor-will. The illustrations are outstanding, with 32 pages of colour and over 100 black-and-white drawings. Many of them have been prepared especially for this book, but also included are excellent reproductions of the works of John Gould, John James Audubon, Edward Lear, J. G. Keulemans, Archibald Thorburn and others.

What would this book contain in 25 years? Many species will certainly have to be added and a few removed, while some will have become extinct. The least we can do is actively to support our conservation bodies, and we should buy or at least read a book such as this one.

P. J. Olney

Birds of the British Isles and their Eggs. By T. A. Coward, edited and revised by J. A. G. Barnes. Warne, London, 1969. 359 pages; 97 colour and 80 black-and-white plates. 55s.

T. A. Coward would have been pleased, I am sure, with the way in which Mr Barnes has edited and brought up to date this ornithological classic, though at the same time perhaps a little disheartened that his masterpiece had to be retouched.

Mr Barnes has combined the original three volumes into one much larger and has produced a very nice, well laid-out book for the library shelf. He has retained the great readability of Coward's work and his own editing and command of English have kept in tune with this. The book deals with all the species that have been recorded in Britain and Ireland on five or more occasions, but only brief details are given for the rare ones with five to 50 records. Each is dealt with in essay form and some may feel that it is a pity that there are no sub-headings for the various sections on general characters, distribution, descriptions, behaviour, breeding and so on. Behaviour is covered far more comprehensively than in most popular bird-books and this makes good and interesting reading. Distribution is also

dealt with well and accurately, and in this respect Mr Barnes has called upon J. L. F. Parslow's series of papers in *British Birds* (vols 60-61). The section on the law provides an extremely useful addition; it is concise and easily understood.

The book is of little use, however, to those interested in the finer points of field identification; there are many that are far better. Archibald Thorburn's classic illustrations, though delightful to browse through, are of limited value to the modern birdwatcher who, in any case, has probably seen them many times before. The photographs, which appear in sections throughout the book, are some of the best by Eric Hosking, J. B. and S. Bottomley and others; they are again nice to browse through, but they do little more than increase the price of the book and many (perhaps all) have been published elsewhere. Probably the most useful for identification purposes are those of the Great Northern Diver in winter plumage, the Long-billed Dowitcher and the Wilson's Phalarope, all by the Bottomleys.

This, then, is a good, well-written book with some excellent sections, particularly on behaviour, but students of identification should look elsewhere. R. F. PORTER

News and comment *Robert Hudson*

Seabird wreck in the Irish Sea At least 10,000 auks are known to have died during September and October around the Irish Sea. The first casualties seem to have occurred at the end of August in Ireland, where 1,000 or more bodies were found in September between Cos. Down and Wexford. The major kill was reported from the Firth of Clyde, where some 7,500 corpses were located. Bodies were still coming ashore in Cumberland during mid-November. Small-scale mortality among seals and fish in the Irish Sea was not certainly connected, though some popular newspapers assumed the contrary. Over 95% of the bird casualties reported were Guillemots and the majority of the rest Razorbills. The number of ringed auks found, though small, exceeded the number recovered during the *Torrey Canyon* incident of 1967. Two Guillemots picked up in Cornwall and Devon were ones which had originally been rescued after the *Torrey Canyon* oiling and later released in Dorset; they were the first from over 60 cleaned birds ringed on that occasion to show survival longer than six weeks after release.

Such a widespread and spectacular wreck as the present one caused alarm amongst ornithologists and other biologists. At short notice, the Natural Environment Research Council convened a high level meeting of interested parties in London on 24th October. Representatives of the Royal Society for the Protection of Birds, the British Trust for Ornithology and the Seabird Group attended this meeting and a second held on 11th November. Also present were marine biologists, pathologists, pollution experts, and representatives of the several Ministries concerned. Both meetings considered the evidence available. The most startling information came from the detailed chemical analysis of the livers of 36 Guillemots, for many of them showed concentrations of polychlorinated biphenyls (PCB) relatively higher than had usually been found in wild birds. These levels reached several hundred parts per million. On the other hand, the levels of DDT and its metabolites were not more than is now considered usual. No information exists on the toxicity of

PCB to auks; indeed, the few trials on other birds in the past have shown this family of substances to be less toxic than the organochlorine pesticides to which it is related. Therefore, no firm conclusion on the cause of the wreck can yet be drawn. The balance of opinion, as expressed by Dr M. W. Holdgate of the Nature Conservancy at a subsequent press conference, seems to be that these deaths would not have occurred had the birds not been affected by unusually prolonged strong westerly winds and also by the effects of ingested PCB. It is most disturbing that a complex chemical widely used for many years in plastics, cosmetics, paints, lubricants and so on should now be shown to be present as a pollutant in the sea and apparently affecting birds. Pollution by PCB has started to worry many conservationists in Great Britain and North America and around the Baltic. The Minister of Local Government and Planning, Mr Anthony Crosland, has been given overall responsibility for pollution by the Prime Minister and sent observers to both N.E.R.C. meetings. In a radio interview he showed that he was well aware of the importance of this wreck by citing it, with the *Torrey Canyon* and the more recent poisoning of the Rhine, as possibly one of the three major pollution disasters of recent years. (I am grateful to C. J. Mead for these notes.)

Monks Wood progress report The second *Report of the Monks Wood Experimental Station* covers the years 1966 to 1968, and relates in some detail the studies carried out by the staff of this Huntingdonshire arm of the Nature Conservancy. These include summaries of basic research on grassland, heathland and woodland ecology, specific studies on Moles and biting insects, and of progress in the ambitious Biological Records Centre. I was particularly interested in the report of the Toxic Chemicals and Wildlife Division. Their laboratory studies are important for the data they are revealing on the physical effects of pesticides. Too much of the pesticide literature chronicles the presence of residues without being able to state their effects on the organisms containing them; we know rather little of what are the limits above which harm is done. Studying Bengalese Finches *Lonchura striata,* the Monks Wood team discovered that the chemical PCB caused some individuals to die when their liver content reached 80 parts per million, though others survived at 634 p.p.m.; this is a clear demonstration of the differences in individual susceptibility. The chlorinated hydrocarbon DDE did not cause deaths when the liver content reached 298 p.p.m.; therefore DDE is much less toxic than DDT, which, in a comparable experiment, killed Bengalese Finches at below the 75 p.p.m. level. In the same species, it was shown that sublethal doses of DDT increased the interval between pairing and ovulation and resulted in reduced egg weight, thus suggesting that DDT affects the endocrine system. One otherwise healthy, free-flying, Kestrel died with its liver content of DDT as low as 11.9 p.p.m. The highly toxic properties of DDT cannot be doubted.

Recently there has been criticism of the work of the Nature Conservancy. But it so happens that this body prefers to work cautiously, eschewing the publicity necessarily sought by some voluntary bodies. Anyone who doubts the meticulousness of the Nature Conservancy's studies should read this 88-page progress report.

New Game Conservancy For some years there have existed at Fordingbridge in Hampshire two bodies concerned with game biology: the Eley Game Advisory Station (initiated in 1932) and the Game Research Association (founded in 1960). Concentrating upon practical field experiments and providing information for shooters and farmers, the Eley Game Advisory Station established a service that was available to all interested in game management. When the Game Research Association was set up, it took over a good deal of the basic research work, including the annual National Game Census, a population level index based on sample counts. A merger between these two bodies had much to commend it, and has now come to pass. The new Game Conservancy will be financed privately, largely by

annual subscriptions from members (£10 per year). It will continue to provide an information service, and will hold residential courses for gamekeepers, farm managers, land agents and foresters. The Game Conservancy considers, however, that its main function will be 'to undertake research on several game species, and then apply it: in fact to turn words into birds'. The Assistant Director (Research) is T. H. Blank, formerly of the ICI Game Research Station.

National Reference Library of Science and Invention An account of the reading room facilities offered by this science reference library, at 10 Porchester Gardens, London W2, was given in 'News and comment' for December 1968. The British Museum has now published a useful catalogue, entitled *Periodical Publications in the National Reference Library of Science and Invention, Part I: List of Non-Slavic Titles in the Bayswater Division.* This list names the 8,400 journals, reports and conference proceedings, many of them biological, available for reference at Porchester Gardens; it is available, price 25 shillings, from the Director (Publications), British Museum, London WC1.

Checklist of bird-watchers Dr W. Rydzewski of Wrocław, editor of the international bulletin *The Ring,* is planning an *Index Ornithologorum* of professional and amateur ornithologists of the world, and invites all serious ornithologists to send him the following information about themselves: name (in full), year of birth, title, ornithological posts and memberships, principal ornithological interests, address, list of more important ornithological publications, and whether he/she would purchase a copy of the *Index* if reasonably priced. Dr Rydzewski's address is Laboratory of Ornithology, Sienkiewicza 21, Wrocław, Poland. The proposed publication could be quite useful if complete; and, of course, completeness will depend on contributors rather than editor.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

I. J. Ferguson-Lees and J. T. R. Sharrock

These are largely unchecked reports, not authenticated records

Instead of covering a single month, this summary deals with certain aspects of the last five months of 1969, thus looking at the autumn period as a whole. In fact, it covers all the non-passerine rarities and scarce migrants reported during August-December, except for the Palearctic waders and all the seabirds (albatrosses, petrels, shearwaters, skuas, gulls, terns, and auks). These will be summarised for the same five-month period in the next issue, and the following one will then deal with the passerines.

PALLAS'S SANDGROUSE

One of the most interesting features of the summer and autumn of 1969 in north and west Europe was the occurrence of a small but significant number of **Pallas's Sandgrouse** *Syrrhaptes paradoxus.* In the 19th century this species used to wander erratically westwards into Europe, sometimes in considerable numbers, after heavy falls of snow or the formation of a hard snow crust in the western part of its range in south-east Russia and south-west Asia had led to its having difficulty in obtaining its normal diet of seeds of grasses and other wild plants. The biggest numbers used to reach Britain in May. As a result of one of these invasions, two clutches of

eggs were found in Yorkshire in 1888, and families of young in Morayshire in 1888 and 1889. There was another considerable invasion in May 1908 when the species was recorded in nine counties north to Yorkshire and west to Cheshire and Hampshire, but then, apart from one in Yorkshire the following year, there was not a single record in Britain for over 50 years until one was seen in Kent in December 1964 (possibly the same individual as had been recorded in the Netherlands since the previous October). It was thought that even this was just a flash in the pan, as those 50 years had seen a gradual desiccation of the western part of the species' range in the Aralo-Caspian region, and it seemed unlikely that there would ever be another invasion in north-west Europe (though a small eruption in 1944 had reached western Russia).

For about a week from 26th May 1969, however, a Pallas's Sandgrouse was watched on Foula (Shetland), and what may have been another was seen briefly at Whitstable (Kent) in early June. Two months passed and then, on 5th September, a wildfowler shot a bird of this species at Seahouses (Northumberland); the specimen is now in the Hancock Museum, Newcastle upon Tyne. Soon after, on 6th and 19th, the same man, with his brother on one occasion, had three more sightings of single sandgrouse near-by at Elwich (Northumberland). There were no more reports for over a month, but on 28th October four strange birds with black bellies and long pointed tails were seen twice in flight at Walton-on-Naze (Essex) and the following day there were similar reports, again referring to parties of four, at Frinton and Little Clacton (both Essex). On 30th two were similarly described between Little Clacton and St Osyth, and there was yet another possible sighting of two between Dovercourt and Colchester (still Essex) in the first few days of November.

Since then, no other British observations have reached us, but it is interesting that small numbers were also recorded in Finland and the Netherlands. Those in Finland were the first since 1888 and involved three together and later two (which were possibly different individuals) on the island of Jurmo in the south-west archipelago and a single one on the west coast near Kokkola, all in May. Those in the Netherlands were the first since 1908 (apart from the one in 1964) and included one at Schiermonnikoog on 17th May, followed by two at Bloemendaal on 21st June, one found dead on Texel on 3rd September and five at Wassenaar as recently as 28th December.

NEARCTIC VAGRANTS

After the remarkable numbers of American birds in Britain and Ireland in the autumns of 1967 and 1968, the total reported in 1969 appeared rather disappointing. Nevertheless, there were some interesting records and they involved what would have seemed a good many individuals only a few years ago; indeed, at least two species produced more records than in any previous year. The majority were waders with, as is usual, **Pectoral Sandpipers** *Calidris melanotos* the most numerous: among these were singles in Norfolk/Lincolnshire and Co. Cork in August, in Somerset (two localities), Devon, Scilly and Cos. Cork and Down during September, and in Northumberland, Co. Durham (two dates) and Co. Cork in October; the only report of two together was at Kinnegar (Co. Down) in September. The last locality also produced a **White-rumped Sandpiper** *C. fuscicollis* in September, and there was another at Easington (Yorkshire) on 9th-10th September. More surprising was a total of five **Semipalmated Sandpipers** *C. pusillus,* the largest number of separate records in any one year (there were also five birds in 1968, but they included three together in Co. Kerry): these were on Tresco (Isles of Scilly) on 19th August, in Co. Kerry in August, at Kinnegar in September, at Ballycotton (Co. Cork) in mid-October and at Cley (Norfolk) on 4th November.

Another species which surpassed the record total of 1968 was the **Lesser Yellowlegs** *Tringa flavipes* with eight in all: during August there were singles on Skomer Island (Pembrokeshire) on 7th, at Balranald in North Uist (Outer Hebrides) on

28th, and also in Co. Kerry; and then, after a gap of over a month, others appeared at Lissagriffin (Co. Cork) for at least a fortnight in early October, at Stithians Reservoir (Cornwall) on 17th-29th October, at Chichester (Sussex) from 16th October to at least 2nd November, at Ynyshir (Cardiganshire) during 10th-21st November, and at Eastbourne (Sussex) on 18th December. Five or six **dowitchers** *Limnodromus spp* were similarly mainly in August and October: one on the Nith Estuary (Dumfriesshire) on 16th August and one at Clonakilty (Co. Cork) in the same month were followed by others at the New Grounds (Gloucestershire) on 16th September and 24th October, on Tiree (Inner Hebrides) on 6th-8th October, and at Cley from 30th October to 4th November. The last was judged to be **Long-billed** *L. scolopaceus* on the call note. Other American waders included a **Lesser Golden Plover** *Pluvialis apricaria* in Co. Kerry in September and October and another at Porthgwarra and St Just (Cornwall) on 9th October; a **Spotted Sandpiper** *Tringa macularia* on St Mary's (Isles of Scilly) from 4th September to 25th October; only one **Buff-breasted Sandpiper** *Tryngites subruficollis,* on St Agnes (Isles of Scilly) on 25th-27th September; and two **Wilson's Phalaropes** *Phalaropus tricolor,* in Co. Wexford in August and Co. Down in September.

Apart from the waders, American birds were very few. An **American Wigeon** *Anas americana* in Co. Kerry in August was followed by one at Netherfield (Nottinghamshire) from 27th October to 2nd November and one at Cley on 4th November. The last locality also produced a **Surf Scoter** *Melanitta perspicillata* at the end of October. The **Laughing Gull** *Larus atricilla* at Radipole Lake (Dorset) was still present until at least mid-September, by which time it had been present for exactly seven months (*cf. Brit. Birds,* 62: 164). Only six **Sabine's Gulls** *L. sabini* were reported from widely scattered localities—near Inverness on 3rd August, at Hunstanton (Norfolk) from 26th August to at least the end of the year, at Squires Gate (Lancashire) on 20th September, at Anderby Creek (Lincolnshire) on 4th October, at St Ives (Cornwall) on 6th October and at Hartlepool (Co. Durham) on 18th. Finally, the only land bird certainly identified was a **Yellow-billed Cuckoo** *Coccyzus americanus* found dead on Cape Clear Island (Co. Cork) on 13th October.

HERONS, CRAKES AND WATERFOWL

Little Egrets *Egretta garzetta* are most often recorded in Britain and Ireland in spring (March-June) and so an autumn total of eight was quite exceptional. Four of these were together (an unprecedented occurrence) as far north as Lochdonhead, Mull (Argyll) from 12th October onwards, three of them staying until the late date of 20th November. Another appeared at Dunblane (Perthshire) on 26th October (arranging its visit to coincide with the annual conference of the Scottish Ornithologists' Club) and the remaining three were at more typical southerly localities —on the Exe Estuary (Devon) during 14th-18th September, on Gann Flats (Pembrokeshire) from 4th October to 2nd November, and at Rosscarbery (Co. Cork) on 18th October. There were also four **Purple Herons** *Ardea purpurea* in the early part of the autumn, at Sandwich Bay (Kent) from 31st August into September, in the heronry at Walthamstow (Essex) on 3rd and 16th September, at Slapton (Devon) during 9th-27th and at Shotton (Flintshire) on 14th. **Night Herons** *Nycticorax nycticorax* included observations at Stodmarsh (Kent) on 23rd-30th July, 19th August and 23rd-24th September and, in between, one only 30 miles away at Wateringbury (Kent) on 22nd September; as well as immatures at Rye (Sussex) and Charlton Marshall (Dorset) on 29th September and 23rd November. **Spoonbills** *Platalea leucorodia* were reported in Norfolk, Essex and Kent in August-September, but the most amusing record was of one seen flying with three **Whooper Swans** *Cygnus cygnus* at Donna Nook (Lincolnshire) on 8th November. A **Black Stork** *Ciconia nigra* at Stoke Canon (Devon) during 28th-30th October and at Poole Harbour (Dorset) on 7th November proved to have escaped from a wildlife park at Okehampton (Devon). A **White Pelican** *Pelecanus onocrotalus* at Ravensthorpe

Reservoir (Northamptonshire) on 5th October was presumed similarly to have been an escape.

Two **Cranes** *Grus grus* were seen in Scotland in August, at Aberlady Bay (East Lothian) on 14th and Loch of Swannay (Orkney) from 20th to about 6th September. **Spotted Crakes** *Porzana porzana* were quite widely scattered in August-October, being reported from Lancashire, Somerset, Cornwall, Scilly, Kent, Suffolk, Norfolk and Yorkshire, and then there were later observations at Sandwich Bay on 1st November, at Clayhanger (Staffordshire) on 22nd November, in Devon during 12th-15th December, and at Sandwich Bay again on 20th and 21st December. There was also an immature **Little Crake** *P. parva* at Cley from 13th September to the end of that month.

It is proposed to deal with the larger than usual numbers of **Bewick's Swans** *Cygnus bewickii* in a future issue with other winter visitors, but it is worth mentioning here that the count on the Ouse Washes (Cambridgeshire/Norfolk) reached 900 for the first time ever on 15th December. **Ferruginous Ducks** *Aythya nyroca* at Sonning Eye (Oxfordshire) on 24th October, at Radipole Lake (Dorset) during 4th-14th December, at Sutton Courtenay (Berkshire) on 6th-7th December, at Lisvane Reservoir (Glamorgan) on 12th December and in early January, and at Dorchester gravel pits (Oxfordshire) from 28th December to 18th January may have been escapes from captivity (while some others, particularly in the London area, certainly were). The same applies to single **Red-crested Pochards** *Netta rufina* at Sandwich (Kent) on 6th September and at Burghfield (Berkshire) on 26th October.

BIRDS OF PREY

There can be little doubt that some remarkable records of raptors at large in Britain during the autumn were the result of the absurd importation laws which permit the sale of birds of prey to people who have no idea how to look after them. Most likely candidates for this category were several reports of vultures. The two commonest European species, the Griffon *Gyps fulvus* and the Egyptian *Neophron percnopterus,* are on the British and Irish list on the strength of old records in 1843 and 1927 in one case, and 1825 and 1868 in the other, and those of course relate to times when comparatively few birds of prey were kept in captivity and vultures were commoner in Europe than they are now. Then in 1968 an Egyptian Vulture was observed in Hampshire and possibly another in Kent, and it was generally accepted that these were likely to be escapes. This view was strengthened in autumn 1969 when an **Egyptian Vulture** which had been seen in Hampshire and Sussex was eventually caught and proved to have some clipped primaries. A **Griffon Vulture** in Somerset in autumn 1969 was similarly traced to a zoo. Then single immature **White-backed Vultures** *Gyps bengalensis/africanus*—it is not certain whether they were of the Indian or African species/race—appeared between Pitsford Reservoir and Old (Northamptonshire) on 8th October for most of that month and at Hogsthorpe (Lincolnshire) about 30th October, the latter being shot (it is perhaps possible that these were the same individual). The one which attracted the most attention, however, was an **American Black Vulture** *Coragyps atratus* in the Sandwich/Dover area (Kent) from 23rd August at least to the end of the year, latterly settling in the vicinity of Sarre and Chislet. It was even suggested that this might have been a wild immigrant on the grounds that 'other far smaller American birds had crossed the Atlantic on the strong westerlies at the end of August' (*Shooting Times,* 29th November 1969: 1941-1942), but apart from anything else big birds of prey are notoriously reluctant to cross large stretches of open water.

There were also a number of reports of eagles in England, most of them unidentified, and these seem equally likely to have been of captive origin. Much more interesting was the coincidence of a **Lesser Spotted Eagle** *Aquila pomarina* at Beachy Head (Sussex) during 19th-24th September, an eagle which could have

been **Lesser Spotted** or **Spotted** *A. clanga* at Gibraltar Point (Lincolnshire) on 17th and 20th September, and an unidentified small eagle over the Isle of May (Fife) on 18th September: the closeness in time seemed to suggest a common origin from the Continent. A **White-tailed Eagle** *Haliaeetus albicilla* at Stanhoe (Norfolk) on 8th November is not likely to have been an escape (unless it was one of the four which disappeared from Fair Isle, Shetland, following the attempt at reintroduction). In this connection, it is perhaps worth noting that unusual numbers of White-tailed Eagles were reported in Upper Bavaria at the end of the year.

Single **Rough-legged Buzzards** *Buteo lagopus* appeared near Simonsbath (Somerset) on the early date of 7th August, at Teesmouth (Co. Durham) on 18th September, at Walthamstow Reservoir (Essex) on 30th November, at Lydd (Kent) on 13th December and at Seasalter (Kent) and Snettisham (Norfolk) on 25th December. **Goshawks** *Accipiter gentilis* were reported in Lancashire in August, in Gloucestershire in September and the Isles of Scilly in October; and **Red Kites** *Milvus milvus* in Somerset and Lincolnshire in August and in Warwickshire and Caernarvonshire (at Bardsey) in September. A notable passage of **Honey Buzzards** *Pernis apivorus* evidently occurred during 18th-26th September, for in those nine days the species was reported from at least ten coastal localities in Yorkshire, Lincolnshire, Kent, Sussex and Dorset; there were only two or three other reports of migrants in the whole autumn. **Ospreys** *Pandion haliaetus* were widely scattered as usual in twenty or more counties from Shetland to Devon, mostly in September, but including one as far west as Midleton (Co. Cork) on 26th August, and one at Chew Valley Lake (Somerset) as late as 20th November. Following the record of a **Red-footed Falcon** *Falco vespertinus* at Gibraltar Point from 25th July to 5th August (*Brit. Birds*, 62: 392), one appeared at Thoresway (Lincolnshire) on 29th August and then, after a gap, others at Huttoft (Lincolnshire) on 4th October, at Dungeness on 12th and at Teesmouth (Co. Durham) on 25th. Finally, a **Gyr Falcon** *F. rusticolus* was seen on Fetlar (Shetland) on 30th September.

SWIFTS, OWLS AND HOOPOES

For the second year in succession there were no less than seven records of **Alpine Swifts** *Apus melba*, five of them in the space of eleven days during 17th-27th September (though two in Somerset were perhaps the same individual). These five were at Sand Point (Somerset) on 17th, Portland (Dorset) on 18th, Weston-super-Mare (Somerset) on 20th, St Agnes on 25th and Beachy Head on 27th, followed by others in October at Marazion (Cornwall) on 18th and Tetney (Lincolnshire) on 24th; September and October are the peak months for this species. The one on St Agnes, which was picked up dead at the lighthouse on 25th September (having died several days previously), had been ringed as a nestling at Solothurn, Switzerland, on 26th July 1969. This is the first ringing recovery in Britain of an Alpine Swift, although numbers are marked each year at Solothurn. A **Pallid Swift** *A. pallidus* was reported at Sandwich Bay on 25th September and, if it were to prove acceptable, it would be the first British record of this south European, south-west Asiatic and north African species.

A **Scops Owl** *Otus scops* on St Agnes on 29th September was only the fourth British record since 1958 and the first in autumn, despite the fact that this very small owl is a summer visitor to breeding areas as near as southern Brittany. A **Snowy Owl** *Nyctea scandiaca* near Amberley (Sussex) on the early date of 2nd August seems more likely to have been an escape. Two **Rollers** *Coracias garrulus* were reported, one at Fordwich (Kent) on 7th August and the other soon afterwards at New Galloway (Kirkcudbrightshire) from the 10th to 14th. **Hoopoes** *Upupa epops* were also rather few with a total of half a dozen records in the Isles of Scilly, Somerset, Devon, Dorset and Norfolk from 11th August to 1st December. One at Blakeney (Norfolk) on 23rd October was seen at the same time as a much-watched **Cream-coloured Courser** *Cursorius cursor*, to be referred to in the next issue.

SMALL ADVERTISEMENTS

Skokholm Bird Observatory. Accommodation offered for the 1970 season. Particulars from General Secretary, West Wales Naturalists' Trust, 4 Victoria Place-Haverfordwest, Pembs.

Cornwall, near St Ives, well-equipped cottages. Peaceful country surroundings; easy reach beaches, golf, riding, bird-watching at Hayle estuary. Sleep 4-6; personal supervision. Mrs Slater, Cuckoo Cottage, Nancledra, Penzance (Cockwells 398).

Naturalist and wife take PGs. Breakfast, packed lunch, supper. Apply P. N. Kearney, Cley-next-Sea, Holt, Norfolk. Cley 382.

Disposing of books and/or periodicals on birds? Ornithologist building his library will pay top prices for single volumes or complete collections. T. Lawson, MBOU, 49 Waldegrave Gardens, Twickenham.

Magazine binding. Reasonable charges, S.A.E. details. N. B. Wilkie, 51 Hamilton Drive, Elgin, Morayshire.

Urgently required. *British Birds*, February 1962. J. H. Ryder, 4 Beach Cottages, Malltraeth, Bodorgan, Anglesey.

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 in whole or in part 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 are sent free to authors of papers (two authors of one paper receive 15 each and three authors ten 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 wide margins, 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 author's address clearly given in one line at the foot. 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 generally those used in *A Field Guide to the Birds of Britain and Europe* (revised edition, 1966). The scientific name of each species should be underlined (but not put in brackets) immediately after the first mention of the English name. Sub-specific 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 1969' 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:

BANNERMAN, D. A. 1954. *The Birds of the British Isles*. London. vol. 3: 223-228.
LACK, D. 1960. 'Autumn "drift-migration" on the English east coast'. *Brit. Birds*, 53: 325-352, 379-397.

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. Before submitting his paper, the author must neatly insert any lettering or numbering that is an integral part of the figures and, as this is perhaps the most difficult aspect of indian ink drawing, he is advised to use Letraset or seek the aid of a skilled draughtsman.

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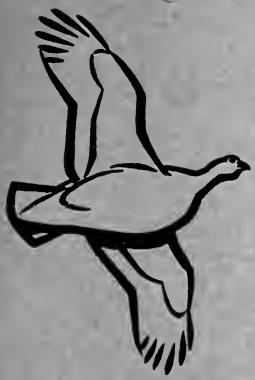

British Birds

Report on rare birds in Great Britain in 1968 (with 1964 and 1967 additions)
F. R. Smith and the Rarities Committee

Monarch butterflies coinciding with American passerines in Britain and Ireland in 1968
J. F. Burton and R. A. French

Notes **News and comment** **Recent reports**

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Volume 62 Number 11 November 1969

British Birds

Report on rare birds in Great Britain in 1968 (with 1964 and 1967 additions)

F. R. Smith and the Rarities Committee

Plates 68-71

This is the eleventh annual report of the Rarities Committee. Even without the Nutcrackers *Nucifraga caryocatactes* (see page 476), the number of records submitted in 1968 was 510 (of about 113 species), the highest total so far and one which continued the steady increase since 1964 when, for comparison, the figure was no more than 260. In spite of this, only 89 were rejected and the acceptance rate of 83% was also the highest yet. Rejections have fluctuated between 76 and 102 in recent years, while the acceptance rate, although affected by the large-scale influxes of Richard's Pipits *Anthus novaeseelandiae*, has risen from 68% in 1963. Standards of observation and presentation have continued to improve and there has been a further increase in the use of the 'Unusual Record' form (*Brit. Birds,* 58: 228-229), which is obtainable free from the address on page 460.

Appendix 1 on pages 490-492 lists the 89 rejections for 1968 and this is followed by a supplementary list of rejections for 1967 in appendix 2. Likewise a few additional records now accepted for earlier years (one for 1964 and about 15 for 1967) are given on pages 489-490 at the end of the main systematic list. Such addenda could be reduced still further if observers would ensure that details were supplied promptly (and never later than the following February). In fact, most records are received quickly and the peak load on the committee is during the four months September-December.

The committee was reduced to nine towards the end of 1968 by D. I. M. Wallace's move to Nigeria and steps are being taken to fill this vacancy after consulting regional recorders. There will shortly be another vacancy as it has now been agreed that one member shall retire,

in order of seniority of service, at the end of each year. At the moment the committee consists of P. A. D. Hollom (Chairman), F. R. Smith (Hon. Secretary), D. G. Bell, A. R. M. Blake, Peter Davis, R. H. Dennis, M. F. M. Meiklejohn, G. A. Pyman and R. Wagstaffe.

The comments on the individual species in this report have been prepared by I. J. Ferguson-Lees, with assistance from Dr J. T. R. Sharrock and F. R. Smith. In recent years these comments have tended to mention associated Irish records with the aim of giving a more complete picture for Britain and Ireland together. Now, for the first time since 1960, all the Irish records of birds on the Rarities Committee's list are included, even where the species concerned was not seen at all in Britain during the year. (The nine in this latter category in 1968 were Little Shearwater *Puffinus assimilis*, Stilt Sandpiper *Micropalama himantopus*, Solitary Sandpiper *Tringa solitaria*, Greater Yellowlegs *T. melanoleuca*, Wilson's Phalarope *Phalaropus tricolor*, Laughing Gull *Larus atricilla*, Olive-backed Thrush *Catharus ustulatus*, Rufous Bush Chat *Cercotrichas galactotes* and American Redstart *Setophaga ruticilla*.) It must be emphasised, however, that the acceptance or rejection of Irish records remains the responsibility of the *Irish Bird Report* (and the Northern Ireland Bird Records Committee). All these Irish records have been taken from the *Irish Bird Report* for 1968 (obtainable from David Scott, The Granite Cottage, Ulverton Road, Dalkey, Co. Dublin, at five shillings) and we are grateful to its editor, Major R. F. Ruttledge, for agreeing to this. In each case the Irish records are given at the beginning of the species comment immediately after another innovation, which is an opening summary (in brackets) of the world *breeding* range. Grand and post-1958 totals have been checked and, in cases of discrepancies between this and earlier reports, the latest figures should be followed, though even they may be confused by the need to distinguish between records and individual birds.

Photographs of some of the individual rarities are reproduced on plates 68-71. Surprisingly few suitable black-and-white prints were received, however, apart from a selection of Nutcrackers which will be published with J. N. Hollyer's special paper (see page 476). Provided that they can do so without undue disturbance, observers are urged to try to obtain good monochrome photographs of rarities, including birds in the hand, bearing in mind that colour transparencies seldom make satisfactory black-and-white prints.

A list of the species considered by the committee was last published with the 1965 report (*Brit. Birds*, 59: 304-305), but revised reprints are obtainable from the address on page 460. Some observers may have heard that it was proposed to add Temminck's Stint *Calidris temminckii* to the list, but the numbers recorded annually were found to be larger than had been thought, and so this species is not after all being included. It should also be noted that records of Arctic Redpolls

Acanthis hornemanni are now considered only if the bird or birds concerned have been examined in the hand.

The principles and procedure followed in considering records were explained in the 1958 report (*Brit. Birds,* 53: 155-156). Apart from the minor changes in the form of the species comments, noted above, the systematic list is set out in the same way as its predecessors. The following points, some of which were outlined more fully in the 1958 report (*Brit. Birds,* 53: 156-158), should be borne in mind, as they show the basis on which this information has been put together:

(i) The details included for each record are (1) county; (2) locality; (3) number of birds if more than one, and age and sex if known (in the cases of spring and summer records, however, the age is normally given only where the bird concerned was not in adult summer plumage); (4) if trapped or found dead; (5) date(s); and (6) observer or observers up to three in number, in alphabetical order.

(ii) No record which would constitute the first for Britain and Ireland is published by us, even if we consider it acceptable, until it has been passed by the Records Committee of the British Ornithologists' Union.

(iii) In general, the report is confined to records which are regarded as certain, and 'probables' are not included. In the case of the very similar Long-billed and Short-billed Dowitchers *Limnodromus scolopaceus* and *L. griseus,* however, we are continuing to publish indeterminable records and this also applies to observations of such 'difficult' groups as frigate-birds *Fregata spp.* and albatrosses *Diomedea spp.*

(iv) The sequence of species is based on the last B.O.U. *Check-List of the Birds of Great Britain and Ireland* (1952) with a few small changes resulting from more recent research and the many later additions inserted where they seem most appropriate. The scientific nomenclature and specification, on the other hand, follow the more up-to-date work of Dr Charles Vaurie's *The Birds of the Palearctic Fauna* (1959-65) with only minor exceptions. Any sight records of subspecies (including those of birds trapped and released) are normally referred to as 'showing the characters' of the race concerned.

Proofs of this report have again been sent to most of the county editors concerned in England and the regional recorders in Scotland, Wales and Ireland, as this enables the details to be double-checked. Nevertheless, despite this being done in each of the previous two years, there have still tended to be a few discrepancies between the relevant reports of this committee and the regional publications, particularly in the matter of last dates. As pointed out in the 1966 and 1967 reports (*Brit. Birds,* 60: 310-311; 61: 331), the length of stay of an individual bird is of interest and once again observers and county recorders are asked to make sure that, in addition to the date of finding, they supply the last date on which any bird was seen.

The procedure outlined in the 1967 report (*Brit. Birds,* 61: 331) for investigating the possibility of escapes is still being carried out through M. D. England. He is informed of the records as they are submitted and makes enquiries about any that appear likely to be of captive origin; valuable arrangements continue with the editor of *Cage Birds* and the Wildfowl Trust for the exchange of information about escapes. The committee is most grateful to those concerned

and to the many observers and local organisations whose co-operation has made the publication of this report possible. All records should continue to be directed to F. R. Smith, 117 Hill Barton Road, Exeter, Devon EX1 3PP.

Finally, a matter for concern. The committee has been deeply disturbed by increasing reports of some observers' lack of consideration for local interests. This seems all too often to be a regrettable feature of bird-watching in general, but it is particularly noticeable in the cases of rarities which stay for several days or even weeks and attract hordes of visitors. Some of these people are giving the rest a bad name by careless parking of vehicles, trespassing and even causing damage to property. The result is to jeopardise the good relations that have previously existed between local ornithologists and landowners. Equally serious, some observers seem to be unnecessarily selfish towards other bird-watchers and, what is worse, towards the birds themselves. There have been instances of tired migrants being continually hounded by those trying to get better views or wishing to photograph or ring them. Such birds have sometimes been unable to feed or have been frightened away before other more considerate observers have had a chance to see them. Indeed, in the autumn of 1968 it was alleged that a certain Bluethroat *Luscinia svecica* died as a result of being continually chased from bush to bush, while one mainland observatory felt forced to put out a premature report of the departure of a rare wader when, in fact, it was still present. It is to be hoped that a little reflection on others' points of view may improve things in future.

Systematic list of records accepted

Pied-billed Grebe *Podilymbus podiceps*

Norfolk: Welney, 9th to 12th November (M. T. Barnes, G. M. S. Easy, C. A. E. Kirtland *et al.*).

Somerset: Blagdon Reservoir, 14th May to 5th June (D. E. Ladhams, K. E. L. Simmons). Chew Valley Lake, 4th and 5th July (G. Selway, K. E. L. Simmons).

(North and South America) First recorded in 1963, there has been at least one a year since 1965, but the Somerset records—Blagdon Reservoir in 1963 and 1968 and Chew Valley Lake in 1965, 1966, 1967 and 1968—probably relate to the same individual, in which case the one in Norfolk was only the third.

Black-browed Albatross *Diomedea melanophris*

East Lothian: Bass Rock area, the one recorded in 1967 (*Brit. Birds,* 61: 332) was seen 10-14 miles north-east of Eyemouth (Berwickshire) on 7th or 8th February and at the Bass Rock on many occasions from 13th April to about 20th July, but spent much time away in June and July (F. Marr *et al.*).

Yorkshire: Filey Brigg, 13th October (M. Denton, T. Stevenson, P. T. Treloar).

(Southern Oceans) Also an adult off Mizen Head, Co. Cork, on 13th August, as well as unidentified albatrosses off Cape Clear Island, Co. Cork, on 13th July and 3rd September and two together south-west of Castletownshend, Co. Cork, on 26th August. The total of British and Irish observations is now at least 27, but there has probably been some overlap in individuals and the one at Filey Brigg may have been the Bass Rock bird moving south.

Little Shearwater *Puffinus assimilis*

(Atlantic south from Madeira and Caribbean, and southern Pacific and Indian Oceans) None in Britain, but one off Brandon Point, Co. Kerry, on 21st September and a series off Cape Clear Island, Co. Cork—one on 18th April and two each on 19th August, 9th September and 3rd October—brought the British and Irish total to 35 (eight in April-June, 27 in August-October), 26 of them off western Ireland since 1964.

Cory's Shearwater *Calonectris diomedea*

Kent: Dungeness: 13th April (J. R. H. Clements, M. J. Rogers).

Scilly: Peninnis Head, St Mary's, two, 15th August (R. F. Coomber).

Yorkshire: Scarborough, 14th August (R. H. Appleby).

(Eastern Atlantic and Mediterranean) Also single ones off Cape Clear Island, Co. Cork, on 16th April and 7th September and two dense rafts totalling about 374 there on 16th June. This species is always more numerous in Irish waters and, except for about 130 in 1965, there have not been more than ten British records in any one year. Those in Yorkshire and the Isles of Scilly were in the peak July-September period, but the single ones in Kent and Co. Cork in April were only the eighth and ninth in that month (the other seven having all been in 1965).

Purple Heron *Ardea purpurea*

Derbyshire: Shardlow, adult, 18th and 19th April (R. W. Key, T. G. Smith).

Devon: Slapton Ley, immature, 10th to 24th August (D. J., L. H. and M. R. Edmonds *et al.*).

Dorset: Lodmoor, adult, 27th April to 1st May (F. R. Clafton, T. R. Cleeves, E. T. Welland *et al.*). River Stour, Hampreston, adult, 11th June (J. V. Boys).

Gloucestershire: Frampton-on-Severn and Hasfield Ham, immature, 28th April (R. K. Bircher, K. J. Grearson, K. T. Primett) and The Noose, Severn Estuary, 4th May (B. M. Kiddle); considered to be the same bird.

Hampshire: Keyhaven, immature, 19th May (G. P. Green, D. Westerhoff, E. J. Wiseman *et al.*).

Kent: Stodmarsh, adult, 27th April (P. J. Grant, M. A. Hollingworth, M. J. Watts *et al.*).

Lincolnshire: Donna Nook, immature, 11th May (S. Lorand, K. Robinson).

Suffolk: Minsmere, adult, 23rd to 26th April, one from 13th May onwards, four on 19th May, five (including four adults) on 23rd May, three on 24th May, one staying until 6th June, two from 19th to 27th June; then two immatures from 6th to 15th

October, and two on 3rd November (H. E. Axell, R. S. Briggs, D. Mower *et al.*).

(South-central Eurasia, north to Holland, and Africa) Up to 20 in eight counties made 1968 a record year (the previous highest being eight in 1963 and nine each in 1966 and 1967). Five together in one locality is probably unprecedented and encourages hopes of colonisation. As usual, the pattern of records suggests that most originated from the Netherlands, but those in the south and west in April coincided with an early influx of southern vagrants and may have come from further south. Apart from the later Minsmere series, all except the one in Devon in August were in the spring.

Little Egret *Egretta garzetta*

Anglesey: Cemlyn Bay, 25th May (A. J. M. Bailley).

Hampshire: Farlington Marshes, 29th May (K. Grant). Keyhaven, 29th May to 6th June (P. Hobby, D. Peart, E. J. Wiseman *et al.*); 24th August to 12th September (B. Duffin, Miss D. V. Jones, E. J. Wiseman *et al.*).

Lancashire: Pilling, 5th May (E. Baron, A. Jenkinson, H. Sherdley *et al.*).

Somerset: Steart, 12th May (Mrs H. Highway). River Axe, near Weston Bay, 28th August (R. Angles).

Suffolk: Orford, 9th July to 1st August (E. S. Corbett, P. B. Nicholson, R. J. Partridge).

Wigtownshire: Mochrum Loch, found dead, 23rd April (Miss J. McGaw, C. A. B. Campbell).

(Southern Eurasia, Africa and Australia) Also one dead at Lough Ree, near Athlone, Co. Westmeath, about 7th February and one on Strangford Lough, Co. Down, from 31st July to early September. These nine British and two Irish bring the total since 1958 to about 70, compared with just over 70 Purple Herons. Again, the pattern of the Little Egrets was generally further to the west and most were in May rather than April.

Cattle Egret *Bubulcus ibis*

Derbyshire: Shardlow, 15th to 18th September (R. A. Frost, R. W. Key, T. Lindsay *et al.*).

(Iberia, south Russia, south Asia, Africa, Australia and the Americas) This species is resident in south Europe and northern vagrancy is minimal. Most seen in Britain are escapes, though such a source for this one has not yet been traced. Of nine records (twelve birds) since 1958, all except an influx of four or five in Sussex in 1962 have been of suspect origin.

Night Heron *Nycticorax nycticorax*

Caernarvonshire: River Conway, adult, 9th November (W. T. and Mrs F. M. Bate).
Kent: Murston, adult, 17th April (R. and M. E. Smith). Stodmarsh, adult, 18th and 19th June (H. G. Alexander, Major C. S. L. Incledon, P. J. Mountford).

Leicestershire/Nottinghamshire: River Soar, at Kegworth, adult, 11th April

(S. J. R. Jones) and Ratcliffe-on-Soar, 28th April (C. A. Burton, H. E. Russell); considered to be the same bird.

Leicestershire: Welham, adult, 2nd June (Miss K. M. Kirton).

Surrey: River Wey, at Farnham, immature, 1st and 2nd December (R. W. Byrne, T. A. Guyatt, J. E. Hunt *et al.*).

(Southern Eurasia, Africa and the Americas) Seven records (but only five or six individuals) is the highest annual total since at least 1958. Although eight or nine wander off each year from the free-flying colony at Edinburgh Zoo Park (*Brit. Birds,* 60: 313; 61: 334) and others have escaped from zoos elsewhere, the two in April appeared during an influx of southern vagrants.

Little Bittern *Ixobrychus minutus*

Essex: Hanningfield Reservoir, immature, 11th August (S. H. Hudgell).

Hampshire: Titchfield Haven, ♂, 9th June (D. M. Peart, J. Simmons, Dr C. Suffern *et al.*).

Hertfordshire: Wilstone Reservoir, ♂, 17th August (B. J. Nightingale).

Kent: Dungeness, immature, 10th August (J. G. Cranfield, M. J. Rogers, R. E. Scott).

Man: Port Erin, ♂, trapped, 21st April (R. Cripps, E. D. Kerruish, E. Ladds *et al.*).

Norfolk: River Thurne, at Repps Staithe, immature, 21st January (V. F. Cable). Holme, ♂, 1st to 15th May (P. R. Clarke, Dr J. F. H. Bulman, O. Laugharne *et al.*). Hainford, ♀, found dead, 4th June (J. G. Goldsmith, R. Harrison).

Scilly: St Mary's, ♂, 3rd June (E. Griffiths, A. G. Parsons, L. P. Williams).

(Western Eurasia, Africa and Australia) Although there are three or four records each year, this total of nine is the highest since the exceptional eleven in 1965. Five were in the peak months of April-June and three in August, but the one in Norfolk in January was the first winter record since at least 1958. The one in the Isle of Man on 21st April, which was found in a greenhouse, arrived during an influx of southern vagrants.

White Stork *Ciconia ciconia*

Lincolnshire: Benington/Frampton, Boston, 25th November to mid-December (Mrs M. E. Raven, Dr J. S. Rivers, Mrs B. Woodward *et al.*).

Norfolk: Halvergate marshes, the one surviving from 1967 (*Brit. Birds,* 61: 335) stayed until 3rd May (M. J. Seago).

(Central and southern Europe, south-west Asia and north-west Africa) The Norfolk record marked the end of a remarkable influx in spring 1967: two stayed in Norfolk right through that summer, but one was then killed by striking an overhead cable on 27th December 1967 (*Brit. Birds,* 61: 335). The one in Lincolnshire was the fourth winter record since 1958.

Green-winged Teal *Anas crecca carolinensis*

Drakes showing the characters of this North American race of the Teal

were recorded in January-April and October-December as follows:

Cardiganshire: Cors Tregaron, two, 11th December (P. Davis).

Cornwall: River Lynher, at Whakar, 10th February to 15th April (R. Burridge, S. C. Madge).

Fife: Morton Lochs, two, 12th October (Dr K. C. R. and Mrs H. S. C. Halliday, Miss J. McFarlane).

Lanarkshire: Gadloch, ♂, 14th January (B. Zonfrillo), possibly the same one as seen in 1967 (*Brit. Birds,* 61: 336). Libberton, Carnwath, 12th to 19th April (Sir R. Erskine-Hill, Bt, Miss R. S. Hunter *et al.*).

(North America) Also one near Midleton, Co. Cork, from 16th to 27th March and another at Ballycotton Lake, Co. Cork, from 24th March to 13th April. The combined total of seven records (nine individuals) is the highest ever; there were only 27 in the ten years 1958-67.

Blue-winged Teal *Anas discors*

Outer Hebrides: Balranald, North Uist, ♂, 29th April to 16th August (A. R. McGregor *et al.*).

Worcestershire: Upton Warren, ♂, 11th to 27th March (A. F. Jacobs, J. Lord, B. T. Nicholls *et al.*).

(North America) Though found in Britain or Ireland in 1960, 1962, 1966, 1967 and 1968, the grand total of records is still only about 29. The chance of escapes from captivity is small.

American Wigeon *Anas americana*

Shetland: Norwick, Unst, ♂ and ♀, 20th January to 3rd February (M. Sinclair, F. J. Walker).

(North America) Also an unprecedented series at Akeragh Lough, Co. Kerry, during 6th-12th October, with a maximum of 13 on the evening of the 10th, and one male on 28th December; an immature male shot just south of Akeragh Lough on 12th October had been ringed near Jemseg, New Brunswick, Canada, on 29th August 1968 and paralleled the one ringed near Sheffield, New Brunswick, on 6th August 1966 and then recovered in Shetland on 7th October 1966 (*Brit. Birds,* 60: 314; 61: 66). Although almost every waterfowl collection breeds this duck, the two ringing recoveries and the occurrence together of as many as 13 suggest that a number of the other dozen or more recorded since 1958 have been wild. The pair on Unst may have been the same individuals as were seen there in May 1967 (*Brit. Birds,* 61: 336).

Ring-necked Duck *Aythya collaris*

Berkshire/Oxfordshire: Sutton Courtenay and Dorchester gravel pits, ♂, 14th to 19th February (J. A. Lucas, P. E. Standley, N. Williams *et al.*).

Cambridgeshire: Mepal, ♂, 7th to 10th January (G. M. S. Easy, C. A. E. Kirtland, O. R. Marks *et al.*).

(North America) Also two males in Co. Armagh in the early part of the year, sometimes both at Lurgan Park, sometimes both by Lough Neagh and sometimes one in each place. This species tends to reappear in successive winters in the same localities and, apart from the two in Co. Armagh which have been recorded since 1960 and 1966 respectively, the one on the Berkshire/Oxfordshire border was seen in the same general area in the early part of 1967 (and again in 1969). Treating these repeat occurrences as one each, there are now nine British and Irish records. No full-winged individuals are known in captivity.

Ferruginous Duck *Aythya nyroca*

Devon: River Axe, ♀, 14th April (J. Davis, D. M. N. Norman).

Somerset: Sutton Bingham Reservoir, 6th November (L. I. Hamilton). Orchardleigh Lake, ♂, 20th December, staying until 13th February 1969 and visiting Chew Valley Lake on 29th December and 5th and 19th January after shoots at Orchardleigh (R. M. Curber, B. Rabbitts, G. P. Threlfall *et al.*).

Suffolk: Benacre, Lowestoft, ♀, 6th April (B. J. Brown, D. R. Moore).

Worcestershire: Bittell Reservoir, ♂, 9th September (A. R. and B. R. Dean).

(South and east Europe, south Asia and north-west Africa) Five is the largest number recorded in one year since 1965, but this species is so commonly kept in captivity under free-flying conditions that it is impossible to estimate how many observations really relate to wild individuals.

Surf Scoter *Melanitta perspicillata*

Devon: Kingsbridge Estuary, immature ♀, 15th December, staying until May 1969 (R. G. Adams, M. R. Edmonds, F. R. Smith *et al.*).

East Lothian: Gullane Point, ♂ and ♀, 15th September (R. Osbourne, W. K. Richmond).

(North America) The total since 1958 is now 18 records (about 22 individuals), all September to May.

King Eider *Somateria spectabilis*

Shetland: Moul of Eswick, near Lerwick, ♂, 12th January to 19th April (D. Coutts, J. H. Simpson).

(Circumpolar Arctic) The total since 1958 is now seven or eight. The only ones known in captivity are at Slimbridge and Copenhagen Zoo and they are not full-winged.

Lesser White-fronted Goose *Anser erythropus*

Gloucestershire: Slimbridge, adult, 3rd to 27th February (E. E. Jackson, D. I. M. Wallace *et al.*).

(North-east Europe and Siberia) The ten years 1958-67 produced about 32 in Britain (none in Ireland) and this single record is the second lowest annual total since 1958 (none in 1965).

Black Kite *Milvus migrans*

Orkney: Rousay, 15th May (E. Balfour).

(Most of Eurasia, Africa and Australia) This is only the tenth British record (no Irish ones) of this common European bird and two or three of the four records in 1966 may have involved the same individual.

Gyr Falcon *Falco rusticolus*

Scilly: between Tresco and St Mary's, 30th September (D. I. M. and Mrs K. A. Wallace).

Shetland: Fair Isle, 16th and 17th January (G. J. Barnes, J. Wilson).

(Circumpolar Arctic) Two or three a year is now normal and these bring the total since 1958 to 22, spread over every month. The one in the Isles of Scilly showed the characters of the white (*'candicans'*) type which predominates in Greenland, arctic Canada and Siberia.

Red-footed Falcon *Falco vespertinus*

Lincolnshire: Donna Nook, ♀, 30th June (S. Lorand, C. Morrison, K. Robinson).

Sussex: Sidlesham, immature, 8th September (M. Shrubb).

Yorkshire: Spurn, immature, 12th to 18th September (J. D. Craggs, J. Cudworth, B. R. Spence *et al.*).

(East Europe and south from Siberia) The annual pattern in a total of about 59 records since 1958 has fluctuated from none to ten or more with the greatest numbers every second or third year. Until 1967 most were in May-June, with only occasional ones to October, but 1967 produced six autumn records and there are two more above. (An Irish record in 1966 was overlooked when the species comment was prepared for the 1967 report in *Brit. Birds*, 61: 338; this was a male near Maam Cross, Connemara, Co. Galway, on 18th September 1966, only the second record in Ireland.)

Lesser Kestrel *Falco naumanni*

Cornwall: St Ives, ♂, 31st May (W. J. and Mrs Loosemore).

(South Europe, west-central and east Asia, and north-west Africa) Supported by a colour photograph, this is the first record since 1926 (although one was probably seen in Sussex in May 1945) and the twelfth in all. The difficulty of separating this species from the Kestrel *F. tinnunculus* in the field probably results in its being overlooked more than, for example, the Red-footed Falcon. Many kestrels are imported in captivity, but they are mainly *F. tinnunculus*.

Crane *Grus grus*

Northumberland: Bamburgh, 5th May (J. M. Bayldon, M. Bell).

Surrey: Newlands Corner, two, 22nd October (C. K. and Mrs. P. Dunkley).

(North and central Eurasia, south to Black Sea area) Now recorded

every year in Britain, but the numbers have varied enormously from only one in 1964 to an estimated 500 or more in 1963 (*Brit. Birds,* 57: 502-508). These two were in the peak months of May and September-November.

Little Crake *Porzana parva*

Sussex: Beachy Head, ♀, trapped, 15th April (R. H. and Mrs M. E. Charlwood, S. Greenwood *et al.*).

(Central and east Europe and west Asia) Also two (one an adult male) on Cape Clear Island, Co. Cork, from 23rd August to 3rd September. Three individuals in one year equals the totals of 1959 and 1967 (including the addition on page 490). There have now been twelve since 1958 and just over 80 altogether, in all months though this species winters chiefly from the Mediterranean southwards.

Little Bustard *Otis tetrax*

Norfolk: Scole, Diss, found dead on 19th December, specimen now in Norwich Castle Museum (E. Ellis, J. G. Goldsmith). North Wootton, King's Lynn, found dead, 31st December (J. G. Goldsmith, T. Greenacre).

Pembrokeshire: St David's Airport, shot by a wildfowler on 23rd November, wing sent to British Museum, Natural History (J. W. Donovan, D. Goodwin).

(South Europe, west Asia and north-west Africa) These are the first records since 1964 and, as there have been only five others since 1958, the occurrence of three in six weeks is noteworthy. This species breeds as close as the north of France, but most of the vagrants examined have shown the characteristics of the eastern population (formerly separated as *O. t. orientalis*).

Sociable Plover *Vanellus gregarius*

Kent: Deal, 28th September to 18th November (J. R. Dyer, D. F. Harle, G. R. Shannon *et al.*).

Suffolk: Havergate, 4th October (R. J. Partridge).

(South-east Russia and west-central Asia) These were only the ninth and tenth records, all August-December apart from one in April, and the first since 1963 when one also stayed for several weeks, in Devon, from 23rd September to 12th November (*Brit. Birds,* 57: 267).

Lesser Golden Plover *Pluvialis dominica*

Cornwall: St Just airfield, 6th October (N. J. and N. R. Phillips).

(Arctic North America and north-east Asia) This was only the third British record since 1958, although Ireland produced five (four of them in 1966) in the same period; all eight were between 7th September and 16th October. The date this time again coincided with arrivals of Nearctic waders, and weather conditions also made it likely that the American race *P. d. dominica* was involved.

Long-billed Dowitcher *Limnodromus scolopaceus*

Scilly: Porth Hellick, St Mary's, two, 21st and 22nd September (R. S. Brown, A. R. Dean, A. Greensmith *et al.*).

(North America) These two were accepted as Long-billed because they uttered the monosyllabic *keek* note attributed to that species, in addition to the supporting descriptive details referred to by Dr J. R. Jehl (*Brit. Birds,* 61: 366-372).

Dowitcher *Limnodromus scolopaceus* or *L. griseus*

Hampshire: Stanpit Marsh, two, 23rd to 27th September (J. Jenkin, S. F. W. Paul).

Norfolk: Snettisham, probably Long-billed, 7th to 30th September (J. M. Bryan, G. M. S. Easy, C. A. E. Kirtland *et al.*).

(North America) Also three in Ireland—at Akeragh Lough, Co. Kerry, on 7th October, at Ballycotton, Co. Cork, from 13th October to 1st November, and on the North Slob, Co. Wexford, on 2nd November. With the Long-billed Dowitchers above, these brought the combined total of British and Irish records of the two species to over 80.

Stilt Sandpiper *Micropalama himantopus*

(North America) None in Britain, but one at Akeragh Lough, Co. Kerry, on 6th-7th October was the first Irish record and brought the British and Irish total to seven.

Great Snipe *Gallinago media*

Kent: Medway, 2nd August (Dr J. G. Harrison). Dymchurch, 27th December (Major G. F. A. Munns).

Nottinghamshire: Huthwaite, 16th November (R. and Mrs Stevens).

Scilly: Tresco, 3rd October (D. I. M. and Mrs K. A. Wallace).

(North-east Europe and north-west Asia) There have now been 20 or 21 since 1958 (but only one in Ireland), mostly in autumn and winter.

Upland Sandpiper *Bartramia longicauda*

Cornwall: St Just, 6th October (P. G. Lansdown, P. A. Roscoe).

Scilly: Tresco and St Mary's, 26th September to 12th October, two on 4th October (R. F. Coomber, S. C. Joyner, P. R. Messent *et al.*) (plate 68).

(North America) These two records (three individuals) brought the total since 1958 to eight, all September-November (the earliest on 24th September). Three in one year was remarkable and the first time since 1960 that more than one had been recorded. These were the first in Britain since 1964, but one was seen in Co. Wexford in October 1967.

Solitary Sandpiper *Tringa solitaria*

(North America) None in Britain, but one at Akeragh Lough, Co. Kerry, on 21st-22nd September, was the first Irish record and brought the British and Irish total to eleven.

Spotted Sandpiper *Tringa macularia*

Cornwall: Porthgwarra, 27th October to 3rd November, when found dead (D. Barker, N. R. Phillips, G. P. Threlfall *et al.*).

Scilly: St Agnes and Tresco, 18th September to 2nd October (D. B. Hunt, S. C. Joyner, J. Ridley *et al.*).

Somerset: Durleigh Reservoir, 27th August to 4th September (B. Dixon, Miss E. M. Palmer, R. H. Ryall *et al.*).

(North America) These brought the total since 1958 to eight, all September-October and five of them in the Isles of Scilly in four successive years, and the grand total to 14.

Greater Yellowlegs *Tringa melanoleuca*

(North America) None in Britain, but one at Ballycotton, Co. Cork, on 23rd-24th August brought the British and Irish total to about 16.

Lesser Yellowlegs *Tringa flavipes*

Cornwall: River Camel, 9th November to 6th December (Reverend J. E. Beckerlegge, J. B. Bottomley, D. J. Britton *et al.*).

Norfolk: King's Lynn, 21st September (D. M. Bryant).

(North America) Also three records (four individuals) in Ireland—on Rogerstown estuary, Co. Dublin, from 21st to 27th July, on Akeragh Lough, Co. Kerry, on 27th-28th August, and two together on the North Slob, Co. Wexford, on 9th September. These six birds brought the total since 1958 to 35. Since 1961 it has been one of the most regular of the Nearctic waders, with two to six recorded annually.

Marsh Sandpiper *Tringa stagnatilis*

Lancashire: Leighton Moss, 14th July (S. Craig, D. Power, H. Shorrock *et al.*).

(South-east Europe and west and east Asia) There have now been 17 records in Britain (though none in Ireland), six of them since 1963. Most in autumn have been on the eastern side in August-September and so this, the first in July, was both early and unusually far west.

Baird's Sandpiper *Calidris bairdii*

Sussex: Rye Harbour, 8th and 10th September (D. J. Britton, Mrs L. B. Rogers).

(North America) Also two at Ballycotton, Co. Cork, on 31st August-1st September and 3rd-8th September. The grand total is now 30, the great majority in September and all but five since 1961.

White-rumped Sandpiper *Calidris fuscicollis*

Norfolk: Snettisham, 13th and 14th July, and 17th August (D. M. Bryant).

(North America) Also two at Ballycotton, Co. Cork, on 11th-18th and 31st August, and one at Akeragh Lough, Co. Kerry, on 10th November. This species has been recorded annually since 1958,

amassing a total of nearly 50 records in that time, but the numbers have fluctuated between one and 12 or 13 in a year. Most have been during September-November and so the Norfolk dates were on the early side.

Semipalmated Sandpiper *Calidris pusillus*

Gloucestershire: River Severn, at New Grounds, 13th October (D. I. M. Wallace).

(North America) Also one at Lissagriffin Lake, Co. Cork, from 27th August to 1st September and three at Akeragh Lough, Co. Kerry, during 4th-12th October. Only in recent years has this species begun regularly to be recognised over here and, of the 14 individuals now recorded, twelve have been since 1964.

Buff-breasted Sandpiper *Tryngites subruficollis*

Caernarvonshire: Bardsey, 21st September (G. H. and Mrs F. Evans, K. Redshaw *et al.*).

Cornwall: St Just, 1st October (P. Pearce, N. R. Phillips).

Northumberland: Creswell Ponds, two, 18th September (B. and T. Hallam). Seaton Sluice, 13th October (A. Blackett, S. Hingston *et al.*).

Scilly: St Mary's golf links, one 14th September, two 15th to 21st (A. R. Dean, P. Z. Mackenzie, K. Pellow *et al.*). St Mary's airport, 17th to 24th October (J. R. H. Clements, D. J. Holman, K. Pellow *et al.*).

(North America) Also at least nine individuals in Ireland—three at Ballycotton, Co. Cork, on 24th August, 8th-21st September and 13th September; four or more at the North Bull, Co. Dublin, the first on 8th September, then four together on the 11th-12th and at least three remaining until the 29th; and two at Lissagriffin Lake, Co. Cork, on 16th September and 5th October. This species has now been recorded in nine successive years, but 11 records and 17 or more individuals in one year were unprecedented and brought the totals since 1958 to about 43 records and 54 birds. This wader shows a greater tendency than most American species to occur here in small parties of two to four.

Black-winged Stilt *Himantopus himantopus*

Essex: Hamford Water, five, 5th September (S. E. Linsell).

Lincolnshire: Marston, Grantham, 25th December (P. D. Mackenzie).

Middlesex: Kempton Park, 6th July (D. A. Baker, J. C. Paris, D. Parr *et al.*).

Staffordshire: Belvide Reservoir, 11th to 16th June (R. J. C. Blewitt, D. Smallshire, C. Rutter *et al.*).

(Southern Eurasia, Africa, Australasia and the Americas) There have now been some 30 records (45 individuals) since 1958, but none in Ireland. The party of five together in Essex matched a similar record in Devon in September 1967 (*Brit. Birds,* 61: 342-343). Eight individuals was the second highest annual total since 1958 (20 were recorded in 1965).

Wilson's Phalarope *Phalaropus tricolor*

(North America) None in Britain for the first time since 1960, but one at Ballycotton, Co. Cork, on 2nd-3rd September brought the British and Irish total to 30, all since 1954.

Pratincole *Glareola pratincola*

Wiltshire/Gloucestershire: Cricklade (Wiltshire), 30th May, also flew over county boundary (I. J. Gray).

(South Europe, south-west Asia and Africa) There have now been four records since 1958, compared with five of the far less widespread Black-winged Pratincole. This was the second in May.

Black-winged Pratincole *Glareola nordmanni*

Somerset: Ilchester, 8th September (D. I. M. and Mrs K. A. Wallace, Miss D. T. Bryde-Williams).

(South Russia and west Asia) All five records since 1958 have been in the autumn months of July to early October.

Cream-coloured Courser *Cursorius cursor*

Carmarthenshire: Cefn Sidan Sands, Pembrey, 23rd October (P. E. Davidson, A. Franklin, M. Potts *et al.*).

(South-west Asia and north and east Africa) This desert species has now been recorded more than 30 times in Britain, but only once in Ireland, chiefly October-December. The above was the third since 1958, all in the middle fortnight (9th to 23rd) of October.

Laughing Gull *Larus atricilla*

(Eastern North America and Caribbean) None in Britain, but one at Tivoli, Co. Cork, on 12th August was the first Irish record and brought the British and Irish total to five.

Bonaparte's Gull *Larus philadelphia*

Cornwall: St Ives, adult, 16th March to 9th April (E. Griffiths, N. J. and N. R. Phillips *et al.*).

Somerset: Cheddar Reservoir, immature, 28th August (G. Beakes, T. R. Cleeves, P. L. Garvey).

(Alaska and western Canada, becoming widespread in North America outside the breeding season) There have now been about 19 records in Britain, but only one in Ireland. No more than three were identified in the nine years 1958-66, but then the two years 1967-68 produced five, an increase which probably reflected more careful examination of small gulls.

White-winged Black Tern *Chlidonias leucopterus*

Berkshire: Theale gravel pit, adult, 27th October (J. A. Lucas).

Cambridgeshire: River Delph area, two on 17th August, one on 18th; two on 17th and 19th September, three on 22nd, one on 23rd and 24th (G. M. S. Easy, R. C. Marks, C. A. E. Kirtland *et al.*).

Derbyshire: Staunton Harold Reservoir, immature, 23rd and 24th August (R. A. Frost, M. J. Giles, J. H. Horobin *et al.*).

Dorset: Radipole Lake, Weymouth, 10th August (H. G. Alexander, K. R. Smith).

Durham: Washington, 30th May (D. G. Bell, E. Shearer).

Essex: Shell outfall, Stanford-le-Hope, 18th August (R. Cohen, R. Tomlinson).

Glamorgan: Lisvane Reservoir, Cardiff, 29th September (Mrs A. Heathcote).

Kent: Dungeness, immature, 5th to 16th August, and adult, 16th August (M. J. Rogers, R. E. Scott *et al.*); immature, 11th to 16th October (J. R. Collman, A. J. Greenland, R. E. Scott *et al.*).

Lancashire: Crossens Marsh, Southport, adult, 23rd August (G. A. Richards).

Leicestershire/Rutland: Eye Brook Reservoir, 10th to 27th November (N. L. Hodson, A. E. Land, T. McIlroy *et al.*).

Middlesex: Staines Reservoir, immature, 12th and 13th August (A. Goddard, R. J. Johns, C. Westwood *et al.*).

Norfolk: King's Lynn Point, immature, 25th August (O. R. and Mrs. C. A. Marks). Cley and Blakeney, immature, 27th August to 8th September (A. R. M. Blake, R. J. Johns, E. J. Wiseman *et al.*). Salthouse Broad and Arnold's Marsh, immature, 21st September (M. Jones, Dr J. N. Yates).

Somerset: Cheddar Reservoir, immature, 27th August to 8th September (R. J. Prytherch, A. M. Rackham, D. I. M. Wallace *et al.*); immature, 29th September (J. A. McGeoch).

Sussex: North Point, Rye, immature, 11th August (M. A. Hollingworth). Chichester gravel pits, immature, 11th to 16th September (G. R. Gervis, M. Shrubb, Miss J. V. Stacey *et al.*).

(South-east Europe and west and east Asia) Also one at Ballycotton, Co. Cork, from 10th to at least 24th August, and one at Akeragh Lough, Co. Kerry, on 22nd-25th September joined by a second on the last two days. Since 1958 there have now been 107 in Britain and seven in Ireland; this total of 114 has been made up of annual figures of 3, 9, 9, 7, 7, 5, 18, 4, 10, 16 and now 26. In 1968 there were two records of two and one of three: in the previous ten years there had been only four other instances of two. The 1968 figure was not only the highest annual total, but it continued the upward trend since 1964: the five years 1964-68 totalled 74 compared with only 40 in the six years 1958-63. The 114 in the eleven years ranged from March to November, but the last date of the Leicestershire/Rutland record above was the latest that this species had ever been recorded here. Normally the pattern has included a number of spring (March-June) records (30 during 1958-67), but in 1968 there was only one in May, all the others being August-November.

Whiskered Tern *Chlidonias hybrida*

Cornwall: Ruan Lanihorne, 26th to 30th April (H. H. Williams).

(South Eurasia, north-west, east and south Africa, and Australia)

Also one at Shanagarry, Co. Cork, on 18th May. Eight of the last eleven years have amassed 14 in Britain and two in Ireland. The one in Cornwall was the first April record since 1958 and may well have been the earliest ever (photographs supported the identification).

Gull-billed Tern *Gelochelidon nilotica*

Cornwall: Hayle, 18th April (P. Harrison, V. R. Tucker). Widemouth Bay, two, 6th September (R. A. Hoblyn, G. H. Price).

East Lothian: Aberlady, 22nd March (A. Macdonald).

Hampshire: Langstone Harbour, 9th June (B. W. Renyard, J. T. Smith).

Kent: Shellness, Leysdown, 5th September (Miss N. J. Bentley, B. Hawkes).

Norfolk: Salthouse/Weybourne, 4th August (R. J., R. S. and Mrs A. M. Johns).

(Denmark, south Europe, south Asia, north-west Africa Australia and the Americas) The high total of 17 in 1967 was not repeated and these six records (seven individuals) were slightly less than the average during 1958-66. The one in East Lothian in March was the earliest ever recorded, though there have been a number in April. The pattern during recent years—mostly English Channel and east coast—has suggested that the Danish population is involved, rather than overshooting from south Europe, but it is surprising that there has still been only one Irish record (1957).

Caspian Tern *Hydroprogne tschegrava*

Derbyshire: Egginton, 3rd June (R. H. Appleby, T. G. Smith, C. Whipple).

Dunbartonshire/Stirlingshire: Loch Lomond, 7th August (M. Forrester).

Hampshire: Stanpit Marsh, Christchurch, 20th July (C. I. Husband, M. I. Webber).

Leicestershire/Northamptonshire: Stanford Reservoir, 3rd June (R. B. Ratcliffe).

Norfolk: Cley, 13th July (K. Allsopp, R. S. Brown, A. Greensmith *et al.*).

Staffordshire: Belvide Reservoir, 20th July (C. Rutter).

(Baltic, south-east Europe, south-west and south-east Asia, Africa, Australasia and North America) The observation at Egginton was from 12.30 to 13.00 hours and that at Stanford Reservoir from 15.10 to 15.30 hours; the two localities are only 35-40 miles apart, but in both cases the bird was seen flying off south-west and Stanford is firmly south-east of Egginton. These six records followed seven in 1967 and eleven in 1966. Thus the three years 1966-68 amassed 24 records (27 individuals), whereas the previous eight years 1958-65 produced only 18. As usual, half were in July, which appears to be the peak month. There has still been only a single Irish record (1959) and the one in Dunbarton/Stirling, listed above, was the first for Scotland.

Brünnich's Guillemot *Uria lomvia*

Shetland: Norwick, Unst, freshly dead, 20th March, specimen now in Royal Scottish Museum (F. J. Walker).

(Circumpolar Arctic) This species has been recorded in Britain and

Ireland only five times, but it is not easily identified at sea and may occur much more often than the few found dead suggest. The only other since 1958 was similarly picked up, in Lancashire in April 1960.

Great Spotted Cuckoo *Clamator glandarius*

Cornwall: Stithians, Truro, 23rd April to the last week in June (Reverend J. E. Beckerlegge, G. Jackson, R. L. Winter *et al.*).

(South Europe, south-west Asia and Africa) There are now twelve records, ten in Britain and two in Ireland, of which six have been since 1958. This one arrived during one of the two normal periods (March-April and late July-early August), but the length of its stay—more than two months—was unprecedented.

Scops Owl *Otus scops*

Hampshire: Highclere, found dead, 11th May (Dr J. S. Ash, Dr J. M. Harrison).
Man: Calf of Man, trapped, 29th-30th April (K. Leavett, R. M. Wright) (plate 71).

(South Europe, Russia, west Asia and north-west Africa) It is extraordinary to have two records in one year as there has been only one other (Orkney, June 1965) since 1958. The British and Irish total is only about 67, with very few in the last 30 years.

Snowy Owl *Nyctea scandiaca*

Outer Hebrides: St Kilda, 30th March to 14th April (H. King, D. S. Shelly).
Shetland: Fetlar, pair again bred successfully and fledged three young; in addition, two further adults were present in the later part of the year and there were nine birds on the island in December, ncluding some of the 1967 young (R. J. Tulloch).
Sussex: Seaford Head, 8th November (Mrs V. A. Wilson).

(Circumpolar Arctic) Also one near Ballygar, Co. Roscommon, on 10th November. Apart from Fetlar, Shetland, where nesting took place for the second year in succession, there were thus only two British and one Irish, the smallest total since 1963. It is to be hoped that this does not mean that the species is beginning to withdraw from the expanded range colonised in Scandinavia and Shetland after a series of irruptions from further east during 1960-63 (*Brit. Birds*, 61: 119).

Alpine Swift *Apus melba*

Argyll: Ardnamurchan, 6th July (F. C. Best).
Norfolk: Cley, 20th September (E. M. Raynor, A. Williams, N. Williams).
Pembrokeshire: St David's Head, 21st July (J. H. Marchant).
Scilly: St Agnes, 24th July (A. B. Gammell, F. H. D. Hicks); 21st October (A. Greensmith D. J. Holman, G. Jobson *et al.*).
Sussex: Beachy Head, 3rd August (R. H. and Mrs M. E. Charlwood).

(South Eurasia, north-west and east Africa) Also one on Cape Clear Island, Co. Cork, on 21st April. A total of seven is above the annual average since 1958, but only the one in Norfolk was in a peak month.

Bee-eater *Merops apiaster*

Ayrshire: Swindridge Muir, Dalry, 14th to 18th May (Lt-Colonel M. G. Borwick, D. J. Norden).

Lincolnshire: Barrow-on-Humber, 29th April (M. Hopper).

Suffolk: East Hollesley, 27th August (P. R. Colston, R. E. Emmett, B. E. Newport).

Yorkshire: Spurn, 18th June (D. Murray, E. V. Robinson, B. R. Spence).

(South Europe, south-west Asia and north-west Africa) These four records brought the total since 1958 to 35 (46 birds). The one in Ayr was only the fourth in Scotland (and the first in the south-western part) in that time.

Roller *Coracias garrulus*

Argyll: Cladville, Islay, 29th September (Mr and Mrs Glover, Dr A. M. Tait *et al.*).

Devon: Prawle Point, 12th to 14th September (T. F. Edwards, S. C. Madge, D. M. Norman).

Essex: Great Holland, 24th October to 18th November (Miss P. Harris, J. K. and Mrs D. J. Weston *et al.*).

Middlesex: Osterley Park, 26th and 27th August (D. G. Harris, J. Snell, C. F. Thorn *et al.*).

Yorkshire: Bretton Park, Wakefield, early August to 6th October (M. L. Denton, D. and G. Moran *et al.*).

(South and east Europe, west Asia and north-west Africa) Five is the largest number in any one year, at least since 1958. Unusual, too, were the months (all August-November), for 18 of the 20 in 1958-67 were in May-July. The prolonged stay of those in Yorkshire and Essex and the latter's late last date of 18th November were also remarkable.

Short-toed Lark *Calandrella cinerea*

Norfolk: Salthouse, 8th September (H. P. Medhurst).

Pembrokeshire: Skokholm: 17th and 18th May (C. K. Britton, B. Chambers, D. A. Scott *et al.*).

Scilly: St Mary's, three, 21st to 24th September, two 27th (R. S. Brown, A. R. Dean, A. Greensmith *et al.*); one, 3rd and 4th October (P. J. Grant, D. J. Holman, N. J. Westwood *et al.*); 27th October (R. J. Johns). St Agnes, 1st, 2nd and 9th October (P. J. Grant, D. J. Holman, N. J. Westwood *et al.*).

Shetland: Out Skerries, 2nd, 3rd and 16th May (R. J. Tulloch). Fair Isle, singles of one of the reddish races, trapped, 20th May to 1st June (G. J. Barnes, R. H. Dennis *et al.*), 5th to 8th September (N. Collar, R. H. Dennis *et al.*); four individuals of one of the greyish eastern races in October, two on 9th, one 12th to 15th and one 20th (R. H. Dennis, A. R. Mainwood *et al.*).

(South Eurasia and north and east Africa) The nine years 1958-66 produced only about 27 records, but in 1967 there were twelve individuals and now in 1968 another 15-17. Only three or four of these 15-17 were in spring and so the large number was made up of an autumn increase for the second year in succession, again largely shared between the Isles of Scilly and Shetland.

Red-rumped Swallow *Hirundo daurica*

Devon: River Exe, at Turf, 21st April (P. and Mrs Moriarty).

Kent: Stodmarsh, 20th April (P. A. Dukes, D. J. Holman, T. P. Inskipp *et al.*). Walland Marsh, 30th April (J. F. Burton).

Lancashire: Ainsdale Dunes, 4th May (H. Shorrock).

Norfolk: Mundesley, 18th April (N. J. B. Branson).

(South and east Eurasia and Africa) Five in one year is unprecedented. The total is now 21 individuals (only one Irish), all but four since 1952 which is the period of northwards spread in, particularly, south-west Europe (e.g. *Brit. Birds,* 56: 416-418). All except three have been in spring and so the above records fit well into the expected pattern: they were all in a 15-day period from 20th April to 4th May during an influx of southern vagrants.

Nutcracker *Nucifraga caryocatactes*

(Eurasia from Scandinavia and the Alps to Kamchatka and China) An unprecedented influx began with the first records in Norfolk on 6th-7th August, followed by a trickle of observations preceding the main arrival during the last ten days of the month. A lesser second wave occurred in early September, after which there were smaller numbers in October and stragglers into November and December. Most were in Norfolk, Suffolk, Essex and Kent, but 23 counties were involved in all, as far apart as Shetland, Glamorgan and the Isles of Scilly. The number of individuals was over 200, which was three or four times as many as the previous grand total (and there were only six in the ten years 1958-67). All were probably of the Slender-billed form *N. c. macrorhynchus*, which breeds from north-east Russia eastwards. The eruption affected many other countries in north Europe. A full list of the British records is being published separately as part of an analysis by J. N. Hollyer.

Dusky Thrush *Turdus naumanni eunomus*

Shetland: Whalsay, 24th September (J. H. Simpson).

(Northern and central Siberia) Only the fourth British record, but the third since 1958 and the earliest to date, the others having been in October (two) and December-February.

Olive-backed Thrush *Catharus ustulatus*

(North America) None in Britain, but one on Cape Clear Island, Co. Cork, on 14th-16th October brought the British and Irish total to three.

Grey-cheeked Thrush *Catharus minimus*

Caernarvonshire: Bardsey, trapped, 31st October (G. H. Evans, H. Miles, K. Redshaw *et al.*) (plate 69).

Durham: Horden, found dead, 17th October, specimen now in the Hancock

Museum (B. Little, E. R. Meek, J. Oakshatt *et al.*).

(North America) There are now seven British (but no Irish) records, all since 1953 and all in October except for one in November.

Black-eared Wheatear *Oenanthe hispanica*

Man: Calf of Man, ♂, 30th July (R. L. Leavett, R. M. Wright).

(South Europe, south-west Asia and north-west Africa) There are now 19 records (but only one Irish) in sporadic groups with long gaps: two 1878-92, five 1907-16, eight 1940-54, three 1964-65 and now one 1968. This is the first record for July, the others having been March-June and August-November with peaks in April, May and September.

Pied Wheatear *Oenanthe pleschanka*

Pembrokeshire: Skokholm, ♀, trapped, 27th October (C. K. Britton, B. Chambers, D. A. Scott).

(South-east Europe and south-central Asia) The first record since 1954 and only the fourth altogether, all between 17th October and 1st November.

Thrush Nightingale *Luscinia luscinia*

Kent: Sandwich Bay, trapped, 23rd August (D. F. Harle, J. N. Hollyer, R. E. Scott *et al.*).

(Scandinavia, east Europe and west Asia) The ninth British record and the seventh since 1958. Five of the other eight have been on Fair Isle in May, one in Yorkshire in May and the other two in Northumberland in September-October. Thus this was the furthest south and the first in August.

Rufous Bush Chat *Cercotrichas galactotes*

(South Europe, south-west Asia and north Africa) None in Britain, but one on Cape Clear Island, Co. Cork, on 20th April. This was the third record since 1958 and brought the grand total to nine, but it was also the first in spring, all the other eight having been in September-October. The date was really extraordinary for a species which does not usually appear in Europe until May, but it occurred during an early influx of southern vagrants and there was probably one in Kent two days later, though unfortunately this was not fully substantiated. In this connection, it is worth noting that there was 'a considerable influx during the unusual weather conditions of April 1968' at Gibraltar (*Ibis,* 112: 40).

Cetti's Warbler *Cettia cetti*

Kent: Dungeness, trapped, 31st March (P. J. Grant, M. J. Rogers, R. E. Scott *et al.*).
Sussex: Beachy Head, trapped, 25th September (B. E. Cooper, N. A. G. Lord, M. Robinson).

(South Europe, south-west Asia and north-west Africa) Also the first Irish one on Cape Clear Island, Co. Cork, on 24th August. These three records brought the total to six, all since 1961. Following the series of occurrences in Jersey and the record of summering in southern England in 1967 (*Brit. Birds,* 61: 174-175, 349), these observations again reflected the northward spread on the Continent (*Brit. Birds,* 57: 357-359, 518; 61: 175).

Savi's Warbler *Locustella luscinioides*

Berkshire: Hambridge, Newbury, trapped, 6th May (R. Crockford, I. Hawthorn, I. Weston).

Kent: Stodmarsh, 28th March to 28th July, maximum of three ♂♂ singing, but no proof of breeding (R. G. Pitt, P. J. Mountford *et al.*).

Pembrokeshire: Skokholm, 31st October (D. A. Scott).

Suffolk: Minsmere, 28th April, 15th May to 1st June (H. E. Axell, R. S. Briggs, D. Mower *et al.*). Walberswick, 12th May (G. J. Jobson).

Sussex: Devil's Dyke, Brighton, 26th April (C. F. Helyer).

Warwickshire: Brandon Marsh, Coventry, 21st April (S. A. Wilson, A. W. H. Wincott, B. Wright).

(Europe, west and central Asia and north-west Africa) Not for over 100 years have six counties recorded this species in one year. Although there was no firm evidence of breeding in Kent (cf. *Brit. Birds,* 60: 349-355), the spring records in Sussex, Berkshire, Warwickshire and Suffolk strengthened the expectation that several other localities will soon be colonised. The end-October date of the one in Pembrokeshire was unusually late.

Aquatic Warbler *Acrocephalus paludicola*

Devon: Slapton Ley, immature, trapped, 8th August; another immature, trapped, 10th August; and a third immature, trapped, 9th September (M. R. Edmonds, F. R. Smith).

Hampshire: Stanpit Marshes, Christchurch, 7th September (C. I. Husband).

Scilly: Tresco, 9th September (B. Rabbitts).

Sussex: Beachy Head, trapped, 11th August (P. Clement, B. E. Cooper, S. Greenwood).

(East Europe and west Asia) These six records, the smallest number since 1962, brought the total since 1958 to at least 100. August and September are the normal months.

Olivaceous Warbler *Hippolais pallida*

Cornwall: Porthgwarra, trapped, 14th September, and perhaps another seen (P. Harrison, S. C. Madge, N. R. Phillips).

(South Europe, south-west Asia and north Africa) Including the 1967 addition on page 490, there are now ten records, all since 1951 and all between 16th August and 4th October.

Booted Warbler *Hippolais caligata*

Shetland: Fair Isle, trapped, 8th September (R. H. Dennis, A. R. Mainwood *et al.*).

(Russia and west and central Asia) The fifth record in all and the fourth on Fair Isle. Apart from one observed in the Isles of Scilly on 23rd October 1966, all have been first noted between 28th August and 8th September.

Sardinian Warbler *Sylvia melanocephala*

Pembrokeshire: Skokholm, ♂, trapped, 28th October (C. K. Britton, B. Chambers, D. A. Scott).

(South Europe, Middle East and north Africa) Only the third record (all males) of this mainly resident species. This was the first in autumn, the previous two being in May 1955 and May 1967 (*Brit. Birds*, 48: 515; 61: 351).

Subalpine Warbler *Sylvia cantillans*

Orkney: Auskerry, 29th May (E. J. Williams).

Scilly: St Agnes, trapped, first-year ♂, 6th to 17th October (B. E. and J. Cooper, F. H. D. Hicks *et al.*).

Shetland: Whalsay, ♂, 22nd April to 5th May when two seen, the second probably ♀ (J. Bruce, J. H. Simpson *et al.*).

Yorkshire: Spurn, ♂, trapped, 9th May (J. Cudworth, M. A. Hollingworth, S. J. Weston *et al.*); ♂, trapped, 27th August (G. R. Edwards, J. A. Harrison, B. R. Spence *et al.*).

(South-west Europe, Middle East and north-west Africa) Unlike two other Mediterranean scrub warblers—Sardinian and Spectacled—this is a summer visitor to southern Europe and therefore more likely to wander to Britain and Ireland. Indeed, it is being recorded here to an increasing extent: this was the first time that there had been six in one year and they followed four each in 1966 and 1967; of the total now of 37 birds, 31 have been since 1951.

Spectacled Warbler *Sylvia conspicillata*

Yorkshire: Spurn, trapped, 21st to 31st October (M. Densley, F. C. Gribble, B. R. Spence *et al.*).

(South-west Europe, Middle East, north Africa, Madeira, Canary and Cape Verde Islands) Note that this bird was first seen just one week before the Sardinian Warbler on Skokholm, Pembrokeshire, on 28th October and also a Dartford Warbler *S. undata* on Cape Clear Island, Co. Cork, on the 27th-28th, the latter being only the second Irish record. Although the Spectacled Warbler has a range comparable with those of the Subalpine and the Sardinian, it has not previously been recorded in Britain or Ireland. This is not so surprising, because it is largely resident and it is also the scarcest and most local of these three Mediterranean scrub warblers.

Greenish Warbler *Phylloscopus trochiloides*

Norfolk: Holme, trapped, 26th August (P. R. Clarke, G. Hinchon); another trapped, 9th November (R. J. Johns, E. T. Welland).

Yorkshire: Easington, trapped, 28th August to 1st September (A. O. Aitken, B. R. Spence, R. Wynne *et al.*). Spurn, 19th October (J. R. Collman, A. W. Wallis).

(Eurasia from south Finland and north Germany to Manchuria and central China) Also on Cape Clear Island, Co. Cork, on 1st, 4th, 10th-20th, 24th and 27th-28th October and 5th December and two at Lissagriffin, Co. Cork, on 29th December. These four British and eight Irish records brought the total to 70, all except one since 1945. The December records in Ireland were interesting as there had been two previous cases of wintering in Britain, but the normal period is August-October (and none on spring migration before June).

Bonelli's Warbler *Phylloscopus bonelli*

Caernarvonshire: Llaniestyn, 17th September (A. Teather).

(Central and south Europe, Levant and north-west Africa) Also two on Cape Clear Island, Co. Cork, on 28th August and 6th October. There have now been 22 records, 19 of them since 1958, mainly August-September and only twice previously in October-November.

Arctic Warbler *Phylloscopus borealis*

Caernarvonshire: Bardsey, trapped, 13th September (K. Baker, G. H. Evans, K. Redshaw).

Norfolk: Blakeney, 24th to 31st August (Dr J. T. R. Sharrock, R. Brown, A. Greensmith *et al.*). Wells, 7th September (P. R. Colston).

Shetland: Fair Isle, trapped, 12th to 15th August (R. H. Dennis, A. R. Mainwood *et al.*).

(North-east Europe, north Asia and Alaska) Also one on Cape Clear Island, Co. Cork, on 8th-10th September. There have now been about 53 records, over two-thirds of them in Scotland and with extreme dates 30th July to 24th October; the 34 since 1958 have all been between 12th August and 12th October.

Pallas's Warbler *Phylloscopus proregulus*

Aberdeenshire: Collieston, trapped, 22nd to 24th October (A. Anderson, N. Elkins, W. Murray *et al.*).

Kent: Sandwich Bay, 19th October (D. M. Batchelor); another individual, trapped, 19th October (N. Ball, J. N. Hollyer, T. Ruck *et al.*), another trapped, 24th October (M. Davenport, J. N. Hollyer, T. Ruck *et al.*). Dungeness, trapped, 20th October (P. J. Grant, A. M. Hutson, R. E. Scott *et al.*).

Lincolnshire: Anderby, trapped, 19th October (K. Atkin, J. F. Cooper). Gibraltar Point, trapped, 19th October (R. Pearson, R. B. Wilkinson).

Norfolk: Holme, 20th October (R. J. Johns, E. T. Welland).

Scilly: St Agnes, two, 21st and 22nd October (R. S. Brown, A. Greensmith, D. J. Holman *et al.*).

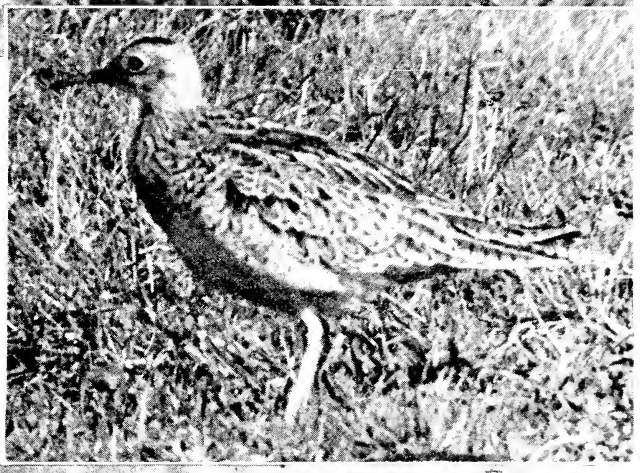
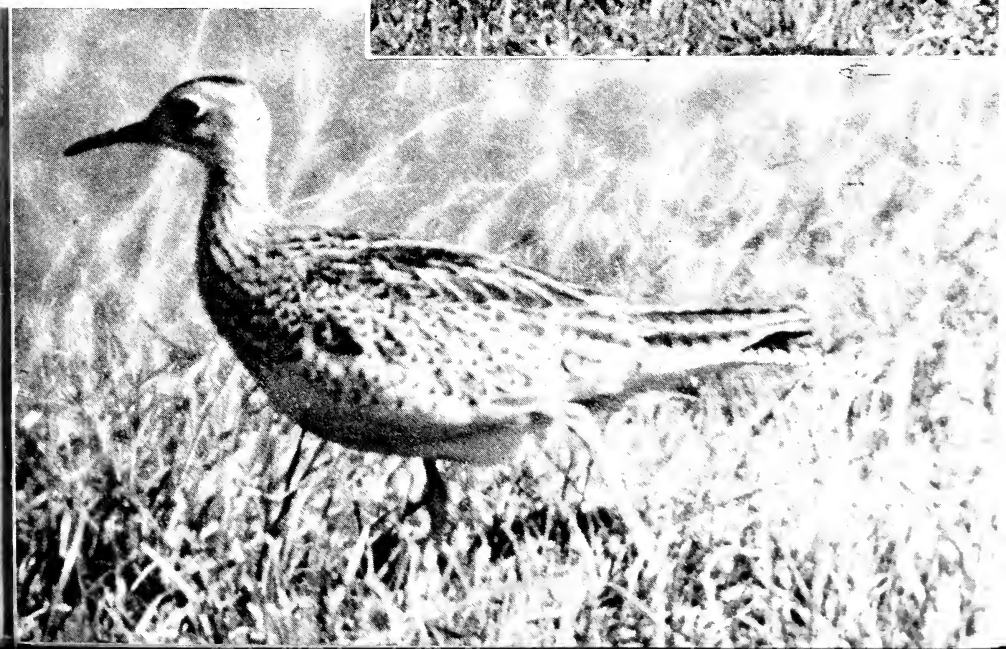


PLATE 68. Upland Sandpiper *Bartramia longicauda,* Isles of Scilly, September 1968 (page 468). Note the short, slightly decurved bill, and the small head, thin neck and long tail and wings, which combine to give this Ruff-sized American wader a slender and elongated shape. Note too the dark crown, the pronounced eye-ring, the scaly back and secondaries, and the barring on the primaries and the tail edges (*photos: R. F. Coomber*)



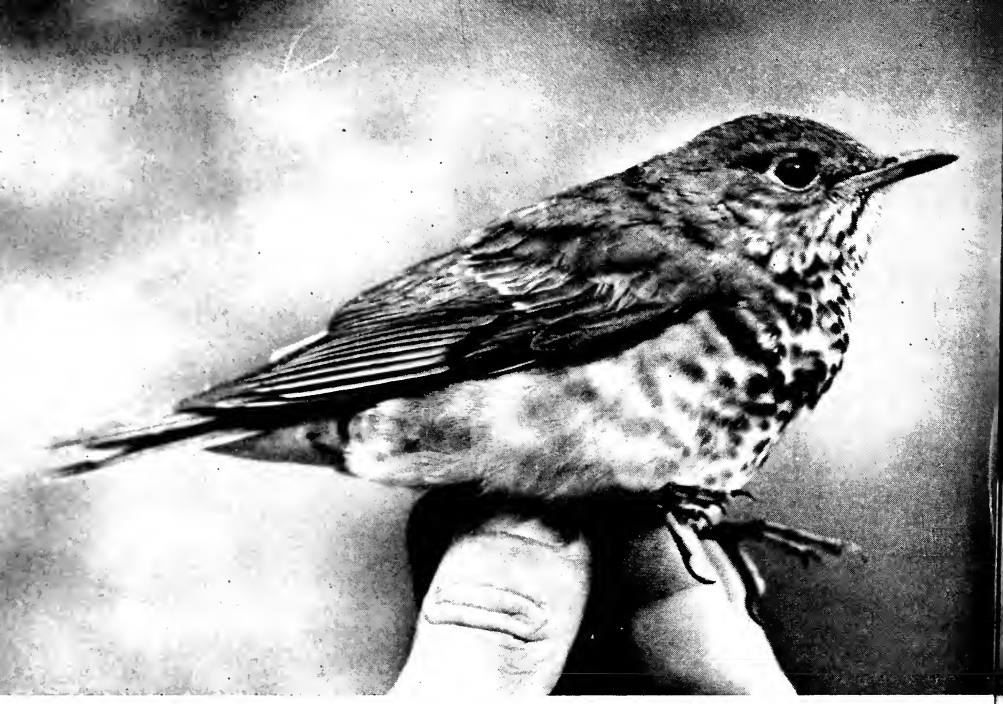


PLATE 69. Grey-cheeked Thrush *Catharus minimus*, Bardsey, October 1968 (page 476). This small American thrush is grey- to olive-brown above and whitish below tinged with buff on the black-spotted breast. It differs from the similar Olive-backed Thrush *C. ustulatus* by a less distinct eye-ring and grey cheeks (*photos: H. Miles*)

PLATE 70. Blackpoll Warbler *Dendroica striata,* Bardsey, October 1968 (page 486). One of several American warblers with two wing-bars and white in the tail, it is distinguished from the similar Bay-breasted Warbler *D. castanea* in autumn plumage by pale legs, yellow breast and flanks and white under the tail (*photos: H. Miles*)

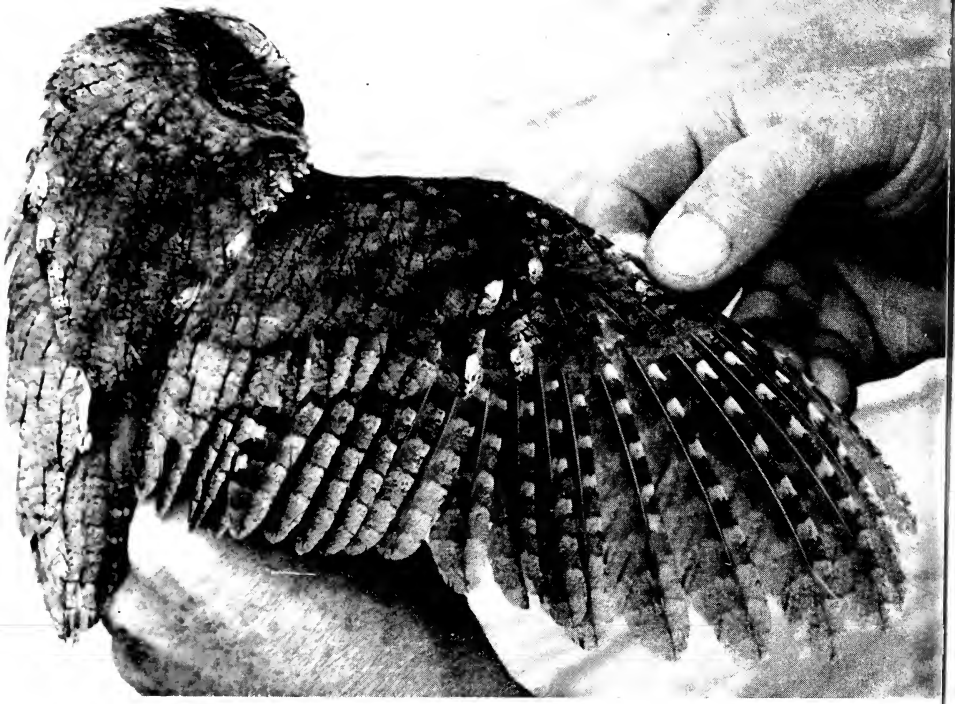


PLATE 71. Scops Owl *Otus scops*, Calf of Man, April 1968 (page 474). Note the small size in relation to the hand holding it, the small head (by comparison with that of a Little Owl *Athene noctua*) and the half-erect ear-tufts, the delicately patterned grey-brown plumage and the slim, tapering shape (*photos: Malcolm Wright*)

Sussex: Beachy Head, trapped, 18th to 20th October (B. E. Cooper, P. J. Wilson, R. H. Charlwood *et al.*). Belle Tout Wood, Beachy Head, 27th and 28th October (R. H. and Mrs M. E. Charlwood, K. Verrall *et al.*). Hodcombe, Beachy Head, 30th October (R. H. and Mrs M. E. Charlwood).

Yorkshire: Spurn, trapped, 19th October (C. Done, R. J. Rhodes, B. R. Spence *et al.*); another, trapped, 20th October (M. Densley, F. C. Gribble, B. R. Spence *et al.*); a third, trapped, 26th to 28th October (J. Cudworth, J. C. Gittins, B. R. Spence *et al.*). Flamborough Head, 27th October (R. D. Ackerley, H. O. Bunce, A. F. G. Walker *et al.*).

(Central, east and south-east Asia) Also one on Cape Clear Island, Co. Cork, on 23rd October, the first in Ireland. This species had been recorded only once before 1951 and only seven times up to 1962; then came six in 1963, one in 1964, four in 1965 and three in 1966. Now, after a blank in 1967, we have this astonishing influx of 18 in eight counties, ten of which were trapped and ringed. All were on the east and south coasts from Aberdeen to the Isles of Scilly and Co. Cork (14 between Yorkshire and Sussex) and all during 18th-30th October; the grand total thus jumped from 21 to 39 within 13 days. See also the next two species which combined to make Asiatic warblers such a feature of October-November 1968.

Dusky Warbler *Phylloscopus fuscatus*

Norfolk: Holkham, 26th October to 6th November, two on 29th October and 2nd November (Mrs E. M. P. Allsopp, H. P. Medhurst, O. Laugharne *et al.*). Holme, trapped, 9th November (R. J. Johns, E. T. Welland); another, 10th November (J. A. W. Moyes, M. Webber).

Scilly: Tresco, 25th October (D. B. Hunt).

(Central and north-east to south-east Asia) Although overshadowed by the Pallas's Warblers, two together and five in one year were just as extraordinary, considering that there had been only six previous records (including the 1964 addition on page 489). These fitted well into the normal pattern: all eleven have been between 1st October and 15th November, mainly in the last fortnight of October. The one on Tresco was the second for the Isles of Scilly, but all the others have been on the east coast from Shetland to Kent.

Radde's Warbler *Phylloscopus schwarzi*

Fife: Isle of May, trapped, 22nd October (P. Harland, I. F. Stewart, J. Stewart *et al.*).

Norfolk: Wells, 20th and 21st October (R. J. Johns, A. J. L. Smith, E. T. Welland *et al.*).

Pembrokeshire: Skokholm, trapped, 22nd October (C. K. Britton, B. Chambers, D. A. Scott).

(Central and east Asia) Three in one year was hardly less remarkable than the Pallas's and Dusky Warblers, as there had been only seven previously (all but one since 1961). These three, all within a period of three days, were slightly later than usual, most of the others having been during 1st-15th October.

Richard's Pipit *Anthus novaeseelandiae*

Caernarvonshire: Bardsey, three, 14th October (G. H. Evans, K.Redshaw); one, 3rd November (H. Miles, K. Redshaw). Llanfairfechan, three, 9th November (Dr P. J. Dare).

Cornwall: Marazion, 8th December (E. Griffiths, S. C. Madge, L. P. Williams *et al.*).

Devon: Lundy, 26th September (A. J. Vickery). Braunton, 25th October (A. J. Vickery). Hope's Nose, Torquay, three, 24th November (J. Davis, A. J. Last, M. Pownall). Thurlestone, 30th November (R. Burridge, V. R. and M. Tucker).

Dorset: Portland Bill, 27th to 30th October (F. R. and Mrs B. Clafton, C. E. Richards).

Essex: Holliwell Point, River Crouch estuary, 19th October (J. Flynn, M. P. Taylor).

Fife: Isle of May, trapped, 17th and 18th September; another, 19th and 21st (J. A. Ginnever, B. Little, E. R. Meek *et al.*).

Kent: Dungeness, 15th September (J. R. Collman, P. J. Grant, R. E. Scott *et al.*). Sandwich Bay, 6th October (D. J. Britton). Cliffe, 14th and 16th November (D. L. Davenport, J. Holloway).

Kincardineshire: Girdle Ness, 19th October (A. Duncan, A. F. Leitch, M. A. Macdonald).

Lancashire: Hundred End, Southport, 14th October (P. A. Lassey). Fleetwood, 22nd October, two on 30th (R. A. Cadman, M. Jones); 3rd and 4th November (H. S. Andrews, P. L. Barnes, Mrs A. Heathcote *et al.*). Freshfield, 6th to 8th November (J. Clements, P. A. Lassey).

Lincolnshire: Donna Nook, 9th and 15th October, two 17th, one 18th and 19th, four 23rd, at least three 24th, at least two 25th, five 26th, three 27th, two 28th to 31st, one 4th November (G. K. Brown, S. Lorand, C. Morrison *et al.*). Huttoft Bank, trapped, 27th October (J. F. Cooper, R. B. Wilkinson).

Lincolnshire/Norfolk: Wisbech sewage farm, 7th October (O. and Mrs P. V. Laugharne).

Norfolk: Weybourne, two, 14th September (M J. Cowlard, K. D. Edwards, H. P. Medhurst *et al.*). Cley, 19th September (B. W. Jarvis); 25th (B. H. Fletcher, Miss E. R. Gooding, J. D. Magee *et al.*); 10th November (B. W. Jarvis). Wolferton, 2nd October (O. and Mrs P. V. Laugharne); 5th, 13th, 20th (D. M. Bryant). Holme, two, 13th October (J. A. W. Moyes); two, 19th (M. T. Barnes); four, 20th (G. M. S. Easy, R. J. Johns, C. A. E. Kirtland *et al*); five, 26th (G. M. S. Easy); two, 27th and 3rd November (C. A. E. Kirtland); five, 9th (R. J. Johns, E. T. Welland); two, 14th (C. A. E. Kirtland); one, 17th and 24th (D. M. Bryant). Holkham, five, 13th October and six 19th (D. J. Britton); three, 20th, two 27th and four 3rd November (P. R. Colston, R. E. Emmett, R. F. Porter *et al.*). Blakeney, 19th October (H. Hunt). Winterton/Horsey, 20th October, two 27th (P. R. Allard). Salthouse, six, 20th October (R. J. Johns, E. T. Welland). Heacham, 26th October (G. M. S. Easy). Hunstanton, 26th October (G. M. S. Easy).

Orkney: North Ronaldsay, 2nd October, another 26th (G. B. Westerhoff, E. J. Wiseman, D. B. Wooldridge).

Pembrokeshire: Skokholm, 7th, 8th, 21st, 22nd October, four 26th, one 27th, 28th, two 29th, one to 4th November (C. K. Britton, B. Chambers, D. A. Scott).

Scilly: St Agnes, 7th September (A. B. Gammell, S. C. Joyner); four, 18th (G. Green, S. C. Joyner, N. Tuersley); four, 7th October, one 14th, two 17th (P. J. Grant, R. J. Johns *et al.*); one, 22nd to 29th (R. S. Brown, A. Greensmith, G. J. Jobson). Tresco, 13th September (S. C. Joyner). St Mary's, two, 17th September (S. C. Joyner); one,

7th October, two 11th and 14th, four 27th (R. J. Johns, B. A. E. Marr, E. T. Welland *et al.*).

Shetland: Fair Isle, 8th to 22nd September, two 11th October, two 15th and 16th, one to 18th, one 22nd to 24th, one 6th, 7th and 23rd November (R. H. Dennis, A. R. Mainwood *et al.*).

Somerset: Clevedon, at least two, 20th to 26th October, 4th, 10th, 24th November (S. Banks, T. R. Cleeves, K. D. Smith *et al.*).

Suffolk: Havergate, 6th October (G. J. Jobson)

Sussex: Selsey Bill, 29th September (D. S. Flumm, M. Shrubb). Beachy Head, two, 19th October (P. R. Colston, R. E. Emmett, H. P. Medhurst *et al.*); one 20th (Mrs M. E. Charlwood); one, trapped, 26th October to 3rd November (A. R. Kitson, W. Merritt, E. I. McNeill *et al.*). Sidlesham, 21st October (M. Shrubb).

Yorkshire: Spurn, 18th to 20th September (P. J. Carlton, B. R. Spence, I. Walker *et al.*); 22nd (P. H. G. Wolstenholme); 2nd October (B. R. Spence); three 8th, five 9th, one 10th and 11th (J. Cudworth, G. R. Edwards, J. W. Hartley *et al.*); two 20th, one 21st and 24th (J. R. Collman, M. Densley, S. Kenyon *et al.*); 8th November (G. R. Edwards, R. J. McCann, B. R. Spence *et al.*).

(Central and east Asia, south-east Asia, Africa and Australasia) Also one on Cape Clear Island, Co. Cork, on 13th September. For the second autumn in succession there was an avalanche of records in Britain and, although it is difficult to count the number of individuals in such a profusion, it seems likely that the total was of the order of 130-150, compared with over 120 in 1967 (*Brit. Birds,* 61: 352-353) and 32-38 in 1966, but only four in 1965. The influx began a little earlier than in 1967 with a first peak in the middle third of September, but the main arrival was again in the last ten days of October, coinciding this time with a remarkable influx of Asiatic warblers. There was only one December record, in Cornwall, as against three in the previous year. It is curious that only one was found in Ireland in each of these two years.

Tawny Pipit *Anthus campestris*

Cornwall: Porthgwarra, 28th April (J. B. and Mrs S. Bottomley, J. S. Wightman).

Durham: Cowpen Marsh, two, 12th April, one 13th (C. S. Allen, I. Lawson, D. Marshall *et al.*). Teesmouth, 27th October (I. Jenkinson, I. Lawson, J. K. Smith *et al.*).

Kent/Sussex: Midrips, 4th September (L. Salmon).

Norfolk: Winterton Dunes, two, 21st April, one 23rd and 28th, 5th May; also 25th August (P. R. Allard, B. W. Jarvis). Holme, 7th to 10th May (P. R. Clarke, O. Laugharne, H. Ramsay); 20th October (J. A. W. Moyes, M. Webber). Salthouse, 5th October (P. J. Oliver). Holkham, 9th to 12th October (O. and Mrs P. Laugharne, P. J. Oliver *et al.*). Cley, 13th October (D. J. Britton), two 23rd (M. Coath, M. J. Cowlard, M. J. McVail *et al.*); one, 30th (R. J. Bradney).

Pembrokeshire: Skokholm, 18th September, trapped, 28th (C. K. Britton, B. Chambers, D. A. Scott).

Scilly: St Agnes and Gugh, 9th to 12th September (J. Dalgleish, S. C. Joyner *et al.*).

Suffolk: Minsmere, 9th September (H. E. Axell).

Sussex: Saltdean, 10th August (A. J. Cooke). Beachy Head, 24th and 25th August (R. H. and Mrs M. E. Charlwood); 8th September (M. J. Helps, B. A. E. Marr, I. R. Willis); 11th (B. E. Cooper). Selsey Bill, 8th September (D. S. Flumm, H. P. K. Robinson, M. Shrubb).

(Europe, south Asia and north-west Africa) Also one at Ballycotton, Co. Cork, on 20th September. Although overshadowed by the Richard's Pipits, these 25 likewise represented a new high, beating the record total of 18 in 1967. There have now been about 135 since 1958. An unusual series of spring records between 12th April and 10th May was associated with an early influx of south European vagrants, while the others were mostly in the usual months of late August and September (10th August to 30th October), generally rather earlier than the Richard's Pipits.

Red-throated Pipit *Anthus cervinus*

Kent: Sandwich, 15th September (D. M. Batchelor, K. A. Chapman, T. L. Norden *et al.*).

Scilly: Bryher, 4th May (R. F. Coomber, P. Z. Mackenzie).

Shetland: Fair Isle, trapped, 15th September (R. H. Dennis, A. R. Mainwood *et al.*).

(Arctic Eurasia) This species produces a steady one to five records a year. The two in autumn (note the coincidence of date) brought the September records since 1958 to seven in a total of 30 (35 birds).

Citrine Wagtail *Motacilla citreola*

Fife: Isle of May, 20th September (J. A. Ginnever, B. Little, E. R. Meek *et al.*).

Norfolk: Cley, 10th September (R. A. Richardson).

(East Russia and west-central Asia from Siberia to Tibet) There are now twelve British records (13 individuals), all since 1954 (two a year in 1964 and 1966-68) and all September-October, though one stayed into November.

Lesser Grey Shrike *Lanius minor*

Lancashire: Radcliffe, 4th June (B. Callow, D. E. Kelly, J. O. Rawsthorne).

Norfolk: Sheringham Common, 7th June (Miss H. M. Mills, B. L. Statham *et al.*) and Winterton Dunes, 9th June (P. R. Allard, M. J. Seago); perhaps the same bird.

(South and east Europe and south-west Asia) These three in six days equalled the annual average for the previous ten years, during which time June was the commonest month (twelve out of 32).

Woodchat Shrike *Lanius senator*

Anglesey: Aberffraw Common, 22nd April (R. and Mrs D. Llewelyn, W. J. Marler *et al.*).

Caernarvonshire: Bardsey, 20th to 22nd May (G. H. Evans, Miss V. Maxse, K. Redshaw); immature, 9th September (G. H. and Mrs F. Evans).

Derbyshire: Clay Mills gravel pit, 20th April (J. H. Horobin).

Dorset: Portland Bill, 18th and 19th May (F. R. Clafton, A. Reese, G. Walbridge *et al.*); 21st July (F. R. and Mrs B. Clafton, P. Walbridge *et al.*); immature, 10th August (F. R. Clafton, Dr D. J. Godfrey, A. Rackham *et al.*); 26th September to 6th October (F. R. Clafton, N. R. Rogers, K. D. Smith *et al.*).

Hampshire: Hengistbury Head, 19th May (D. R. Hewitson, Dr R. G. Mayall, K. T. Standring *et al.*).

Lincolnshire: Gibraltar Point, 26th May (R. Emmens).

Pembrokeshire: Skokholm, 29th June (C. K. Britton, Dr C. M. Perrins, D. A. Scott *et al.*); immature, trapped, 24th and 25th July (C. K. and Mrs A. Britton, Dr M. P. Harris); immature, trapped, 7th September (B. Chambers, C. K. Britton, D. A. Scott *et al.*).

Scilly: Tresco, 27th to 30th April (D. B. Hunt). Watermill, St Mary's, 12th to 22nd September (R. F. Coomber, P. Z. Mackenzie, B. Rabbitts *et al.*). Lower Moor, St Mary's, 21st September (R. F. Coomber, E. G. Woodcock). St Mary's, 27th October (R. J. Johns, B. A. E. Marr).

Shetland: Foula, 29th and 30th April, 5th May (J. G. Holbourn). Fair Isle, trapped, 4th to 8th June (R. H. Dennis, A. R. Mainwood *et al.*); immature, trapped, 18th September (G. J. Barnes, R. H. Dennis *et al.*). Whalsay, adult, 10th September (J. H. Simpson).

Yorkshire: Kirby Underdale, near Pocklington, 27th May (H. T. James).

(West Europe, south-west Asia and north-west Africa) Also one on Cape Clear Island, Co. Cork, on 23rd-28th June. Of 125 during 1958-67, 66 were in spring and 57 in autumn with two in early July (see Dr J. T. R. Sharrock, *Brit. Birds,* 62: 310-315). The 23 in 1968 were similarly divided, with twelve in spring and eleven in autumn, but formed the highest total ever, exceeding 21 in 1958 and 1960 and 19 in 1967.

Rose-coloured Starling *Sturnus roseus*

Argyll: Iona, 9th July to 2nd August (Miss J. McFarlane, Dr R. A. L. Sutton, Mrs D. E. Walters *et al.*).

Shetland: Fair Isle, immature, 23rd to 25th August (G. J. Barnes, R. H. Dennis, A. R. Mainwood *et al.*).

(South-east Europe and south-west Asia) Records of this species are particularly open to the suspicion of escapes. An adult on Fair Isle from 23rd May to 1st June, with a very abraded tail and a bruised bill with wart-like marks, was considered to have been in captivity. The immature listed above for August, on the other hand, was in undamaged plumage and was believed to have been a genuine migrant.

Red-eyed Vireo *Vireo olivaceus*

Scilly: St Agnes, immature, 6th and 7th October (B. P. Pickess, D. I. M. Wallace, F. Waters *et al.*).

(North America) The sixth record (seven individuals), all since 1951 and all in the first fortnight of October. This and the next seven species, together with the two Nearctic thrushes on page 476 and the White-throated Sparrow on page 488, formed an unprecedented influx of 14 American passerines of eleven species in late September and October. In this connection, we draw attention to the short summary by J. F. Burton and R. A. French of the remarkable invasion of American

Monarch butterflies *Danaus plexippus* which was evidently associated (pages 493-494).

Parula Warbler *Parula americana*

Dorset: Portland Bill, 9th October (F. R. and Mrs B. Clafton, Dr D. J. Godfrey *et al.*).

(North America) Now three records in three successive years, all October-November and all in south-west England between the Isles of Scilly and Dorset.

Myrtle Warbler *Dendroica coronata*

Scilly: St Mary's, immature, 23rd to 27th October (D. P. and Mrs R. A. V. Carthy, A. Greensmith *et al.*).

(North America) Like the Parula Warbler, this species has now produced three records in south-west England, between the Isles of Scilly and Devon, but these have been spread over 14 years and the dates of the previous two were later (January 1955 and November 1960).

Blackpoll Warbler *Dendroica striata*

Caernarvonshire: Bardsey, trapped, 22nd and 23rd October (G. H. Evans, H. Miles, K. Redshaw) (plate 70).

Scilly: St Agnes, 11th to 25th October (R. J. Buxton, P. J. Grant, Miss H. M. Quick *et al.*).

(North America) The first records for Britain and Ireland. This species normally migrates from Alaska, Canada and northern United States south to winter in northern South America.

Northern Waterthrush *Seiurus noveboracensis*

Scilly: Tresco, 3rd to 7th October (D. B. Hunt, D. I. M. and Mrs K. A. Wallace *et al.*).

(North America) Only the second record, the first having been on near-by St Agnes in September-October 1958 (*Brit. Birds,* 53: 513-518).

American Redstart *Setophaga ruticilla*

(North America) None in Britain, but a male on Cape Clear Island, Co. Cork, on 13th-14th October. The only previous European records of this American wood warbler, which winters chiefly in northern and central South America, were on Ushant, France, on 10th October 1961 and in Cornwall on 21st October 1967.

Bobolink *Dolichonyx oryzivorus*

Scilly: St Mary's, 10th October (E. Griffiths, C. S. Waller *et al.*).

(North America) Only the second record and, like the Northern Waterthrush, it followed a first on near-by St Agnes, in September 1962 (*Brit. Birds,* 58: 208-214).

Baltimore Oriole *Icterus galbula*

Cornwall: Bodmin Moor, near Bodmin, adult ♂, 11th to 13th May (A. H. Glanville, D. F. Musson, R. J. Salmon *et al.*).

Scilly: St Agnes, 29th September to 3rd October (P. Dukes, P. J. Grant, D. Holman *et al.*).

(North America) These two brought the total to ten, all since 1958. It is possible that the one on Bodmin Moor in May, which was a male in adult plumage, had been here since October 1967 when four were recorded in south-west England and south Wales. One was also picked up dead in Coventry, Warwickshire, on 16th December 1968 and is now preserved there in the Herbert Art Gallery and Museum, but this is considered likely to have been an escape.

Serin *Serinus serinus*

Cornwall: Lelant, four, 6th January (R. J. Johns, D. I. M. Wallace). Drift Reservoir, Penzance, 24th February (A. B. Griffiths). Porthgwarra, 5th October (R. Burridge, N. J. Phillips); 2nd and 3rd November (N. J. and N. R. Phillips *et al.*).

Devon: Plymouth, 1st to 4th August; two, 9th November (P. F. Goodfellow).

Dorset: Radipole Lake, Weymouth, two, 9th to 15th February (F. R. Clafton, D. A. Dolphin).

Durham: Hartlepool, 14th September (I. Jenkinson).

Gloucestershire: New Grounds, 6th April (D. I. M. Wallace).

Norfolk: Holme, 15th April (T. J. Handford).

Scilly: Tresco, 11th November, two 16th and 17th, one 23rd; also 28th December (D. B. Hunt).

Shetland: Scalloway, 17th November (R. Duthie).

Sussex: Selsey sewage farm, 24th November (H. P. K. Robinson).

(Continental Europe, Mediterranean islands, Asia Minor and north-west Africa) From single records in 1959 and 1960, this species increased to five each in 1961, 1962 and 1964, six in 1965, 16 in 1966 and over 20 in 1967 when a pair also bred successfully for the first time. Now we have a further 14 records (20 birds) in 1968, all but one in counties south of a line from Gloucester to Norfolk and chiefly on the south coast. Although most were in autumn and winter, it seems likely that further breeding will soon be reported.

Scarlet Rosefinch *Carpodacus erythrinus*

Kent: Sandwich Bay, 22nd October (C. J. Cox, Dr J. J. M. Flegg).

Northumberland: Holy Island, 27th September (M. F. M. Meiklejohn).

Scilly: Tresco, ♂, 7th to 9th June (D. B. Hunt); 2nd October (D. I. M. Wallace).

Shetland: Fair Isle, 25th to 27th May; 6th June; 29th August; 6th September, three 7th, two 8th, one 9th, 18th to 20th; 12th October (R. H. Dennis, A. R. Mainwood *et al.*). Fetlar, ♂, 1st to 3rd June (K. Hughson, R. J. Tulloch, J. Wightman *et al.*). Out Skerries, 11th September (Dr W. L. N. Tickell, R. J. Tulloch). Whalsay, two, 14th October (J. H. Simpson).

(East Europe and trans-Asia) The males on Fetlar and Tresco are

worth noting as the rosy feathering is not assumed until the second year and adults in this plumage are seldom seen in Britain. Juvenile and first-year males are indistinguishable from females and so the remainder of these records (about 14 individuals) refer to either. There have been spring records every year since 1963 and the four listed here brought the total since 1958 to four in May and seven in early June. September is still the peak month, but there were again five in October (see *Brit. Birds,* 61: 358) in another year of Richard's Pipits, as well as central and east Asiatic warblers.

Two-barred Crossbill *Loxia leucoptera*

Dumfriesshire: Forest of Ae, ♂, 17th February (J. Copper, H. Ostroznik, S. Ostroznik); ♂ and ♀, 19th, 23rd February (B. Harper, H. Ostroznik, J. Stewart).

(North-east Europe, north-central Asia, northern North America and West Indies) This male and female brought the total since 1958 to eleven, five of them in 1966. Eight of the nine during 1958-67 were between 7th July and 25th November, but one in Hertfordshire in 1963 was dated 22nd December and these February records perhaps provide further evidence of occasional overwintering.

White-throated Sparrow *Zonotrichia albicollis*

Suffolk: Herringfield, Lowestoft, first-winter ♂ by dissection, 16th November to 1st January 1969, when it died (H. E. Jenner).

Sussex: Beachy Head, immature, 19th to 30th October (P. Clement, P. R. Colston, R. F. Porter *et al.*).

(North America) Up to 1966 all the four British records had been in spring (May and June), as was one in Co. Cork in April 1967, but then came one in Caernarvonshire in October-November 1967 (soon after two in the Netherlands in September-October) and now we have two more in the late autumn, bringing the British and Irish total to eight. This new pattern fitted into the notable arrivals of American passerines in the autumns of 1967 and 1968. A few are kept in captivity, but no escapes have been traced.

Black-headed Bunting *Emberiza melanocephala*

Argyll: Islay, ♂, 11th June (Dr R. H. Berry, Seton Gordon).

(South-east Europe and south-west Asia) There have now been 15 since 1958, but this species is not uncommonly kept in captivity and some of these have been strongly suspected of being escapes. Indeed, one trapped on Fair Isle on 17th-26th April was considered certainly to have been of captive origin.

Yellow-breasted Bunting *Emberiza aureola*

Fife: Isle of May, ♀ or immature, trapped, 26th August (K. Parkes, G. A. Pearson, C. J. Rose).

Shetland: Fair Isle, first-winter ♂, 13th to 18th September (R. H. Dennis, A. R. Mainwood *et al.*).

(North-east Europe and north Asia) The total is now 27 (17 of them since 1958), of which six have been on the Isle of May and no fewer than 13 on Fair Isle, and all but five in September.

Rustic Bunting *Emberiza rustica*

Scilly: Tresco, first-year ♂, 24th and 27th October; at least one other, 7th and 8th November (D. B. Hunt).

(North-east Europe and north Asia) These two brought the total since 1958 to 34 or 35, of which 17 have been on Fair Isle, where the species is now almost annual, and 25 in September-October.

Little Bunting *Emberiza pusilla*

Shetland: Fair Isle, trapped, 26th to 28th September; 11th to 14th October; 23rd to 27th October (R. H. Dennis *et al.*).

(North-east Europe and north Asia) It was suggested that the exceptional number in 1967 might have been linked with the Richard's Pipits and have come from further east than usual (*Brit. Birds,* 61: 360), but, despite another invasion of the latter, not to mention all the Asiatic warblers, only Fair Isle produced any Little Buntings in 1968. Indeed, these three might be said to be that island's normal quota, as 33 of the 59 since 1958 have been recorded there, mostly in the months of September and October.

Supplementary 1964 record accepted

Dusky Warbler *Phylloscopus fuscatus*

Lincolnshire: Huttoft Bank, trapped, 1st November (J. F. Cooper).

Although most of the committee found this record acceptable when it was originally considered in 1964, it was rejected then, under the minority rule, as a detailed wing formula had not been taken. At the request of the observer, however, the record has now been reconsidered and it is accepted on the plumage description.

Supplementary 1967 records accepted

Wilson's Petrel *Oceanites oceanicus*

Cornwall: St Ives, 29th October (P. R. Colston, R. J. Johns, E. T. Welland *et al.*).

Little Shearwater *Puffinus assimilis*

Cornwall: St Ives, 28th October (P. R. Colston, R. J. Johns, E. T. Welland *et al.*).

Little Egret *Egretta garzetta*

Derbyshire: Repton, 18th to 24th May (R. H. Appleby, R. Salt, N. Till *et al.*).

Night Heron *Nycticorax nycticorax*

Yorkshire: Knaresborough, 7th October (J. R. Mather).

Little Crake *Porzana parva*

Lancashire: Withington sewage farm, 11th to 15th November (D. Aldcroft, A. S. Duckels, P. Fearon *et al.*).

Wilson's Phalarope *Phalaropus tricolor*

Lancashire: Hundred End, Southport, 27th August to 17th September (A .S. Duckels, P. Fearon, R. E. Jackson *et al.*).

Lincolnshire/Norfolk (correction): Wisbech sewage farm, in addition to the dates given (*Brit. Birds,* 61: 343), two were seen on 16th October.

Olivaceous Warbler *Hippolais pallida*

Dorset: Portland, 27th August (A. R. Dean, R. J. Johns, E. T. Welland).

Greenish Warbler *Phylloscopus trochiloides*

Norfolk: Holkham, 17th September (P. R. Colston, R. E. Emmett). Wells, 24th September (M. J. Allen, J. N. Dymond *et al.*).

Richard's Pipit *Anthus novaeseelandiae*

Lancashire: Hundred End, Southport, 8th October (S. C. Joyner, P. F. Twist, M. S. Twist).

Norfolk: Winterton/Horsey, five, perhaps eight, 22nd October, two 28th, 29th; two, 12th November (P. R. Allard). Salthouse, 16th December (M. J. Seago).

Pembrokeshire: Skokholm, 17th to 30th October; 16th November (B. Chambers, C. K. Britton, D. A. Scott). Wooltack Point, at least five, 25th November (R. S. Brown, A. Greensmith, H. Nash).

Scarlet Rosefinch *Carpodacus erythrinus*

Shetland: Scalloway, 2nd September (N. Collar).

Amendment to the 1966 report

Gyr Falcon *Falco rusticolus*

The record for Baltasound, Unst, Shetland, late May to 4th August 1966 (*Brit. Birds,* 60: 316) has now been withdrawn by the observer who submitted it, as he is no longer satisfied that his identification was correct.

Appendix 1. List of 1968 records not accepted

This list contains all the 1968 records which were not accepted after circulation to the committee. It does not include (a) records withdrawn by the observer(s), without circulation, after discussion with the Hon. Secretary; (b) records which, even if circulated, were not attributed by the observer(s) to any definite species; or (c) a few records which were mentioned in 'Recent reports', but of which full details were unobtain-

able. Birds considered to be escapes are also omitted.

In the vast majority of cases the record was not accepted because we were not convinced, on the evidence before us, that the identification was fully established; in only a very few cases were we satisfied that a mistake had been made.

Albatross sp.	Selsey Bill, Sussex, 29th June
Wilson's Petrel	Isle of Skye, Inverness-shire, 29th September
Little Shearwater	St Ives, Cornwall, 23rd September
Cory's Shearwater	Portland Bill, Dorset, 15th April
	Spurn, Yorkshire, 7th and 11th May
	Great Orme, Caernarvonshire, 28th August
	St Ives, Cornwall, two, 29th August
	Sandwich Bay, Kent, two, 8th December
Purple Heron	Morton Lochs, Fife, 8th May
	Marazion Marsh, Cornwall, 5th June
	Topsham, Devon, 12th December
Night Heron	Capel Curig, Caernarvonshire, two, 14th August
Ferruginous Duck	Staines Reservoir, Middlesex, 23rd October
	Llanybydder, Caernarvonshire, two, 17th and 24th November
King Eider	Roseneath Point, Dunbartonshire, 30th March
	Rhu Bodach, Isle of Bute, 20th May
Gyr Falcon	Pevensey Levels, Sussex, 10th February
Red-footed Falcon	Beachy Head, Sussex, 17th May
Crane	Frampton-on-Severn, Gloucestershire, 28th July
Baillon's Crake	Birling Gap, Beachy Head, Sussex, 30th October
Little Crake	Winspit Valley, Dorset, 15th December
Great Snipe	Romsey, Hampshire, 8th February
	Wednesfield, Staffordshire, 24th to 27th February
	Swillington, Yorkshire, 11th May
	Isle of Skye, Inverness-shire, 15th September
	Cley, Norfolk, 26th September
	Calf of Man, Isle of Man, 8th October
Hudsonian Curlew	Lavernock Point, Glamorgan, 24th April
Greater Yellowlegs	Helford River, Cornwall, 10th October
Lesser Yellowlegs	Creswell Ponds, Northumberland, 13th July
	Wisbech sewage farm, Lincolnshire/Norfolk, 24th September
	Powderham, Devon, 7th October
Marsh Sandpiper	Royston sewage farm, Hertfordshire, 29th September
Baird's Sandpiper	Stanford Reservoir, Leicestershire/Northamptonshire, 15th September
Broad-billed Sandpiper	Perry Oaks, Middlesex, 27th September
	St Mary's, Isles of Scilly, 2nd to 4th October
	Pennington Marshes, Hampshire, 26th December
Buff-breasted Sandpiper	Loch Ordals, Lewis, Outer Hebrides, 8th September
Wilson's Phalarope	St Ives, Cornwall, three, 10th and 11th September
Laughing Gull	Loch Lomond, Dunbartonshire, 2nd April
Bonaparte's Gull	Newlyn, Cornwall, 7th November
Slender-billed Gull	Gilkicker Point, Hampshire, 24th May
White-winged Black Tern	Christchurch Harbour, Hampshire, 11th August
	St Ives, Cornwall, 9th September
Whiskered Tern	Benacre, Suffolk, 20th September

Gull-billed Tern	Fortrose, Ross-shire, two, 30th August
	Dawlish Warren, Devon, 6th October
Caspian Tern	Selsey Bill, Sussex, 21st April
	Eye Brook Reservoir, Leicestershire, 19th June
Sooty Tern	Minsmere, Suffolk, 2nd September
Brünnich's Guillemot	St Ives, Cornwall, 27th October
Scops Owl	Wells, Norfolk, 3rd November
Snowy Owl	Beachy Head, Sussex, mid-November
	Catterick, Yorkshire, 21st December to 18th January 1969
Black-billed Cuckoo	Tresco, Isles of Scilly, 23rd August
Alpine Swift	Cuckmere Valley, Sussex, 23rd April
Dusky Thrush	Nethybridge, Inverness-shire, 12th to 16th October
White's Thrush	Haslemere, Surrey, 6th to 14th January
Rufous Bush Chat	Maidstone, Kent, 22nd April
Cetti's Warbler	Thurlestone, Devon, 21st April
Pallas's Grasshopper Warbler	Fetlar, Shetland, 21st April
Aquatic Warbler	Chew Valley Lake, Somerset, 5th July
	Great Livermere, Cambridgeshire, 27th July
	Seaford Head, Sussex, 6th September
	Cley, Norfolk, 19th October
Greenish Warbler	Wick, Caithness, 12th October
Bonelli's Warbler	Clevedon, Somerset, 6th April
Arctic Warbler	St Agnes, Isles of Scilly, 8th October
Alpine Accentor	Brancaster, King's Lynn, Norfolk, 27th April
Richard's Pipit	Caerlaverock, Dumfriesshire, 17th April
	Holkham, Norfolk, 17th April
	Kingston, Surrey, 8th May
	Tregantle, Cornwall, 21st September
	Wirral, Cheshire, 4th October
	Marazion Marsh, Cornwall, 6th October
	Tresco, Isles of Scilly, 26th October
Tawny Pipit	Frampton, Gloucestershire, 11th and 12th November
Red-throated Pipit	Beachy Head, Sussex, 7th September
	Dungeness, Kent, 18th September
Citrine Wagtail	Easter Compton, Gloucestershire, 15th September
Lesser Grey Shrike	Mynydd Illtyd, Breconshire, 11th April
	Eastnor Park, Herefordshire, 17th November
Woodchat Shrike	Lunderston Bay, Renfrewshire, 29th March
	Porthgwarra, Cornwall, 8th October
Serin	Fair Isle, Shetland, 1st October
	North Ronaldsay, Orkney, 11th October
Scarlet Rosefinch	Blakeney, Norfolk, 3rd February
Yellow-breasted Bunting	Lavernock Point, Glamorgan, 22nd August
	Llanddulas, Caernarvonshire, 22nd September
Little Bunting	Beachy Head, Sussex, 3rd November

Appendix 2. Supplementary list of 1967 records not accepted

Little Shearwater	St Agnes, Isles of Scilly, 18th October
Broad-billed Sandpiper	Belvide Reservoir, Staffordshire, 17th August
Gull-billed Tern	Portland Bill, Dorset, 31st August

F. R. Smith, 117 Hill Barton Road, Exeter, Devon EX1 3PP

Monarch butterflies coinciding with American passerines in Britain and Ireland in 1968

J. F. Burton and R. A. French

Ornithologists will remember autumn 1968 as a time when unprecedented numbers of vagrant American birds reached Britain and Ireland, including eleven species of passerines and, among them, the first records of Blackpoll Warblers *Dendroica striata* (see pages 485-487 in this issue). Entomologists, on the other hand, will associate it with an unparalleled immigration of the American butterflies known as Monarchs or Milkweeds *Danaus plexippus:* more than 60 were seen or captured, the largest annual total since the first was found in Britain in 1876. The previous highest figure was 40 in 1933, but the grand total between 1876 and 1967 was only 215, including just 15 in the ten years 1958-67.

In 1968 the first Monarch was found dead at Longham, Dorset, on 1st September; and on 24th September another was sighted over the dunes at Studland in the same county. Apparently, however, the butterflies did not reach British shores in any numbers until 3rd October, on which date they were reported in the Isles of Scilly, south Devon and south Dorset (all, incidentally, on islands or promontories projecting into the Atlantic and the English Channel). About 6th October as many as ten were seen on Michaelmas daisies in a garden at Dorchester, Dorset, and at least ten not far away in another garden at Hazelbury Bryan in the same county. Most, however, occurred singly. Although the majority stayed near the south coast, others drifted further inland and, by the middle of the month, were reported from north Somerset, Gloucestershire, Worcestershire, Lancashire, Sussex, Essex and the London area. In Wales one was captured near Swansea on 12th October. In Ireland one was caught in the Heligoland trap (and later released) on Cape Clear Island, Co. Cork, on 8th October and another was seen there on 31st October, while there was also one at Ballycotton, Co. Cork, on 16th October.

Monarchs are widely distributed in the United States and southern Canada in summer and small colonies have also been established in the Azores and the Canary Islands. (They cannot breed anywhere in Britain or Europe, however, as the milkweed plants *Asclepias* they feed on do not exist here.) In North America in autumn they migrate southwards in small groups, sometimes in swarms, along the Pacific coast and also through the eastern half of that continent until they reach their winter quarters in southern California, Florida and Mexico, where they roost in trees. In early spring they awake and migrate

north again to their breeding areas. They are one of the best-known migrant butterflies in the world and their remarkable journeys have been studied by Professor F. A. Urquhart of Toronto University, who, with his helpers, has marked thousands with identification tags. Many of them have been found more than 1,000 miles away from the point of release, but so far none has been recovered in Britain or Ireland. We hope that ornithologists will look out for them: the recovery of one here would at least prove that our Monarchs come from America.

At the present time the question whether these insects can and do cross the Atlantic unaided is a matter of dispute among entomologists. Professor Urquhart himself is inclined to believe in the mechanical transference of Monarchs across the Atlantic by human agency, e.g. ships, rather than by direct flights (1964, *Proc. Entomol. Soc. Ont.*, 9: 23-33). On the other hand, we consider that, whilst some may be assisted across by ships, the majority can and do fly unaided over the Atlantic, just as some small American passerines are thought to do. Monarchs are large, powerful butterflies which generally cruise at around 11 m.p.h. when migrating over land and are capable of reaching speeds of up to 30 m.p.h. for at least short distances without wind assistance. With westerly gales blowing behind them, it would be quite possible in our opinion for them to cross the Atlantic in two to four days. The coincidence of the arrivals here in early October 1968 of these butterflies and many vagrant American birds during prolonged westerly gales is, we think, significant.

With G. W. Hurst of the Meteorological Office, we are studying the relevant weather situations for eventual publication in a paper on the movements of Monarchs to Britain and Ireland since 1876, but clearly the subject cannot be considered in isolation from the studies already made of birds crossing the Atlantic. If, as we believe, the Monarchs in 1968 were wind-borne from North America, then only one suitable opportunity occurred for a transatlantic passage between mid-September and 7th October. This would have involved a three-day crossing, arriving in Britain and Ireland about midnight on 28th/29th September. The journey would have been carried out in warm sector conditions, in a strong, cloudy, non-turbulent airflow with winds of 30-35 knots and little change from the surface to several hundred feet. This wind regime would provide an explanation for all the records after 29th September, but the two single butterflies seen on 1st and 24th September must either have had a different origin, possibly the Azores or the Canary Islands, or a different method of transportation.

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Notes

Goosander dying after swallowing fish hook and wire An immature male Goosander *Mergus merganser,* found dead on 23rd February 1969 at Walton Reservoirs, Surrey, was passed to me for examination. The bird appeared to be in good condition generally, with plenty of subcutaneous fat, though there was no trace of food in the entire digestive tract. Inside the gullet I found three inches of a plastic-covered steel wire used by pike fishermen for traces, and at the entrance to the gizzard a well-rusted hook with more of this wire attached. In the gizzard itself there was still more wire, some of which had been ground by the stones there into a small pellet of minute fragments, and this had pierced the gizzard wall in several places. The bird probably took a live fish being used as pike bait and swallowed the hook and trace as well.

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Communal feeding of Spotted Redshanks on migration At 15.00 BST on 8th October 1969, at the North Slob, Co. Wexford, I watched a party of 19 Spotted Redshanks *Tringa erythropus* fly in to settle in shallow water. They immediately split up and eight came ashore while the rest started feeding in the usual manner, some in water just covering their 'knee-joints' and others practically swimming. These eleven birds gradually moved into deeper water until they were all clearly afloat. Suddenly and excitedly the group closed into a tight bunch and began swimming rapidly (with almost the buoyancy of phalaropes *Phalaropus spp*) back and forth in unison with their shoulders touching, their necks stretched horizontally and their bill-tips held straight forward just under the surface of the water. I had a definite impression of slight but rapid opening and closing of the bills, though this was difficult to see clearly. I watched this behaviour for about five minutes, being particularly struck by the speed and apparent urgency of their movements. Unfortunately, I then had to leave and was unable to examine the water in the area, but the extreme localisation of the birds' movements suggested that they were feeding on a dense swarm of small organisms. The water there, about eight feet below mean sea-level, is known to be very saline due to seepage under the sea wall and is particularly good for surface-feeding ducks, of which over 1,000 were present at the time.

The Handbook mentions rather similar behaviour by Redshanks *T. totanus,* but they were recorded as moving in an oblique line through shallow water (swimming or wading?) with heads half-submerged and moved from side to side 'with great rapidity'.

OSCAR J. MERNE
Bayview, Curracloe, Co. Wexford

Arctic Skua feeding young on migration On 13th July 1968, at Freshfield, Lancashire, I saw an adult and two juvenile Arctic Skuas *Stercorarius parasiticus* close inshore. For several hours they continually harassed passing terns *Sterna spp* and Kittiwakes *Rissa tridactyla,* and once a flock of Feral Pigeons *Columba livia.* I soon realised, however, that only the adult was having any success in obtaining food. Although the young skuas made repeated efforts to chase other birds, they proved to be remarkably awkward at it. Sometimes they appeared to obstruct each other, especially when following the same intended victim, and they frequently baulked the adult. They also seemed unable to decide which bird to harass and usually did not remain very long in pursuit. Each time the adult caught food they gave up the chase and clamoured after it. The adult then always settled on the water and passed the food to them. The young skuas often rested on the sea, at times waiting for the adult to bring food and rising at the last moment to meet it. CHRISTOPHER FELTON

54 Delfby Crescent, Southdene, Kirkby, Liverpool, Lancashire

This seems an unusual habit among skuas, but there are many records of adult terns feeding the young after leaving the breeding area. Professor N. Tinbergen (1953, *The Herring Gull's World:* 229) described adult Sandwich Terns *S. sandvicensis* carefully selecting and feeding individual juveniles during migration in August. Dr Ralph S. Palmer (*Proc. Boston Soc. Nat. Hist.,* 42 (1): 103) cited similar behaviour by Common Terns *S. hirundo,* and Dr N. P. Ashmole and H. Tovar (*Auk,* 85: 90-100) recorded it among Royal Terns *S. maxima* and Elegant Terns *S. elegans.* EDS

Woodpigeon nesting on open shingle On 11th June 1969, at Orford Ness, Suffolk, P. Nicholson was able to take me to visit an area where access is not normally permitted and birds apparently suffer little human interference. This consists of open shingle with no vegetation apart from small isolated tufts of oatgrass *Arrhenatherum elatius* and sea campion *Silene maritima.* Here there were colonies of Black-headed Gulls *Larus ridibundus* and Herring Gulls *L. argentatus,* at the fringe of which, on the shingle beside a tuft of oatgrass and campion, I found the nest of a Woodpigeon *Columba palumbus* containing a single young bird. The nest was of locally collected material, mostly grasses, and not unlike those of the gulls. The young Woodpigeon was old enough to walk from the nest on my approach and then squat to hide in the next tuft. Although I did not see the adults, the white wing-patches were already clearly developed and there was no doubt about the identification. The nearest trees are more than one and a half miles from this spot. P. A. BANKS

36 Short Walk, Butley, Woodbridge, Suffolk

In his monograph on *The Wood-Pigeon* (1965: 43, 123-124) Dr R. K. Murton referred to a variety of ground nests—in heather in Orkney, in bracken and under heaps of sticks in Wigtownshire, and in cornfields, nettlebeds and long grass at the bottoms of hedges in the south of England—but in all these cases there was plenty of cover over and around. W. D. Campbell described a nest with young in oat-stubble in Berkshire some 300 yards from the nearest trees (*Brit. Birds,* 53: 404) and E. Cowieson one with eggs in marram grass on Forvie Sands, Aberdeenshire, about two miles from any wood or trees (*Brit. Birds,* 56: 340-341), but the above nest seems to have been even more open than either of these. EDS

Raven clutching Jackdaw in the air R. B. Warren's note (*Brit Birds,* 62: 237-238) on a Carrion Crow *Corvus corone* taking a Starling *Sturnus vulgaris* in the air recalled a similar observation of mine involving a Raven *C. corax* and a Jackdaw *C. monedula.* On 3rd July 1966, above Whidana Wood Hill, Glenapp, Ayrshire, some 20 Jackdaws were vociferously mobbing a Raven about 50 feet up while the latter, twisting and turning in the air, was making a determined attack on a juvenile Jackdaw, which did not appear to be sick or weak. The mobbing Jackdaws were calling excitedly and diving at the Raven without actually striking it. Eventually the Raven succeeded in clutching its victim and both fell perpendicularly, bouncing as they hit the ground.

Immediately, all the other 20 Jackdaws dropped down as well, still calling, and formed a black mass on the ground. I could not see whether they now attacked the Raven, but after a few seconds the juvenile managed to escape. The Raven persisted in the chase, however, and twice more the smaller bird was clutched and borne to the ground in the same way, each time escaping as before with the help of the other Jackdaws. On its fourth attack, the Raven overshot its quarry, now tattered and bedraggled, which gave the latter a chance finally to get away. Nevertheless, the flock of Jackdaws continued to mob the aggressor, calling continuously and swooping at it without touching it (just as they might a bird of prey), and they even forced it to the ground before it eventually evaded them and flew off out of sight over the hill.

R. C. DICKSON

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Rook taking food from dustbin In the late afternoon of 7th November 1969, at the R.A.F. station at St Mawgan, Cornwall, I saw a Rook *Corvus frugilegus* perched on the edge of a dustbin, pulling out rubbish and throwing it all over the ground. After about a minute of this behaviour it flew off with what appeared to be a piece of bread or pastry. This habit is widespread among Herring Gulls *Larus*

argentatus in the area, but it seemed remarkable that such a granivorous and insectivorous species as the Rook should scavenge for scraps in this way. M. L. RICHARDS

24 AMQ, St Eval, Wadebridge, Cornwall

Dipper flying into barbed-wire fence On 13th June 1969, at Mossylee, near Glossop, Derbyshire, Paul Darling and I found a freshly dead juvenile Dipper *Cinclus cinclus* impaled on a barbed-wire fence which crossed a small stream. It had apparently flown into the top wire, six feet above the stream, and a barb about 15 mm long had pierced its head. There was quite a lot of blood on its breast and also on the wire; although it was a very hot dry day, this blood was still wet, indicating that the bird had been dead for only a matter of minutes. It had been ringed in the nest about five weeks previously and the brood had fledged on 20th May. J. E. ROBSON

77 St Mary's Road, Glossop, Derbyshire

Grasshopper Warblers singing persistently in August According to *The Handbook*, Grasshopper Warblers *Locustella naevia* sing only exceptionally in August. Between 2nd and 15th August 1969, however, at Druidston Haven, Pembrokeshire, I frequently heard sustained reeling from at least four different individuals for periods of up to two minutes at a time. They normally sang at dusk or in the first hour of darkness—both after rain and on warm, dry days—but once I heard two of these birds reeling intermittently for an hour or so from about 9.30 a.m. A. P. RADFORD

2 Wyck Beck Road, Brentry, Bristol

Tree Sparrow mounting dead mate On 22nd May 1969, driving near Harrogate, Yorkshire, I saw a Tree Sparrow *Passer montanus* fluttering on the road. As I passed, it flew off and I saw that there was a dead bird at that spot. I stopped and observed the corpse through binoculars from about 30 yards. Almost immediately the Tree Sparrow returned and hopped around the dead bird in tight circles, occasionally flicking its wings. Every few seconds it mounted the corpse and tried to copulate with it, afterwards resuming its circling activity. After four attempts at coition, it was disturbed by another vehicle and I then retrieved the corpse. It proved to be a second Tree Sparrow, very freshly dead and still warm, lying dorsal surface uppermost in a position which superficially resembled that of a submissive female. Later examination showed it to be a female with a well-developed brood patch and markedly granular ovaries. As I drove away I saw the male return once again to where the corpse of the female had been lying. DAVID M. BURN

Department of Zoology, The University, Leeds 2

News and comment *Robert Hudson*

Another reprieve for DDT For over a decade conservationists have been denouncing the use of chlorinated hydrocarbon insecticides, of which DDT is by far the most common. Severe limitations on the use of DDT have been imposed since 1968 in Hungary, Sweden, Denmark, Australia, New Zealand and Canada. The U.S. Federal Government has announced severe restrictions with the intention of phasing out DDT in the next three years. But what of Britain? The use of organochlorine pesticides here has been under review by the Wilson Committee, on which manufacturers, agriculturalists and conservationists have been represented. Their conclusions, published in December, are that organochlorines are generally undesirable because of their persistence; that alternatives should be used as far as possible; and that DDT should be withdrawn from household use. But the wording of the Wilson Report reveals how reluctant were the industrial and agricultural viewpoints to accept these limitations. In particular, they attempted to deny that DDT is inherently hazardous to wildlife. How much more evidence do they want? The link between organochlorines and widespread breeding failures of certain raptor species was finally clinched by laboratory experiments conducted in the U.S.A. by Dr L. Stickel; yet the Wilson Committee ignored this when stating that the Peregrine case 'is not precise enough to establish a causal relationship with certainty'. It is still painfully obvious that chemists and administrators are quite unable to understand the complexities of ecological situations; that the interactions of free-living organisms cannot be reduced to simple equations; that ecologists must use logic and circumstantial evidence in addition to experiment. The Wilson Committee made the further misjudgment of asserting that there is no evidence of exposure to organochlorines having adverse effects on Man. That biochemists are not prepared to be so dogmatic may be seen from references to DDT as a possible carcinogen (e.g. *Experientia,* 22: 748; *Ind. Med. Surgery,* 37: 218); in some instances above-average levels of DDT appear to show correlation with human deaths from disorders that include liver cancer. This aspect is still debatable.

The effect of the Wilson Committee proposals will be to reduce the use of organochlorines in Britain by about 20% only. This is not good enough.

National Nature Reserves NNR number 128 was declared in December: Cors Erddreiniog, near Llangefni, Anglesey. This reserve of 78 acres has been established by lease to protect a 'living' peat fen, one of the best in Anglesey. The fen has developed from a now infilled lake which dated from the last Ice Age. A combination of low rainfall and lime-rich drainage water has provided the special conditions in which an alkaline fen (rather than an acid bog) could develop. Cors Erddreiniog is important to botanists because of rare or local plants there, and because of potentially valuable information to be gleaned from analyses of pollen grains preserved in the peat.

The Upper Teesdale National Nature Reserve has been enlarged by a further 2,093 acres between High Force and Cow Green on the Durham side of the county boundary. This extension includes Widdybank Fell, perhaps the most famous of the Teesdale botanical sites; and to a limited extent compensates for the area of the reserve due to be inundated by the Cow Green Reservoir, the disgraceful approval of which caused such a furore in 1967.

The future of Salcey Forest This magnificent forest, lying across the Northamptonshire/Buckinghamshire boundary, is one of the few surviving large oakwoods in England. It is thought to be one of the best in the country for Nightingales and Woodcock; and is notable also for the wide variety of butterflies, orchids, ferns

and fungi to be found there. Unfortunately, Salcey Forest is managed for the Crown by the Forestry Commission, whose mania for silviculture has spoiled so much of the British countryside. *Habitat* announces that the Chairmen of the County Naturalists' Trusts concerned are to approach the Commission to see if at least one large representative area of natural oaks can be saved.

Diplomatically, *Habitat* states that the Forestry Commission 'must try to make its forestry pay, and in the main this means felling the oaks and replanting with saleable timber including conifers'. But the Forestry Commission is not a viable business. Its general liabilities were £319 millions by September 1967, when it was spending an average of £207 per acre to produce timber worth £147 per acre (figures provided by the Forestry Action Group for Wales). Therefore it would actually pay the Commission to leave native hardwoods standing.

Award for BBC film A BBC documentary film about the problems of atmospheric pollution in Britain was honoured with the Silver Award in the Prix Futura International Television Competition in Berlin during November. This documentary, entitled 'A Funny Thing Happened on the Way to the Garbage Dump', was produced by a London-based BBC film unit.

A Swedish holiday? We have been asked by the Skånes Ornitologiska Förening to draw attention to the ornithological attractiveness of south-west Sweden. The cost of living in Sweden is fairly high, but the Falsterbo Bird Observatory offers cheap accommodation for those prepared to accept moderate comfort and prepare some of their own meals. Falsterbo is on the extreme south-western point of Sweden, and is famous for its autumnal raptor migration. Beginning in August, with thousands of Honey Buzzards, this visible passage continues until early October with even larger numbers of Buzzards passing over. A dozen raptor species in a day is not unusual at peak periods, these including Red and Black Kites, and Spotted, Lesser Spotted and White-tailed Eagles. But it is not only in autumn that Falsterbo merits a visit, for breeding species in the region include Red-necked Grebe, Marsh Harrier, Avocet, Black Woodpecker, Golden Oriole, Crested Tit and Marsh Warbler. Falsterbo Bird Observatory is open between 1st April and 31st October, and enquiries should be addressed to Gunnar Roos, Falkvägen 21, S-230 10 Skanör, Sweden.

Annual cage-bird exhibition The National Exhibition of Cage and Aviary Birds was held as usual in early December, and I am grateful to Colin Harrison for the following impressions.

The shabby vastness of the Alexandra Palace, combined with the bleak weather, tended to chill the atmosphere a little. Annual visits give the impression that the show is gradually shrinking, although numerically the display of native birds was as large as ever. Finches formed the bulk of these, and the chief item of interest was a variant, non-melanic form of Bullfinch in which the female is white and the male white with a pink breast and face. This form has occurred before in the wild, but has not previously been established in aviaries. Hybrid finches were numerous, with crosses of Chaffinch × Greenfinch, Chaffinch × Goldfinch and Greenfinch × Crossbill the most interesting. Buntings were fewer, with Snow Bunting represented by a single hen. Insectivorous birds were also less in number and variety than on previous occasions—it is understood that the more unusual now appear at local shows where cash prizes are given—but Blackcaps and Lesser Whitethroats, Dunnocks, chats and thrushes were present, as well as Jays and Magpies. The only Waxwing was among the foreign birds and labelled 'Cedar Waxwing', which puzzled me until I was informed that European birds have been sold recently as Cedar Waxwings.

There were the usual displays of birds for sale by dealers. The emphasis seems

to have shifted to southern African and South American species, with less evidence of those from Eurasia and North America which, as strays, would confuse the record for birdwatchers—although some small streaky African species of nondescript plumage could pose difficult problems in field identification. In general, the dealers' stands now show greater regard for the needs of individual birds and tend to avoid overcrowding, but the sight of newly imported tropical birds huddling into the corners of cages for warmth is not a happy one. In general, this show still offers an opportunity to see some species and variants that might not otherwise come our way, but it fails to convey the real interest and pleasure that many find in bird-keeping.

Opinions expressed in this feature are not necessarily those of the editors of British Birds

Recent reports

P. F. Bonham and J. T. R. Sharrock

These are largely unchecked reports, not authenticated records

The last summary (*Brit. Birds,* 62: 452-456) dealt with a number of the non-passerine groups (including herons, waterfowl, birds of prey, crakes, sandgrouse to hoopoes, and all the American vagrants) throughout August-December 1969. The following analysis covers the seabirds (albatrosses, petrels, shearwaters, skuas, gulls, terns and auks) and the Palearctic waders over the same five-month period. All the passerines will be similarly treated in the next issue. There will then be a summary of some of the more interesting winter visitors, after which the feature will revert to surveying a month at a time.

ALBATROSSES TO PETRELS

Albatross records were widely scattered during August-October. **Black-browed Albatrosses** *Diomedea melanophris* were identified off Hoy (Orkney) on 13th August and the Bass Rock (East Lothian) on 23rd, the former being only the third albatross ever recorded in the Northern Isles. Unidentified albatrosses were seen off Minsmere (Suffolk) on 14th October and off Cley (Norfolk) at the end of that month. A **Magnificent Frigate-bird** *Fregata magnificens* was also reported at Garlieston (Wigtownshire) on 29th October.

Cape Clear Island (Co. Cork) had its usual passage of **Great** and **Cory's Shearwaters** *Puffinus gravis* and *Calonectris diomedea,* this time extending from 22nd July to 24th October, but a combined total of just over a hundred was rather below the average for recent years. Of these, 50-60 on 23rd-24th September were Cory's and ten, on widely scattered dates, were Great; almost all the rest were not specifically identified. A few other reports of large shearwaters came from the west and south coasts of Ireland and England east to Dorset, and a Cory's Shearwater was seen in the Irish Sea off north Pembrokeshire on 15th November, a very late record. Although the passage of **Sooty Shearwaters** *P. griseus* was poor at Cape Clear Island, there were some other interesting reports during August; one was seen off Reiff (Ross-shire) on 7th; as many as 72 at Spurn (Yorkshire) and three at Huttoft (Lincolnshire) on 23rd; and two in the Thames estuary off Halstow Marshes (Kent) on 29th. There were also several records of single birds off the east, south and south-west coasts, and seven were noted at Portland (Dorset) on 4th October. As many as 130 **Manx Shearwaters** *P. puffinus* were seen off Hunstanton (Norfolk) during the week-end 23rd-24th August. Finally, a **Wilson's Petrel** *Oceanites oceanicus* was identified at Cape Clear Island on 3rd August. In

general, however, it was not an outstanding autumn for movements or vagrant records of shearwaters and petrels.

SKUAS TO AUKS

Reports of **Long-tailed Skuas** *Stercorarius longicaudus* were rather fewer than usual: they included singles during August at Redcar (Yorkshire) on 12th, Fife Ness (Fife) on 18th, Huttoft on 23rd and Hunstanton about the same date, as well as four at Hartlepool (Co. Durham) on 21st August and one at Donna Nook (Lincolnshire) on 19th September. There was also a later record on 25th October, of one at Squires Gate, Blackpool (Lancashire), a very unusual area for this species. Sixty or more skuas were counted off Hunstanton during the week-end 23rd-24th August (cf. Manx Shearwaters above), including five identified as **Great Skuas** *S. skua,* and twelve of this species were seen off Weybourne (Norfolk) on 27th August, but otherwise skua passage was unremarkable.

About 13 **Mediterranean Gulls** *Larus melanocephalus* were reported on the east coast from Kent to Co. Durham and also single adults at Combwich (Somerset) on 23rd October, at Fairhaven, Lytham St Annes (Lancashire) on 13th December, and at Dawlish Warren (Devon) next day. Coinciding with the peak of Mediterranean Gulls in early November were two records of immature **Great Black-headed Gulls** *L. ichthyaetus,* at Spurn on 2nd and at Worthing (Sussex) four days later, followed by a third at Fair Isle on 18th November; there are only seven previous British records. An unprecedented invasion of northern gulls occurred at Fair Isle during a period of northerly storms in the second half of November. About 5,000 **Great Black-backed Gulls** *L. marinus* and 8,000 **Herring Gulls** *L. argentatus* were present on the island on 24th, the latter almost all of the northern '*omissus*' population, being large and dark but still with flesh-coloured legs. On the same day about 300 **Glaucous Gulls** *L. hyperboreus* were counted, two-thirds of them adults, this being three times the island's previous highest total of 100 in 1951; only one **Iceland Gull** *L. glaucoides* was identified, however. At about this time, up to 100 Glaucous were present on Fetlar (Shetland), and an Iceland occurred at Donna Nook on 30th. Single **Ivory Gulls** *Pagophila eburnea* were seen on North Ronaldsay (Orkney) about the end of October and in Shetland in November.

Most reports of **marsh terns** *Chlidonias spp* related to the period from 5th August to early September with a marked lull just before mid-August. **Black Terns** *C. niger* reached sizable maxima at several localities, for example 190 at Staines Reservoirs (Middlesex) on 5th August, 70 at Llangorse Lake (Brecon) on 11th, 700 at Dungeness (Kent) on 23rd, and 70 at Witham Mouth (Lincolnshire) next day. During 5th-12th August **White-winged Black Terns** *C. leucopterus* were reported from Radipole Lake (Dorset), Minsmere, Donna Nook, Washington (Co. Durham) and Holywell Ponds (Northumberland), and then during 14th August-3rd September from Dungeness, Cley, Hunstanton, Wisbech sewage-farm (Norfolk/Lincolnshire) and the Inner Ribble Marshes (Lancashire); there was also a late record from Newtown (Isle of Wight) on 26th September. **Whiskered Terns** *C. hybrida* were identified at Chew Valley Lake (Somerset) on 16th-19th August and South Linton Pond, Ellington (Northumberland), on 4th-5th September. **Caspian Terns** *Hydroprogne tschegrava* appeared at Sandwich Bay (Kent) on 27th July and Cley and Minsmere on 6th August, and **Gull-billed Terns** *Gelochelidon nilotica* at Sandwich Bay on 3rd August and Donna Nook on 4th, suggesting a small influx of these species, presumably from the Baltic area, on the east coast of England about the end of July. Later records included a **Caspian Tern** at Cley in the second week of September, two **Gull-billed** at Harty (Kent) on 7th September and one of the latter at Cley on 26th October.

A scattering of records of **Little Auks** *Plautus alle* ranged in time and number from a single bird at Cape Clear Island on the early date of 23rd August to 100 or more off Fair Isle on 6th December.

CURLEW SANDPIPERS AND LITTLE STINTS

The outstanding feature of the wader migration was the passage of **Curlew Sandpipers** *Calidris ferruginea,* the numbers and distribution being quite unprecedented. As in previous years, a few, largely adults, were reported long before the main movement. Some of these were mentioned in the September issue (*Brit. Birds,* 62: 392) and, in addition, there was one at Wisbech sewage-farm on 19th July, followed during early August by records of one or two in Devon, Somerset, Gloucestershire and Cheshire. The next small arrival was on 15th August and in the following week about 35 were reported from eleven localities: singles at Ballycotton (Co. Cork), Wellington (Shropshire), Ecton sewage-farm (Northamptonshire) and four English coastal localities, as well as three at Sand Bay (Somerset), up to five at Chew Valley Lake, six in Budle Bay (Northumberland) and 15 at Wisbech sewage-farm. From about 22nd August to the end of the month the wind was predominantly strong north to north-easterly and further irregular arrivals, mainly of juveniles, resulted in some sizable flocks, including 20 at Minsmere on 23rd, 40 at Slimbridge (Gloucestershire) on 25th, and 65 at Teesmouth (Co. Durham/Yorkshire) and 100 at Wisbech sewage-farm on 26th. (It will be remembered that there was a peak in records of skuas and Manx Shearwaters on the east coast during this period.)

These flocks, however, were totally eclipsed by the remarkable numbers produced by the main arrival on 27th August, the vast majority being juveniles. Between this date and the end of September, Curlew Sandpipers were reported from over 80 localities and in such areas as the Wash, north Norfolk and the Severn Estuary they seem to have been almost continuously distributed along the coast. No less than 250 were ringed, compared with the previous grand total of only 311. The maxima at most localities occurred between 27th August and 4th September, followed by a sharp decrease and sometimes a much smaller maximum later in September.

The northernmost Curlew Sandpipers were four in Dornoch Firth (Sutherland/Ross-shire) on 28th August and nine in the Montrose Basin (Angus) on 9th September. Records from the Firth of Forth included 100 in the Tyninghame Estuary (East Lothian) and 20 at Musselburgh (Midlothian). Further south, 232 were counted at Teesmouth (Durham side 166, Yorkshire side 66) on 4th September, and up to 82 at Spurn. Lincolnshire and Norfolk produced the highest numbers, as might be expected, with maxima of 265 at Donna Nook (on 31st August, down to only 20 four days later), 45 at Gibraltar Point, about 500 at Holbeach Creek and many flocks of 50-100 all round the Wash, 500 more at Wisbech sewage-farm and many parties of 10-30 all along the north Norfolk coast, including up to 40 at Cley. Numbers at Minsmere reached 76, but the only reports from the Essex coast were of two flocks of 25 and 13 which clearly do not indicate the true strength there, as 70 were seen far up the Thames Estuary at Rainham (Essex) and 135 at Harty, Isle of Sheppey (Kent). Smaller numbers were reported from several other localities in Kent, notably 26 at Cliffe, 40 at Sandwich Bay, twelve at Dungeness, 60 at Walland Marsh and 24 at the Midrips/Wicks. At Sidlesham (Sussex) daily coverage produced a maximum of no less than 180, and smaller flocks were seen in all the Channel counties, the Channel Islands and the Isles of Scilly.

Around the Severn Estuary there were maxima of 43 at Steart (Somerset), 25 at Sand Bay, 100 at Slimbridge (on 31st August, falling to only four on 9th September and rising again to 21 a week later) and 40 at Frampton Marsh (Gloucestershire). In Wales, 24 were seen in the Dovey Estuary (Cardiganshire) and up to 55 at Malltraeth (Anglesey). The only report from the Isle of Man was of four at Castletown on 31st August. Fairly high peaks were recorded in north-west England: up to 55 at the mouth of the Dee (Cheshire), 35 on the Mersey at Frodsham (Cheshire), 63 on the Inner Ribble Marshes and 65 in the Lune Estuary at Conder Green (Lancashire). There were also two records of singles in Wigtownshire.

Some exceptional flocks were seen in Ireland. There were flocks of 40 and 81 at Shannon Airport (Co. Clare) and Blennerville (Co. Kerry) on 30th August, over 100 at North Bull Island (Co. Dublin) in early September and 26 at Lady's Island Lake (Co. Wexford) on 13th. Co. Cork had many parties of 30-40 in early September, in addition to 56 at Ballycotton on 9th, 212 at Tivoli on 11th and 150 at Kinsale as late as 18th.

Inland, away from the coasts and estuaries, well over 100 in total were reported from 22 localities in 17 counties from Somerset to Yorkshire, the largest numbers being 39 at Perry Oaks (Middlesex) and twelve each at Eye Brook Reservoir (Leicestershire/Rutland) and Blithfield Reservoir (Staffordshire). By the end of September almost all the Curlew Sandpipers had left. October records from only eleven localities involved no more than four together, except for nine at Eye Brook Reservoir on 5th. November records included singles at Swithland Reservoir and Huncote (both Leicestershire) on 1st and 13th, two at Tivoli on 8th and three at Clevedon (Somerset) on 16th. Finally, one was seen on the Inner Ribble Marshes on 6th December.

Influxes of Curlew Sandpipers in the past have been associated with movements of **Little Stints** *C. minuta*. It was noticeable that the early Curlew Sandpipers were not accompanied by Little Stints, but by mid-September a few flocks of the latter had appeared, such as 50 in Teesmouth on 13th-14th (which were almost all new arrivals) and 15 at Sidlesham on 21st, but by this time most of the early Curlew Sandpipers had already left, and it is difficult to draw any conclusions until a more complete set of records is available. This abnormal movement and its possible causes will be fully analysed by Dr C. D. T. Minton and P. Stanley, and we ask that all records of Curlew Sandpipers and Little Stints not yet submitted to any national or regional recorder should be sent to **P. Stanley, Biochemistry Department, University College, Gower Street, London WC1.**

OTHER WADERS

Kentish Plovers *Charadrius alexandrinus* were present at Minsmere and Dungeness (up to two at each locality) during 30th July-4th August. A few **Dotterel** *Eudromias morinellus* included two at Cley on 6th September. North-east vagrants were single **Great Snipe** *Gallinago media* at Fair Isle on 23rd September and Cantley (Norfolk) five days later, and two **Broad-billed Sandpipers** *Limicola falcinellus*, one with Curlew Sandpipers on the Inner Ribble Marshes on 30th August (found dead the following day) and the other at Gruinard Bay (Ross-shire) on 9th September. About 14 **Temminck's Stints** *Calidris temminckii* were seen at ten localities, mainly on the east coast and with no discernible pattern, but two at Gruinard Bay on 9th September (the same day as the Broad-billed Sandpiper) and one at Thurlestone (Devon) on 26th-30th October were well away from the usual areas, while the latter and one at Teesmouth on 20th October were also very late.

A **Red-necked Phalarope** *Phalaropus lobatus* was seen at Queen Mary Reservoir (Middlesex) on 1st September, followed by two unidentified phalaropes at Stewartby (Bedfordshire) on 12th-13th and the usual scattering of **Grey Phalaropes** *P. fulicarius* through to the end of November. Three **pratincoles** *Glareola spp* were reported, single **Black-winged** *G. nordmanni* at Sandwich Bay during 29th August-4th September and at Pitsford Reservoir (Northamptonshire) on 6th September and, in between, a **Pratincole** *G. pratincola* at Minsmere on 5th. Finally, mention must be made of the **Cream-coloured Courser** *Cursorius cursor*, seen by several hundred people, which arrived at Blakeney (Norfolk) on 18th October, moved 35 miles south-east to Caister (Norfolk) at the end of the month, and died there in mid-November. This was about the thirtieth British record, but only the fourth since 1958. We have received two or three photographs of this bird, but understand that many others were taken; we would be interested to see any black-and-white prints for possible publication (see also page 458 in this issue).

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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 generally those used in *A Field Guide to the Birds of Britain and Europe* (revised edition, 1966). The scientific name of each species should be underlined (but not put in brackets) immediately after the first mention of the English name. Sub-specific 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 1969' 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:

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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. Before submitting his paper, the author must neatly insert any lettering or numbering that is an integral part of the figures and, as this is perhaps the most difficult aspect of indian ink drawing, he is advised to use Letraset or seek the aid of a skilled draughtsman.

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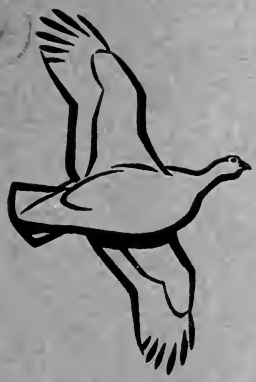

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British Birds

Bewick's Swans in Britain and Ireland during 1956-69

M. A. Ogilvie

INTRODUCTION

Thirteen years have passed since the massive influx of Bewick's Swans *Cygnus bewickii* during the severe weather in early 1956. This unprecedented movement was ably written up by Nisbet (1959), who concluded his paper with the comment that only future events would determine whether the influx was unique, or whether it heralded 'a new phase in the eventful history of this unpredictable species'. It is the intention of this paper to review the situation since 1956 and to give details of the present status and distribution of the species in Britain. The past status was treated fairly briefly by Nisbet and when the present writer came to look through the relevant literature he began to understand why. A slightly fuller account is thought worthwhile including, however, as background to the present picture.

PAST STATUS

It was only in 1830 that the Bewick's Swan was determined as a species separate from the Whooper Swan *Cygnus cygnus*, with which it had formerly been confused. A reading of the British literature, both standard national or regional works and the local county bird reports, leads to the sad and perhaps inevitable conclusion that the confusion did not end in 1830 and, indeed, has not ended yet. It is probably never going to be possible to put together an accurate story of the status of the Bewick's Swan in Britain between 1830 and 1950, though some periods are better documented than others.

It is clear that the Bewick's Swan was once plentiful in Scotland, with the main wintering area in the Inner and Outer Hebrides, in particular Tiree and North Uist (Baxter and Rintoul 1953). There was, in addition,

a regular autumn and spring passage through Shetland. On the east coast and in the central and southern areas the species remained rare. There has been an enormous decrease almost to vanishing point in Scotland, though it is not so easy to judge from the records exactly when this took place. Probably the Bewick's Swan was already declining there before the end of the 19th century, and for at least the last 30 years, possibly more, the species has been no more common than now, with a handful present most winters at one site and a scattering of other records.

The other main wintering area in the British Isles was Ireland where, as in Scotland, a major decrease has been recorded this century (Kennedy, Ruttledge and Scroope 1955). In England and Wales the Bewick's Swan seems to have been rather rare throughout the 19th century, the first signs of an increase coming during the 1920's. At this period short notes appeared in *British Birds* reporting flocks in various counties. It is not possible, however, to reconcile the major decreases in Scotland and Ireland with the much smaller increase in England and Wales.

When one considers the normal line into Britain for birds from arctic Russia, where the Bewick's Swan breeds, a route which regularly involved Shetland, even if only for a small number of individuals, seems a very long way north. There is some indication that Bewick's Swans passed on to Ireland from Scotland, though Nisbet's (1955) statement that the population in the latter country was always rather transitory conflicts with the impression gained by reading Baxter and Rintoul (1953). Again, this may seem a strange migration route, though an essentially similar one is now taken by Iceland and Greenland breeding species, including the Whooper Swan. But speculation of what did formerly happen is idle. A change has taken place, certainly in migration routes and distribution, and probably in total numbers.

The first noticeable influx into England took place in 1938/39 (Witherby 1939) and this produced the initial fenland records which subsequently led to the establishment of regular wintering there (Nisbet 1955). This was the first occasion, repeated in later years, when a cold spell drove Bewick's Swans into England from the Netherlands, where large numbers had always wintered. Nisbet (1955) pointed out a coincidence between the first arrivals in force in England and Wales and the desalination of the IJsselmeer, enclosed in 1932. There is no further concrete evidence for the connection and it must remain an interesting hypothesis.

Nisbet (1955, 1959) has discussed the gradual change in status that took place in the period 1938/39 to 1955/56.

REGULAR WINTERING HAUNTS

At the time of the 1956 influx there was only one site in Britain, the Ouse Washes astride the Cambridgeshire/Norfolk border, which

regularly had wintering Bewick's Swans, at least when the washes were flooded. There were, of course, many other localities where Bewick's Swans would be present most, if not all, winters, but nowhere else did flocks stay long. The usual pattern at these sites was for a flock to remain a week or two at most before moving on. This extreme mobility and lack of strong attachment to one locality produced difficulties when trying to determine total numbers in the country, or even in a small area. Nisbet (1955) clearly showed how regular wintering became established at the Ouse Washes only after a period when the species was present just in severe weather. He suggested that the influx in 1956 would lead to other places becoming regular wintering sites in the same way. His idea that such future sites might include the Somerset and Essex reservoirs, where Bewick's Swans remained for considerable periods in 1956, has not been fulfilled. Nevertheless, the number of regular wintering places in Britain has certainly increased since 1956. There are now six localities where more than 20 spend every winter (except the very driest) and at only one of the five new sites is there no link with previous hard weather visits. These regular sites, and one which has declined, are described below.

(1) *The Ouse Washes, Cambridgeshire/Norfolk*

The Ouse Washes are a strip of pasture land twenty miles by half a mile bounded by the embanked Old and New Bedford Rivers. They act as a temporary holding place for excess water in the complex fen drainage system and are at least partially flooded from December to March.

Table 1. Peak counts of Bewick's Swans *Cygnus bewickii* on the Ouse Washes (Cambridgeshire and Norfolk) from 1938/39 to 1968/69, together with the mean of the highest count in January and in February, where known

Season	Peak count	Jan-Feb mean	Season	Peak count	Jan-Feb mean
1938/39	11		1954/55	254	182
1939/40	nil		1955/56	705	368
1940/41	26		1956/57	270	195
1941/42	6		1957/58	300	300
1942/43	1		1958/59	343	242
1943/44	1		1959/60	220	89
1944/45	1		1960/61	708	605
1945/46	nil		1961/62	340	224
1946/47	33		1962/63	168	28
1947/48	2		1963/64	255	113
1948/49	5		1964/65	30	16
1949/50	5		1965/66	588	475
1950/51	30		1966/67	855	813
1951/52	7		1967/68	776	
1952/53	120	78	1968/69	676	671
1953/54	41	35			

The variation in flooding from year to year is great, however. In a dry winter there will be virtually none at all, while a wet year will mean floods as early as September.

The Ouse Washes remain the single most important wintering place for Bewick's Swans in Britain, and table 1 gives the peak count made each winter for the last 31 years. The figures for 1938/39 to 1958/59 are from Nisbet (1955, 1959); those for the years since have been extracted from *Cambridge Bird Reports* and the files of the National Wildfowl Count Scheme. Such a long, unbroken run of records is rare.

It will be seen that after the peak during the 1955/56 influx there was a levelling off at 250-350 which lasted until 1963/64. An exceptional peak in 1960/61, when larger than usual numbers were present elsewhere, but nothing like the influx of 1955/56, will be discussed later. The very low figure of 1964/65 was due to an almost complete absence of flooding. The last four winters have shown a higher level, though it is too early to say whether this will last or whether the area has reached the maximum it can hold. The establishment of reserves over significant proportions of the Ouse Washes in the last few years (Scott 1968) can be expected to have a favourable effect, by reducing disturbance.

Because the peak count does not necessarily bear a direct relationship to the wintering population, a second column has been added in table 1 which shows the average of the peak counts made in January and in February. Counts in March can be inflated by returning migrants from further west. Unfortunately, sufficient data are not available for 1967/68 but the single count given was made in January.

The upward trend in wintering numbers is clearly shown from these figures, despite the low totals in 1962/63, when the Ouse Washes were frozen for the whole of January and February and the peak count was made in December, and in 1964/65 when there was virtually no flooding. At certain flood levels large numbers of Bewick's Swans move off the Ouse Washes proper to the stretch of river between Earith and Swavesey, and counts from there are included in the totals.

(2) *The New Grounds, Slimbridge, Gloucestershire*

The establishment of the wintering flock here owes much to the artificial and highly advantageous conditions created for the Bewick's Swans in the enclosures of the Wildfowl Trust. The build-up of the flock from 24 in 1963/64 to 366 in 1968/69 has already been well documented (P. Scott 1966, D. Scott 1967, 1969, Ogilvie 1968). Suffice to say here that it has been due to the provision of ample supplies of grain in a sheltered and undisturbed pool. Had this not been provided, it is probable that numbers would, at best, have increased only very slowly. The swans are dependent to some extent on the area surrounding the enclosures and their pool, in particular on the River Severn mudflats and adjoining salt-marsh and wet pasture, collectively

Table 2. Peak counts of Bewick's Swans *Cygnus bewickii* at the New Grounds, Slimbridge, Gloucestershire, from 1955/56 to 1968/69, together with the total number of individuals identified in each year

Season	Peak count	Different individuals	Season	Peak count	Different individuals
1955/56	16	not known	1962/63	32	not known
1956/57	15	not known	1963/64	24	24
1957/58	16	not known	1964/65	56	74
1958/59	15	not known	1965/66	125	148
1959/60	12	not known	1966/67	271	336
1960/61	11	not known	1967/68	199	342
1961/62	39	not known	1968/69	366	439

known as the New Grounds, and this dependence is likely to grow with the increasing size of the flock.

There was a definite connection between severe weather and wintering Bewick's Swans at the New Grounds. Although odd birds or family parties had been seen in a number of earlier winters, it was not until 1955/56, when up to 16 were recorded, that any stayed for more than a day or two. A similar number occurred in 1957/58 when there was also some cold weather, and from then on they were regular in small numbers with the total reaching over 30 in 1961/62 and 1962/63, both winters, especially the latter, including severe weather.

Since the individual Bewick's Swans at Slimbridge can be identified by their varying bill patterns, it has been possible to record not only the number present each day, but also the total number of different individuals which visit throughout the whole winter. Table 2 shows these figures for the past six winters, together with the maximum recorded in each winter since 1955/56. It is thought that the temporary visitors include birds which are too timid to feed within a few yards of buildings; or others that, because of the crowding and the aggressive behaviour of established individuals, fail to find the food at all; and some wanderers which develop no strong attachment to any one wintering place.

(3) *The Lower Derwent valley, Yorkshire*

This area consists of low-lying stretches of grassland alongside the River Derwent between Wheldrake and Bubwith. It floods regularly except in the driest winters, though not usually until December or early January. Bewick's Swans seem to have become regular winterers only after 1959/60 when up to 90 were present for some weeks. Before that, records are very scattered and not restricted to periods of hard weather, presumably because the floods freeze rather quickly. In 1960/61 over 100 were present throughout January, reaching a peak of 200 in February. In the next four seasons, including the hard winter of

1962/63 and the dry one of 1964/65, numbers were under 30. Further large flocks appeared in 1965/66, with 153 in early January and a peak of 278 in mid-February. In the last three winters the total has generally stayed at about 100.

(4) *Minsmere, Suffolk*

This area of permanent pools, reed-beds and marshy ground has been a regular wintering place for Bewick's Swans since the 1956 influx, when up to 24 were recorded in March. Before then only temporary flocks were noted. The peak counts for the period December-February in each winter since 1956/57 will be found in table 3. The counts exclude the fairly regular influx that takes place in March, presumably of birds returning from further west. The general rise in numbers since wintering started seems to have halted in the last five years.

(5) *Breydon Water, Norfolk/Suffolk*

The estuary of Breydon Water and its adjacent marshes form a very suitable habitat for Bewick's Swans, though increased drainage may well eventually have an effect. As at Minsmere, regular wintering seems to date directly from the 1956 influx, when a party of 51 was present for a few days. The peak winter counts, taken in December-February (table 3), show rather more fluctuation than those for Minsmere, but the upward trend is obvious.

(6) *Somerset Levels, near Langport*

This area consists of low-lying pasture land bordering the rivers Yeo, Parrett and Brue. Drainage works have reduced flooding in recent years, but the total area under water can still amount to several thousand

Table 3. Peak counts of Bewick's Swans *Cygnus bewickii* in December-February at Minsmere (Suffolk), Breydon Water (Norfolk/Suffolk) and the Somerset Levels, from 1956/57 to 1968/69

Season	Minsmere	Breydon Water	Somerset Levels
1956/57	20	5	47
1957/58	32	12	40
1958/59	38	12	27
1959/60	67	0	88
1960/61	81	15	64
1961/62	48	24	85
1962/63	56	52	28
1963/64	60	17	60
1964/65	88	48	12
1965/66	97	60	55
1966/67	73	108	54
1967/68	70	44	28
1968/69	24	26	107

acres. The floods, even in wet years, come and go in a matter of days, and this, coupled with the large area involved, makes accurate assessments of the numbers of Bewick's Swans very difficult. Small flocks of less than 20 were recorded most winters from at least 1950 until the 1956 influx when up to 40 were present. Since 1956 larger numbers have regularly been seen whenever the floods have been suitable and the peak winter counts are shown in table 3. It is difficult to detect any trend in the numbers and the ever-improving drainage has probably already had an effect on them. The area and duration of the floods is steadily on the wane. If the floods recede after the Bewick's Swans have arrived, they have usually taken up temporary residence on Durleigh or Sutton Bingham Reservoirs, both about 15 miles away. The birds will also roost on the reservoirs if the floods become too disturbed by shooting. It seems probable that, within a few years, the flooding may stop altogether and it is doubtful in those circumstances whether the reservoirs could retain the Bewick's Swans in this area.

(7) *The Nene Washes, Cambridgeshire*

The Nene Washes used to perform the same water-holding function for the River Nene drainage area as the Ouse Washes do for their rivers, though always on a smaller scale. In the last decade, however, steps have been taken to eliminate the flooding and in the period 1961/62 to 1965/66 the Nene Washes were dry enough for the traditional pasture to be put under the plough, and no Bewick's Swans were recorded. But in the recent wet winters some have been recorded again. Regular wintering started only in 1958/59, so lasted only three winters before the Nene Washes became dry. The proximity of the Ouse Washes suggests strongly that many birds visit both places and disturbance or flood level at one may influence the numbers at the other. The peak winter counts on the Nene Washes for 1958/59 to 1960/61 were 97, 23 and 180, whereas for the three winters from 1965/66 to 1968/69 they were ten, three and 50.

IRREGULAR WINTERING HAUNTS

Regular wintering sites are defined in this paper as those at which 20 Bewick's Swans stay each season for weeks rather than days. It is of considerable value to try to predict which sites may become regular wintering places in the future. It would certainly serve no useful purpose to list every place where Bewick's Swans have occurred. Because of their habit of frequently wandering over 20 miles or more from a main haunt, it follows that almost every sizable water within this range will receive visits. Whilst none of these satellite places has yet become a wintering haunt in its own right, there are a number where this may yet happen, particularly if the increase at the main haunts continues. It is very probable that in winters when the floods

are intermittent the subsidiary sites enable the birds to stay in the general locality and wait for the floods to reappear.

The regular wintering sites are either flooded pasture, providing both feeding and roosting; or a permanent roosting water with adjoining feeding in wet pasture. In the first category come the Ouse and Nene Washes, the lower Derwent floods, and the Somerset Levels. This last, however, shows some signs of joining Minsmere and Breydon in the second category. The New Grounds at Slimbridge is basically of the second type, with extra food being supplied.

The first type of habitat is the most favoured. Unhappily, it is the least permanent, both in the short term with flooding varying with rainfall and in the long term in view of threats of drainage. It is among such sites, however, that we should look for new regular wintering places. Conservationists should be searching for possible places in the second category to make them more suitable for Bewick's Swans, which are surely going to need them in the not too distant future.

Floodland areas which could become haunts of Bewick's Swans include the River Hull valley in south Yorkshire, where between 100 and 200 stayed for some weeks in 1965/66, and the River Cherwell floods south of Banbury, Oxfordshire, quite regularly visited by small numbers with some signs of an increase in recent years. It is perhaps already too late for Bewick's Swans really to become established in any of the Sussex river valleys, fast being drained, but further west the River Avon floods near Ringwood seem quite suitable, though at the moment more to the eye of the waterfowl biologist than to that of the Bewick's Swan. Floods in the Trent valley in Derbyshire and Nottinghamshire have fairly regular records of small numbers of Bewick's Swans, but disturbance and other factors seem unfavourable to them at present.

In the second type of habitat, Yorkshire has a number of reservoirs and other permanent waters where Bewick's Swans turn up most winters, notably Bottomboat Reservoir and, less now than a few years ago, Fairburn Ings. These records very probably refer to birds actually wintering on the Derwent floods, or on passage, but if there were sufficient feeding for them in the area of the reservoir, they might well stay more often and for longer. Eyebrook Reservoir in Leicestershire has a long history of Bewick's Swans, including the 1956 influx, but for some reason the larger numbers never stay long. Several other reservoirs in southern England which have shown promise in dry winters and then faded include Abberton, in Essex, and Chew, in Somerset. In South Wales small parties appear every winter on Kenfig and Eglys Nunydd pools, but it is uncertain whether these sites could hold larger numbers. In north Wales, some of the wetlands in Anglesey are commonly visited.

Scotland's sole wintering haunt, the Loch of Strathbeg and pools

near-by, in Aberdeenshire, has had four to six Bewick's Swans present in most winters since 1955/56.

NUMBERS OF BEWICK'S SWANS IN BRITAIN

The great mobility of Bewick's Swans makes it very difficult to arrive at accurate totals of the numbers present in the country at one time. The obvious and most satisfactory method is to organise counts to take place at all known haunts on the same date. This is hampered by not knowing all the haunts and by the problems encountered when censusing the extensive Ouse Washes. Very full credit is due to the members of the Cambridge Bird Club for the long, continuous series of counts made there, but even they have had to bow to the weather and to sundry logistical problems on many occasions. Although it is fairly easy to obtain simultaneous counts from the six regular haunts, as has been done in recent years, past records tend to be much more scattered. The necessary extrapolations of figures must always be less reliable than real counts.

Nisbet (1959) managed the first co-ordinated census of Bewick's Swans during the 1956 influx. A survey of the numbers and distribution of the species in Britain for the winter of 1964/65 was meant to include co-ordinated counts. Unfortunately, the winter was so dry that the Ouse Washes never properly flooded, nor did the Lower Derwent valley or the Somerset Levels. In consequence, the Bewick's Swans that came as usual into the country in December and January had to find other places. The survey did not lack records (a recurrent nightmare of organisers), but was rendered almost useless by the over-abundance of reports. Flocks were seen on waters all over Britain where they had hardly ever been recorded before. No indication of the total numbers present at any one time during the winter was possible and the end product of the survey was a long, long list of localities many of which might never be used again.

A peak total of Bewick's Swans in the country for each winter can be arrived at by first tabulating all the available counts for the seven regular sites. Each winter month of December, January and February was divided into four seven- or eight-day periods and the counts within each summed. Where no count was available, an interpolated figure was used when there was a count on either side of the period in question, the lower of the two being taken. Thus it was assumed that Bewick's Swans stayed at the locality throughout the period between the two flanking counts and that they did not fall below the level of the lower of the two counts.

The highest total for each winter was then selected and these are given in the first two columns in table 4, showing the total actually counted and the number interpolated. It will be seen that the latter is nearly always very small. The third column in table 4 contains totals

Table 4. Peak counts of Bewick's Swans *Cygnus bewickii* in Britain from 1956/57 to 1968/69

Counts at other sites are placed in brackets when made in periods other than that of the peak count at regular sites

Season	Weekly period of peak	Total count at regular sites	Interpolation (page 513)	Counts at other sites	TOTAL
1956/57	I Feb	309	0	(52)	361
1957/58	III Feb	372	26	(27)	425
1958/59	II Feb	472	3	18	493
1959/60	II Feb	312	0	65	377
1960/61	IV Jan	677	129	(123)	929
1961/62	III Jan	397	20	(153)	570
1962/63	III Dec	168	68	(125)	361
1963/64	IV Feb	258	0	(169)	427
1964/65	I Feb	125	55	(81)	261
1965/66	II Feb	1,025	20	259	1,304
1966/67	II Jan	1,210	0	225	1,435
1967/68	IV Jan	1,027	71	(175)	1,302
1968/69	II Jan	1,223	0	145	1,368

counted each year at all other sites in the country covered by the National Wildfowl Count Scheme on the date nearest to the period of the peak count. In addition, a search was made of county and local bird reports for extra records. Only in five winters, shown without brackets in table 4, were the count dates within the week of the peak count on the regular sites.

The final column in table 4 therefore gives a peak count for each winter since 1956/57. Although these totals are subject to some qualifications because of the manner in which they have been built up, they nevertheless are the best, and most comparable, figures that can be produced from the existing data for this difficult species. There is no detectable trend in the timing of the peak, though quite a lot of variation.

The highest simultaneous count obtained by Nisbet (1959) for the winter of the great influx, 1955/56, was about 1,600. This showed no effect in the years immediately following, despite the increase in wintering haunts. The numbers involved at these places were, of course, rather small. The peak totals for the years 1956/57 to 1959/60 show no significant trend and the jump to the 1960/61 total of more than double that of any of the previous years comes without warning. It can be split into two parts. Firstly, there was a larger number than normal on the Ouse Washes. The actual count used in the compilation was 501. There was a count of no less than 708 at the end of February, but this almost certainly contained large numbers of returning migrants from further west; only the week before, the count was 369. Thus the Ouse Washes had their highest number of Bewick's Swans since 1955/56. Secondly,

there were unprecedented numbers on the floods of the Derwent valley, already mentioned. There seems no local factor which might have attracted them there in that particular winter in such numbers. The Derwent floods had been present every winter for many years before, but without any Bewick's Swans, and then up to 90 appeared in 1959/60, followed by a leap to 200 in 1960/61.

There remains the problem of where the additional birds came from. A short spell of cold weather on the Continent started on 24th January and lasted about five days. Temperatures in the north Netherlands remained below freezing throughout the period, with a lowest midday reading of −6°C on the 27th. This might well be sufficient to freeze large parts of the IJsselmeer and cause numbers of Bewick's Swans to move west into Britain. There have, of course, been cold periods before and since, which have frozen the IJsselmeer, not least the occasion of the 1956 influx, so what distinguished this cold spell from any other? One possible answer ties in with the theory that, before the 1956 influx, most Bewick's Swans flew over England and Wales to head for their Irish wintering haunts. In 1961 the cold spell did not spread even into eastern England. There were no daytime frosts and only one midnight reading below zero from weather stations in north Norfolk and in the Fens during the five days, thus leaving haunts in this area available to the Bewick's Swans. All this still does not explain the wintering in the Derwent valley. Over 50 were present there by mid-December, so the cold spell did not start the process.

The numbers of Bewick's Swans in Britain were not detectably affected by the short severe spell at the end of December 1961. The available counts do not show any sudden influx, though it is wholly possible that, with such widespread cold conditions, any extra birds from the Continent flew over England direct to Ireland. Certainly by mid-January, when the cold spell was ending, counts showed much reduced numbers at British haunts compared with the previous winter. The Derwent valley in particular was almost deserted. The peak count, although well below that for 1960/61, did show an increase over previous seasons and so the 1960/61 influx may have had a lasting effect on total wintering numbers. The next three winters, however, each had some abnormality which obscured any such effect.

In 1962/63 the prolonged severe weather drove most of the Bewick's Swans from England, presumably into Ireland, and thus the peak count was the one made in mid-December, when some were still arriving in the country, and is not really comparable with other winters. There were some higher counts in March of birds on their way back east. The next winter was rather dry and, although most areas had some floods, they were neither very extensive nor long-lasting and this is reflected in the counts. The winter of 1964/65 was an even dryer one. The peak count was thus the lowest since before 1955/56 influx.

If it has been shown that an unusual influx of Bewick's Swans can produce a lasting increase in wintering numbers in subsequent years, the opposite most certainly does not hold good. The three poor winters of 1962/63 to 1964/65 were immediately followed by an enormous increase which has been maintained and improved upon in the years since. In 1965/66 there were larger numbers than ever before in the Derwent valley, at Minsmere and on Breydon Water, as well as at the New Grounds, though there the increase was artificially induced, at least in part. Numbers on the Ouse Washes were easily the highest since 1960/61. As in 1955/56 and 1960/61, it is possible to find spells of cold weather on the Continent which probably froze the freshwater areas in the Netherlands and sent many Bewick's Swans over to Britain. But the large numbers in the next three winters means that 1965/66 marked the beginning of a new stage in the wintering habit of Bewick's Swans in Britain.

The peak count for the last four winters up to 1968/69 seems to show some levelling out. Two factors, however, are acting in favour of a continued increase: firstly, the establishment in recent years of refuges over significant areas of the Ouse Washes, thus considerably reducing disturbance, and plans to provide more permanent water areas there; and, secondly, the highly favourable situation at the New Grounds. Although the size of the present pond at this latter site may set a limit, the artificial feeding can readily be extended to other ponds. In addition, there are signs of Bewick's Swans staying for longer and longer periods at other wetland sites within 15-20 miles of the New Grounds. Against these favourable features must be set the ever-improving drainage of the Somerset Levels, and the probability that the flooding of the Lower Derwent valley will not be tolerated for many more years.

The 1968/69 peak level of 1,368 compares quite well with the peak count of 1,600 obtained by Nisbet (1959) for the 1955/56 winter.

STATUS OF BEWICK'S SWANS IN IRELAND

In the absence of a long-established network of counters, such as

Table 5. Peak counts and average December-February counts of Bewick's Swans *Cygnus bewickii* at Lough Neagh and Lough Beg, Northern Ireland, from 1964/65 to 1967/68

The figure in brackets is the average of January and February only

Season	Peak count	Month of peak	Dec-Feb average
1964/65	491	Mar	(208)
1965/66	420	Nov	236
1966/67	308	Jan	308
1967/68	no counts due to foot-and-mouth restrictions		

exists in Britain, information on the numbers and distribution of Bewick's Swans in Ireland is inevitably going to be incomplete, and any conclusions drawn will be rather tentative. It is not possible to arrive at a peak total of numbers for each winter, indeed for any winter with the exception of 1966/67. In that year the first International Wildfowl Census was held and the total number of Bewick's Swans recorded in Ireland, in mid-January 1967, was 687. The census of January 1968 was cancelled because of the restrictions imposed during the foot-and-mouth outbreak in Britain. The results for January 1969 are not yet fully available, but counts so far received suggest that there were about 600 Bewick's Swans in Eire and between 300 and 400 in Northern Ireland.

It is possible, using the census results together with more casual observations, to detail the main haunts and give some idea of their relative status. The vast expanse of Lough Neagh (about 100,000 acres), together with the neighbouring Lough Beg (1,700 acres), forms the single most important regular wintering place of Bewick's Swans in Northern Ireland. Only partial and infrequent counts were made before 1964/65, but in that winter the Northern Ireland Ornithologists' Club successfully undertook the massive task of making regular monthly wildfowl counts on the two waters. The majority of the Bewick's Swans are seen in the bays on the south side of Lough Neagh, along the more sheltered parts of the eastern shore, and on Lough Beg.

Table 5 sets out the peak count made in each of the winters of 1964/65 to 1966/67, the month when the peak occurred and the average of the counts for December, January and February. It will be seen that, although a peak of over 400 has been reached in each winter for which counts are available, the number actually spending long periods on the two loughs is somewhat less, though still substantial. November and March peaks are assumed to contain passage birds. A slight upward trend in average wintering numbers is detectable, but counts from earlier years are not complete enough to confirm this as a longer term change. Over 200 Bewick's Swans were present on Lough Beg during the latter half of February 1964, which is rather more than have been recorded there since, but, in the absence of counts from Lough Neagh for that period, little can be made of this.

Threats to Lough Neagh as waterfowl habitat come mainly from increasing human usage, expected to grow rapidly with the development of a new city near the southern shore. Sanctuary areas are being designated, however, and provided these incorporate sufficient feeding grounds the Lough should remain very attractive to Bewick's Swans. Part of Lough Beg has recently been declared a non-shooting area by the local wildfowlers' club.

Elsewhere in Northern Ireland, Bewick's Swans visit a number of other waters, but the picture is far from clear, and counts are available

only for two sites. On the south side of Loch Foyle, near Eglinton, quite large flocks appear some winters, but counts are too few to be certain how long they stay. Up to 300 were present in 1963/64 and there were single counts of 115 in January 1965 and 83 in January 1967. More frequent counts in the future over this large area may show this to be a regular wintering place. Upstream from Eglinton, flocks are seen every winter on the River Foyle at Grange, near Strabane. These may consist of the same birds as at Eglinton. Small numbers appear every winter at Lough Shark, near Poyntzpass, on the Armagh/Down border. Up to 20 have appeared there most years since 1961/62, though before that they were infrequent. Peak counts were 34 in January 1963 and 30 in March 1965. There is a general impression in Northern Ireland that the species has increased in numbers in recent years (T. Ennis *in litt.*).

In Eire, Bewick's Swans are regular at two sites in Co. Donegal. About 50 winter on the east shore of Lough Swilly, mainly on two brackish lagoons, at Inch Island and Blanket Nook. The surrounding marshland is already being drained, which will tend to lessen the attractiveness of the area. At Lough Birra, near Ballyshannon, up to 50 Bewick's Swans are present most winters.

There are two loughs on the Mullet peninsula, Co. Mayo, where Bewick's Swans were once winterers in considerable numbers, but in recent years only a few have appeared (Ruttledge 1966). Further south in Co. Galway the turloughs—winter-flooded fields—near Lough Corrib form excellent waterfowl habitat and one of them, Rahasane Turlough south-east of Galway, holds up to 300 Bewick's Swans, with a regular winter level of 150-200. Smaller numbers occur on Turloughcor, near Tuam. Unfortunately, drainage schemes threaten the continued existence of this type of habitat and there are already signs of a decrease in the area.

In south-west Eire there were formerly more swans on Lough Gill, Co. Kerry (Ruttledge 1966). Recent counts there have included 38 in December 1963 and 66 in January 1967. Smaller numbers occur irregularly at Akeragh Lough, across Tralee Bay from Lough Gill. In the south-east corner of the country, Bewick's Swans are regular on the North and South Slobs bordering Wexford Harbour: up to 80 have been recorded in at least two recent winters. Elsewhere in Wexford small flocks appear occasionally on Lady's Island Lake, but the former major site of the Cull, a salt and fresh marsh west of Kilmore Quay, has now been drained. Over 270 were recorded there in March 1956.

Finally, there are three sites in the centre of Eire holding large numbers of Bewick's Swans each winter. The first is where the Little Brosna River meets the River Shannon in Co. Offaly. The second is about 20 miles up the Shannon at Athlone, Co. Westmeath. The third is Lough Funshinagh, Co. Roscommon, about ten miles north-west

of Athlone. Counts from all three places indicate regular wintering levels of 100-150, with peaks of around 250 at the first two sites and of 150-200 at the third. The relative proximity of these sites suggests, however, that many of the birds may be using all three places during the course of a winter and it requires simultaneous counts to give a true figure for the total population of the area. The most recent complete count was of 446 in mid-January 1969.

Nisbet (1959) gave a total of about 1,000 Bewick's Swans in Ireland on 12th February 1956, before the second and larger influx of that winter. During the latter, Nisbet estimated that a further 1,500 or more crossed Britain to Ireland. There is no evidence from the available counts since that this massive influx produced any lasting effect. Certainly there does not seem to have been any increase in the number of wintering places as in England.

It is a matter of considerable guesswork to suggest what the normal winter population of Bewick's Swans in Ireland might have been in the period between 1956 and the present time. If all the sites just reviewed held their peak count at the same time, this would give a total of up to 1,800; if they all held their more normal wintering levels, a figure of about 1,000 would result. This latter figure is close enough to the mid-January 1967 census of 687 and the mid-January 1969 census of 800-1,000. Thus it may be suggested that there has been rather little change in numbers since 1956. This, however, may at least be obscuring a regional variation between Eire, where the species is believed to have decreased in the last 20 years and to be still declining (Ruttledge 1966, D. Cabot *in litt.*), and Northern Ireland, where, as already mentioned, it appears to be gaining ground. Successive co-ordinated counts will gradually make clear what is now happening.

In view of the increase that has taken place in Britain in the last few years, it seems quite likely that some of this will have been at the expense of Ireland, with birds no longer flying over England but stopping there, short of their original destination. With the current threats of drainage to several of the Irish haunts, the numbers of Bewick's Swans wintering in the whole of Ireland may well drop in future years. It is to be hoped that the British sites will be able to accommodate them.

NUMBERS OF BEWICK'S SWANS IN NORTH-WEST EUROPE

The Bewick's Swans of north-west Europe appear to form a discrete wintering population, separate from those wintering in central southern Asia around the Caspian Sea. All the north-west European countries were covered by the mid-January International Wildfowl Censuses of 1967 and 1968, organised by the Duck Working Group of the International Wildfowl Research Bureau. The counts of Bewick's Swans in table 6 show a strikingly similar picture for the two years.

Table 6. Numbers of Bewick's Swans *Cygnus bewickii* counted in north-west Europe during mid-winter wildfowl censuses in January 1967 and 1968

Country	mid-January 1967	mid-January 1968
Sweden	0	2
Denmark	675	248
East Germany	15	4
West Germany	306	259
Netherlands	2,575	3,046
Belgium	115	17
France	74	5
Britain	1,435	1,302
Ireland	687	no count
TOTALS	5,882	4,929

The European total of about 7,000 arrived at by Nisbet (1959) for three dates in 1955/56 is not far above the actual count of 5,882 for mid-January 1967. Such a difference is to be expected from an arctic-breeding population with its wide variation in breeding success. The distribution in 1955/56 was, of course, abnormal, with a vast concentration of about 6,800 on the IJsselmeer in November 1955. This has never been satisfactorily explained, as the normal wintering level for the IJsselmeer, by far and away the most important wintering place in Europe, was between 2,500 and 3,200 (Nisbet 1959). Bewick's Swans were possibly displaced from Emsland in Germany where schemes to prevent the extensive flooding were just coming into effect, but no more than some hundreds used to winter there, though larger numbers may have stopped on passage.

The present level in the Netherlands seems very close to that of former years. Although the area of the IJsselmeer is now much reduced by reclamation of polders, there will always remain a vast area of shallow water well suited to Bewick's Swans. With the Emsland floods a thing of the past, the new wintering haunts in Britain may be effectively replacing that serious loss of habitat.

BREEDING SUCCESS OF BEWICK'S SWANS

In flocks of species where families stay together during the winter, counts of the proportions of young are very accurate indicators of the relative annual breeding success. This technique is used in most studies of goose populations and is equally applicable to Whooper and Bewick's Swans. Indeed, young swans are much more readily distinguishable from their parents in the field than are those of many of the goose species wintering in Britain. Few observers regularly record such valuable information, however, and, in addition, the samples that they are able to count are usually unavoidably small. Available data, published and unpublished, have been gathered together in table 7.

Table 7. Proportions of young Bewick's Swans *Cygnus bewickii* counted in each winter from 1953/54 to 1968/69

The percentage is placed in brackets for those years when the sample did not include at least one flock of over 100

Season	Sample	Young	Season	Sample	Young
1953/54	?	(44.0%)	1961/62	202	8.9%
1954/55	254	34.6%	1962/63	232	(18.2%)
1955/56	1,964	30.6%	1963/64	36	(30.6%)
1956/57	73	(21.9%)	1964/65	790	19.9%
1957/58	53	(39.6%)	1965/66	1,031	19.5%
1958/59	?	(9.0%)	1966/67	790	24.4%
1959/60	50	(34.0%)	1967/68	435	8.3%
1960/61	472	30.6%	1968/69	753	8.0%

The percentages are given within brackets when the sample does not contain at least one flock of over 100.

The variations are similar to those for geese. Several successive good or bad breeding years will have a noticeable effect on the population level, and Nisbet (1959) suggested that the apparently high numbers of 1955/56 might have been due to the three preceding very successful breeding seasons. There has been no comparable run of success, or failure, since then, though another poor year following 1967 and 1968 could well lead to a decrease. Although the increase in Bewick's Swans wintering in Britain is probably related to shifts of population rather than a general increase, correlation with the breeding success figures is fairly good, even though the small size of many of the samples makes this less satisfactory than it might be. If British wintering numbers become more stable, the value of such figures will grow.

CONCLUSION

It would be rash indeed to claim that this paper is anything but an interim statement about the Bewick's Swan in Britain. The changes, and the rate of change, of the last 15 years have been remarkable. From a comparatively scarce passage migrant in England and Wales, wintering in smallish numbers at just one site, the species has changed to a regular winter visitor which tops 1,300 each year, is found in good flocks at half a dozen sites, and is becoming established at perhaps a dozen more. No other wildfowl species can claim such a greatly changed position over the same short span of years. Prediction of what may happen next is probably more difficult than for any other species. Some of the factors likely to affect the future position have already been mentioned. They exist both in this country, in Ireland and on the Continent. We must hope that the favourable factors continue to hold sway. It must also be hoped that the present fairly satisfactory monitoring of the Bewick's Swan's status by counts and observations continues

and improves so that the next chapter in the history of this fascinating bird can be written up in better detail than this one, without gaps and interpolations.

ACKNOWLEDGEMENTS

It is the lot of local bird report editors to be badgered with requests for information from organisers of enquiries, usually arriving at the busiest time of the year. The writer thanks many such editors for their patience and forbearance and, above all, for their information. This paper is built upon the counts of a multitude of observers, to all of whom thanks are expressed. May they long continue to watch and count Bewick's Swans, not forgetting the proportions of young birds! For allowing me to make use of their counts from Lough Neagh, including a fine series of adult/young figures, I thank the Northern Ireland Ornithologists' Club. I am grateful to David Cabot for much information on the situation in Eire. I am also grateful to the Edward Grey Institute, Oxford, for the use of their extensive collection of local bird reports. G. L. Atkinson-Willes kindly made available the results of the First and Second International Mid-winter Wildfowl Censuses.

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SUMMARY

The past status of the Bewick's Swan *Cygnus bewickii* in Britain is briefly reviewed and the period from 1956 to 1969 examined in some detail. The species now winters regularly at six sites, which are described, four of them having come into use during the 1956 influx. Apart from an influx in 1960/61, probably caused by cold weather in the Netherlands, peak numbers in Britain remained below 600 until 1965/66. In that winter and each of the three since the peak has reached at least 1,300 and has, temporarily at least, levelled out. The wintering sites in Ireland are mentioned. Numbers in that country may have declined recently. Total population numbers in north-west Europe are thought to be much the same as in 1955/56, allowing for wide variations in breeding success. Figures for the latter are given from each season of the period under review.

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Waders and terns in Leicestershire and an index of relative abundance

C. F. Mason

INTRODUCTION

The extent of inland movements of waders (Limicolae) and terns (Sterninae), and their relationships to occurrences on the coast, have been little studied. Hollom (1938) analysed data for 1924-36 from several county bird reports, and Hinde and Harrison (1919) and Hinde (1951) showed that the periods of peak spring movements coincided with spells of warm weather in the Bay of Biscay. Brady (1949) and Evans (1966) both gave information on migrations of waders on the coast of north-east England. Nisbet (1957) analysed the wader records for Cambridge sewage farm; the sewage farm as a habitat was discussed by Boyd (1957). Evans (1968) showed that inland movements of coastal waders occur regularly. Using radar, he observed them flying between the Forth and Solway estuaries, and the Tees and Ribble estuaries, distances of 70-80 miles. He also noted a regular movement, mainly in August, of waders covering long distances overland between south-east and SSE, the four species chiefly involved being Dunlins *Calidris alpina*, Ringed Plovers *Charadrius hiaticula*, Turnstones *Arenaria interpres* and Redshanks *Tringa totanus*, all of which he thought were of Icelandic origin.

The present paper aims to analyse the movements of waders and terns through Leicestershire, with particular reference to the timing of peak numbers and the relative abundance of species.

METHODS

All the data for this paper were extracted from the Annual Reports (1941-67) of the Leicestershire and Rutland Ornithological Society. For the less common waders and terns all the records during the 27 years 1941-67 were used and the monthly totals are given in table 1. For the more numerous species only the records for Eye Brook Reservoir in the decade 1958-67 were taken and the autumn totals for July-October in fortnightly periods are shown in table 2. Table 3 gives an index of relative abundance for the commoner waders during 1958-67, calculated as:

$$\frac{\text{the number of individuals of a species recorded in the period}}{\text{the total number of waders recorded in the period}} \times 100$$

The length of stay of individuals could affect both the form of the recorded peak of migration and the relative abundance calculations. It was assumed that the likelihood of a long stay was the same throughout

Table 1. Monthly totals (January-December) of the rarer waders and terns recorded in Leicestershire in 1941-67

Totals in brackets indicate the inclusion of some estimates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTALS
Oystercatcher *Haematopus ostralegus*	1	3	17	11	4	3	6	45	9	2	1	4	106
Grey Plover *Pluvialis squatarola*	0	0	1	2	14	0	0	1	4	3	2	4	31
Turnstone *Arenaria interpres*	0	0	0	2	59	3	6	39	4	0	0	0	113
Whimbrel *Numenius phaeopus*	0	0	1	17	13	0	7	(176)	14	0	0	0	(228)
Black-tailed Godwit *Limosa limosa*	0	0	9	14	5	0	7	38	14	5	0	0	92
Bar-tailed Godwit *Limosa lapponica*	0	0	1	4	6	0	4	8	27	0	1	0	51
Wood Sandpiper *Tringa glareola*	0	0	0	0	18	2	22	(79)	(41)	4	1	0	(167)
Spotted Redshank *Tringa erythropus*	0	0	0	2	3	1	3	162	87	3	1	0	262
Knot *Calidris canutus*	1	2	15	5	3	0	3	22	12	5	12	3	83
Sanderling *Calidris alba*	1	0	0	1	66	2	1	19	8	1	2	0	101
Little Tern *Sterna albifrons*	0	0	0	3	22	5	2	17	16	2	0	0	67
Sandwich Tern *Sterna sandvicensis*	0	0	0	8	20	3	4	7	34	2	0	0	78

July-October and from year to year. The use of relative abundance as an index to migrating wader populations is discussed fully later.

RESULTS

The Lapwing *Vanellus vanellus*, Little Ringed Plover *Charadrius dubius*, Golden Plover *Pluvialis apricaria*, Snipe *Gallinago gallinago*, Jack Snipe *Lymnocryptes minimus* and Woodcock *Scolopax rusticola* have been omitted from this analysis because of incomplete recording. In the following summaries for all the remaining species the references to other work are cut to a minimum for reasons of space. References to Brady (1949), Evans (1966), Hollom (1938) and Nisbet (1957) are given without the years of publication and it should be remembered that the first two of these referred to the coast of north-east England; Hollom covered inland movements in ten counties in a triangle from Cheshire and Somerset east to Essex; Nisbet's paper was limited to Cambridge. The descriptions of some years as 'good' or 'bad' are based on the indices of relative abundance in table 3 and, where possible, compared with the national picture given by Ferguson-Lees and Williamson (1959, 1960) and Ferguson-Lees (1962, 1963, 1964), these all being referred to under the first-named without the year of publication.

Oystercatcher *Haematopus ostralegus*. Of 106 in 1941-67, all months, 28 (26%) were in March-April and 45 (42%) in August (table 1). Brady found August and late September peaks, but little evidence of spring movements.

Ringed Plover *Charadrius hiaticula*. At Eye Brook in 1958-67 only very small numbers in spring, most in May; only in 1959 were many involved (80 in April-June) and there was none in 1963. Nisbet found a May peak. In autumn one of the more numerous migrants, totalling 1,018 in the ten years, early August to mid-October, with distinct late August and late September peaks (table 2); these apparently bimodal peaks may indicate populations of different origins in August and September. Brady and Nisbet both found second half August and second half September peaks. Evans noted late August and early September arrivals and suggested origins in Iceland and Greenland. Table 3 suggests that 1958-60 and 1967 were good, but 1962 and 1965 extremely bad.

Grey Plover *Pluvialis squatarola*. Only 31 records in 1941-67, with peak of 14 (45%) in May and the remainder fairly evenly in August-December and March-April (table 1). Brady found February, March, May and late September peaks, and Nisbet mid-May and early October ones.

Turnstone *Arenaria interpres*. Of 113 in 1941-67, April-September, 59 (52%) were in May and 39 (35%) in August. Brady recorded peaks in February, April, early September and late October, and Evans in May and August-September. Hollom and Nisbet showed inland peaks in May and August.

Curlew *Numenius arquata*. Spring passage in late March and April over the whole county, although very few actually observed; small numbers breed in the south-west and occasionally elsewhere. In autumn 258 at Eye Brook in 1958-67, most August-September and very few July and October (table 2); it seems likely that the majority were of British origin. Hollom found an August peak and Nisbet early and late August peaks, but Brady showed a mid-September one. Table 3 suggests that 1966 was especially good.

Whimbrel *Numenius phaeopus*. Uncommon migrants, usually recorded flying over.

Table 2. Fortnightly totals (July-November) of the commoner waders and terns at Eye Brook Reservoir, Leicestershire, in 1958-67

Figures in bold type represent peak numbers

	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		
	1-15	16-31	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	TOTALS
Ringed Plover *Charadrius hiaticula*	6	24	88	**362**	167	**226**	118	25	2	0	1,018
Curlew *Numenius arquata*	2	9	65	**78**	34	52	6	5	0	8	259
Green Sandpiper *Tringa ochropus*	4	11	**40**	**41**	6	1	0	0	0	0	103
Common Sandpiper *Tringa hypoleucos*	30	110	181	**200**	80	38	19	11	2	2	673
Redshank *Tringa totanus*	57	**136**	59	31	19	10	2	0	8	8	330
Greenshank *Tringa nebularia*	9	10	83	**124**	76	29	3	1	0	1	336
Little Stint *Calidris minutus*	0	0	1	2	49	**213**	46	12	0	0	323
Dunlin *Calidris alpina*	39	109	211	**394**	319	**510**	428	**598**	388	366	3,362
Curlew Sandpiper *Calidris ferruginea*	0	0	1	8	26	**42**	11	0	0	0	88
Ruff *Philomachus pugnax*	20	74	96	**150**	**132**	61	21	0	0	0	554
Black Tern *Chlidonias niger*	**42**	7	50	**162**	**157**	35	45	13	0	0	511
Common/Arctic Tern *Sterna hirundo/paradisaea*	22	18	43	**75**	28	**91**	30	4	2	0	313

Of 228 in 1941-67, March-May and July-September, 31 (14%) were in spring (most in April) and 176 (76%) in August (table 1). Brady showed peaks in May and the end of July. Hollom found May and August peaks, but Nisbet only a May one.

Black-tailed Godwit *Limosa limosa*. Of 92 in 1941-67, March-May and July-October, 14 (15%) were in April, 38 (41%) in August and 14 (15%) in September (table 1). Hollom showed peaks in April and mid-August/late September, and Nisbet in mid-April and mid-August. The establishment of a steadily increasing breeding colony in East Anglia since 1952 (Cottier and Lea 1969) has not resulted in any detectable increase of records in Leicestershire.

Bar-tailed Godwit *Limosa lapponica*. Of 51 in 1941-67, March-May, July-September and November, 11 (21%) were in spring and 27 (53%) in September (table 1). Evans observed wintering birds leaving in late March and April, with a further rapid passage in May; juveniles returned in late August and adults in late September. Nisbet showed peaks in late April/early May and early September.

Green Sandpiper *Tringa ochropus*. At Eye Brook in 1958-67 no spring records. Of 103 in July-October, 81 (79%) were in August, equally distributed between the two halves (table 2). Hollom showed an August peak, with fewer in September. In Lincolnshire Townsend (1954) showed a late April peak in spring and a mid-August one in autumn, with lesser peaks at the end of July and the end of September. Nisbet also showed a late April peak, and autumn ones in mid-August and late October. The April movement in Lincolnshire and Cambridgeshire, but not Leicestershire, may indicate a more easterly spring movement. Table 3 suggests that 1961 and 1963 were good, and 1965 very bad; Ferguson-Lees recorded 1963 as generally exceptional, with flocks of 20-30 in several parts of the country.

Wood Sandpiper *Tringa glareola*. Of 167 in 1941-67, May-November, 18 (11%) were in May, 22 (13%) in July, 79 (47%) in August and 41 (25%) in September (table 1). Hollom found an August peak and Nisbet both May and August peaks; most arrived in August in the 1952 influx (Nisbet 1956). Table 3 suggests that 1958, 1959 and 1961 were good, but none was recorded in 1965-67; Ferguson-Lees recorded 1959, 1960, 1962 and 1963 as good.

Common Sandpiper *Tringa hypoleucos*. At Eye Brook in 1958-67 the spring passage occurred in April and May, especially the latter (43 as opposed to twelve in April). Hinde and Harrison (1949) found inland passage chiefly at the end of April and in mid-May. Nisbet showed a mid-May peak. Ingram (1945) recorded a late-April peak in Glamorgan. Autumn movement at Eye Brook started early, with many passing in July; the peak was in the second half of August, with an abrupt decline in early September and few in late September and October. Ingram (1945) found a peak in early August in Glamorgan, and the temporal distribution does not show the skewedness that is apparent in the Leicestershire records. Nisbet showed a peak in the first half of August. Table 3 suggests that numbers were above average in 1958, 1959, 1961, 1965 and 1966, and especially low in 1964 and 1967.

Redshank *Tringa totanus*. At Eye Brook in 1958-67 recorded in all months. There was a spring passage during April-June, with a peak in May. Nisbet showed a spring peak in late March, when comparatively few were observed at Eye Brook. The return passage began in June, though the situation was complicated by one or two pairs breeding in most years; a peak was reached in late July, thereafter falling rapidly (table 2). The earliness of the passage suggests that the British population was involved, since Icelandic Redshanks do not arrive until the end of September (Ogilvie 1963). Nisbet also recorded an early passage, with few after the beginning of August, but his peak was a month earlier than at Eye Brook. Brady and Evans showed coastal populations building up from mid-July and reaching a peak in late August. Table 3 suggests that autumn 1962 was good and 1959 especially bad.

Spotted Redshank *Tringa erythropus*. Of 262 in 1941-67, April-November, very

Table 3. Relative abundances (July-October) of the commoner waders at Eye Brook Reservoir, Leicestershire, in 1958-67

For explanation of the calculations see page 523

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Ringed Plover *Charadrius hiaticula*	22.0	29.8	21.1	7.6	1.0	11.7	10.2	0.8	11.4	18.4
Curlew *Numenius arquata*	1.03	3.85	2.08	3.10	3.52	4.65	2.69	4.10	14.96	1.90
Green Sandpiper *Tringa ochropus*	1.23	2.02	0.46	2.66	1.55	2.64	1.59	0	0.47	0.69
Wood Sandpiper *Tringa glareola*	2.26	1.01	0.35	1.18	0.28	0.25	0.31	0	0	0
Common Sandpiper *Tringa hypoleucos*	14.78	16.19	7.86	14.20	8.03	7.66	5.86	21.30	17.50	4.14
Redshank *Tringa totanus*	3.90	0.60	5.89	5.47	15.35	5.02	1.52	4.91	1.63	1.81
Spotted Redshank *Tringa erythropus*	0.21	0.40	0.69	0.45	0.70	3.14	5.75	4.10	0.70	0.43
Greenshank *Tringa nebularia*	9.45	4.45	4.97	3.56	3.94	3.77	2.08	9.02	15.19	3.02
Little Stint *Calidris minutus*	0.82	6.07	18.90	2.22	0	1.26	2.81	0	0.70	4.58
Dunlin *Calidris alpina*	14.8	30.2	32.0	20.8	4.9	32.7	58.5	19.7	30.6	48.8
Curlew Sandpiper *Calidris ferruginea*	0.21	4.66	0.35	0.72	0	3.22	0.18	0	0	2.33
Ruff *Philomachus pugnax*	24.60	0.40	4.28	3.85	10.40	11.00	5.31	11.50	4.20	8.12

PLATE 72. Female Pin-tailed Sandgrouse *Pterocles alchata* at nest, Spain: compare this dry marshland habitat in the marismas of the Guadalquivir with the stony desert site in plates 73-74. These photos show well the pattern of the under-parts of the female: white throat, buff surround, black band extending up and round to eye, then successively a buff band, a thin black line, a broad band of chestnut, another thin black line and, finally, all-white breast and belly (pages 533-541) (*photos: Carlos Melgarejo*)

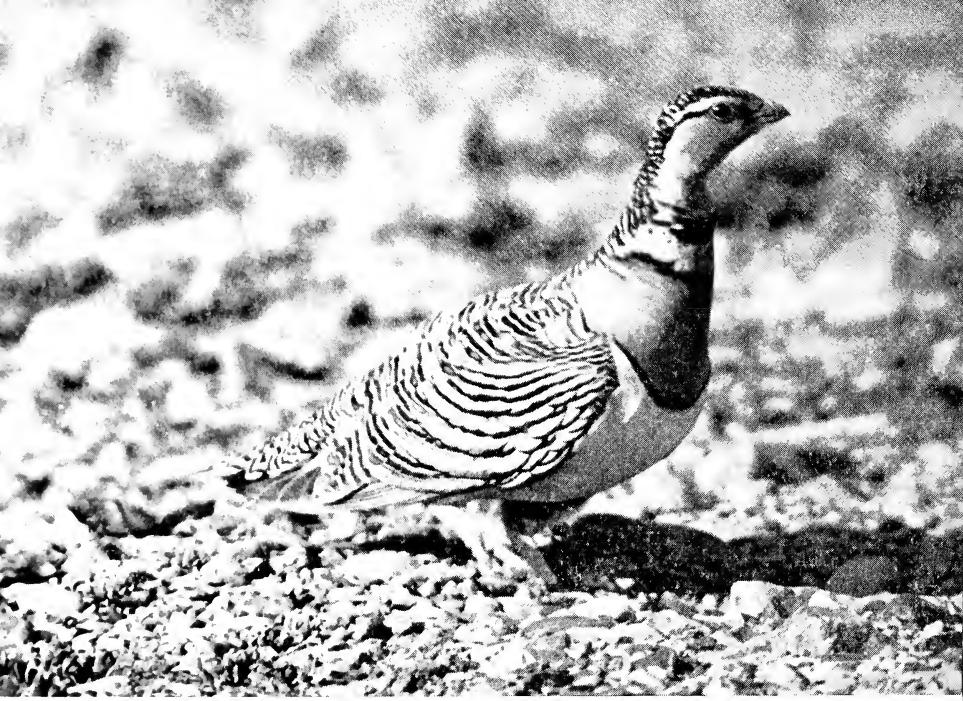
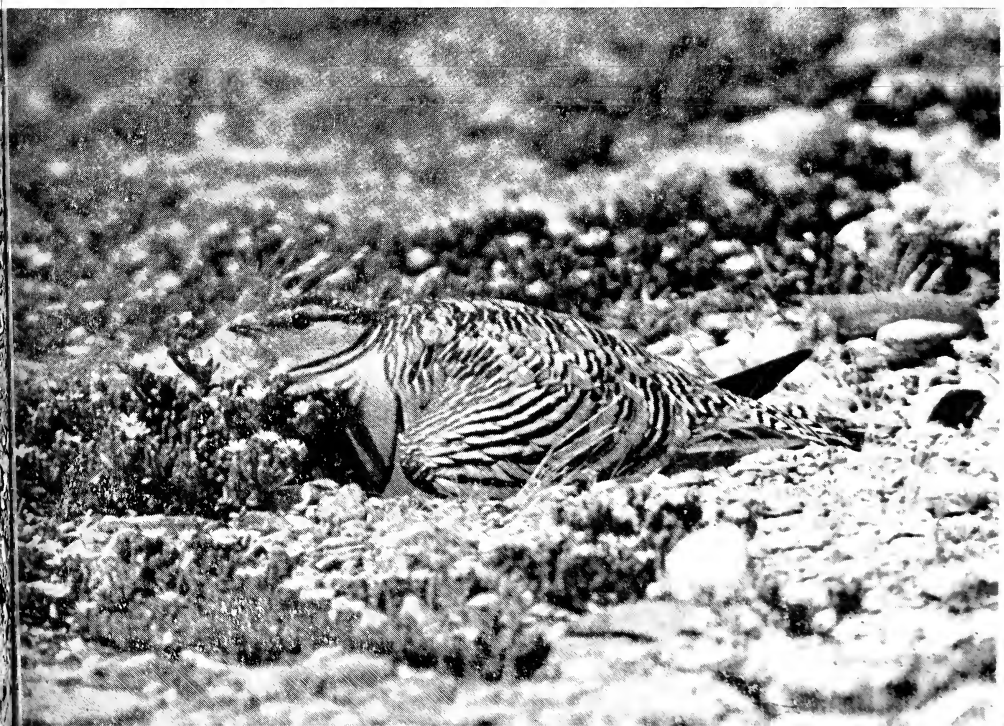


PLATE 73. Female Pin-tailed Sandgrouse *Pterocles alchata*, and her nest and eggs, Jordan, May 1965. This bird has a thinner, more broken neck band and broader white edges to the coverts (page 534). Three is the usual clutch: the eggs are elliptical, glossy, and pinkish-brown with darker markings (page 536) (*photos: Eric Hosking*)

PLATE 74. The same female as in plate 73: above, squatting away from the nest with feathers ruffled as a comfort movement (page 537); below, incubating normally with head down and body flattened. The feathers of the upper-parts are beautifully barred yellow and black, flecked with blue-grey (page 534) (*photos: Eric Hosking*)



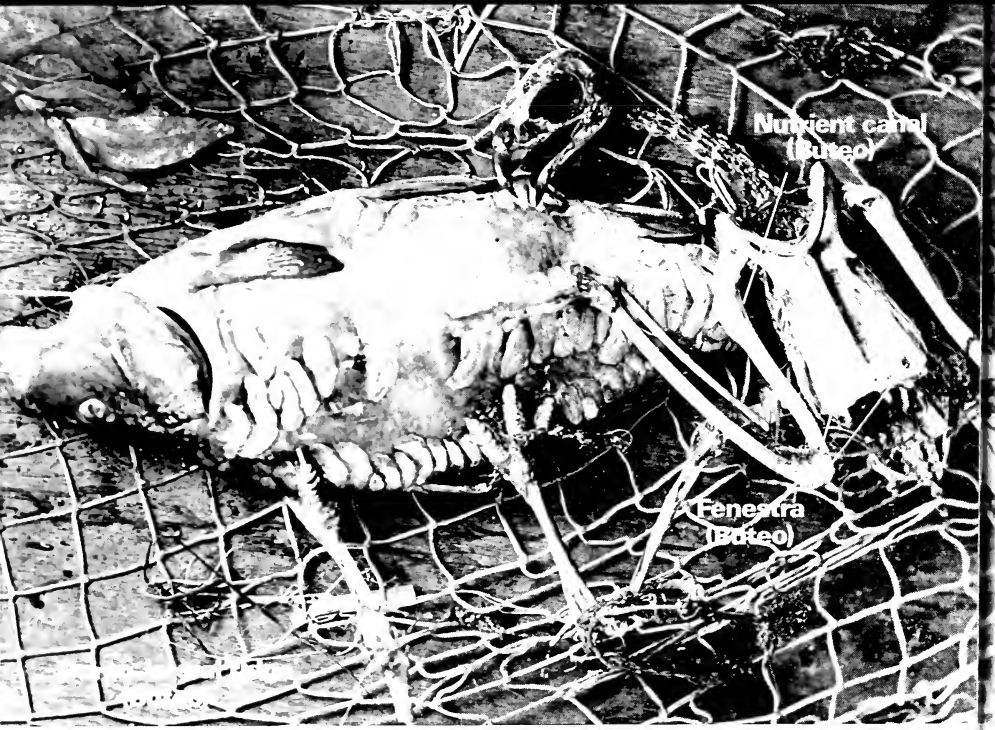
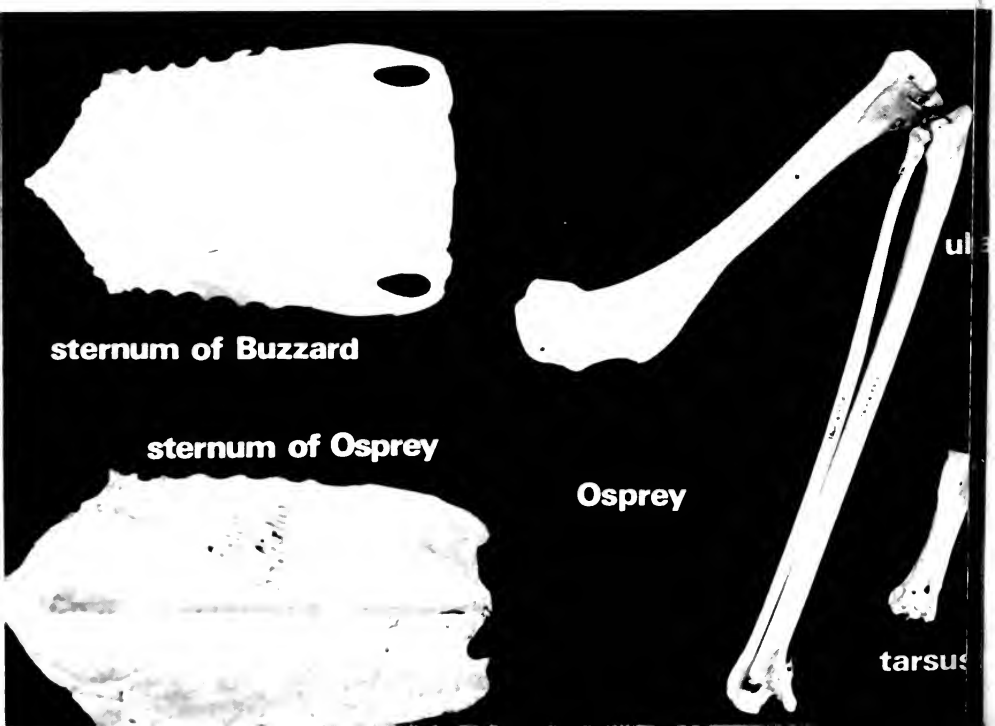


PLATE 75. Above, alleged skeleton of Osprey *Pandion haliaetus* attached to Carp, Germany (*photo: A. Niestlé*). The features marked show it to be a buzzard *Buteo sp.* Compare the two sterna below and the shortness of a genuine Osprey's tarsus in relation to the ulna (pages 542-543) (*photos: British Museum, Natural History*)



few were in spring, 162 (62%) in August (distorted by a large flock in August 1962) and 87 (33%) in September (table 1). Hollom found a September peak and Nisbet an early September one with, again, very few in spring. Table 3 suggests that 1963, 1964 and 1965 were all good years; Ferguson-Lees recorded 1962, 1963 and 1964 as good.

Greenshank *Tringa nebularia*. At Eye Brook in 1958-67 a very small spring passage, chiefly during May. Nisbet recorded a small mid-May peak. Autumn passage spanned July-September, the majority (85%) in August and the first half of September, with a peak (37%) in late August (Table 2). Hollom showed a peak in late August and early September, and Nisbet one in late August. Table 3 suggests that 1958, 1965 and, especially, 1966 were good.

Knot *Calidris canutus*. Of 83 in 1941-67, all months except June, 15 (18%) were in March, 22 (27%) in August and twelve (14%) each in September and November (table 1). Evans recorded emigration of wintering coastal flocks in March, which may explain the March increase in Leicestershire; the autumn peaks in August-September and November may have been due to movements of immigrants. Nisbet observed a mid-September peak, while Evans noted that numbers of Knots arrived in late August and September, building up steadily during the autumn.

Little Stint *Calidris minutus*. At Eye Brook in 1958-67 almost entirely confined to autumn. The majority occurred in September and early October, with a distinct peak (66%) in the second half of September, though exaggerated by a large flock in 1960 (table 2). Hollom showed most passage in September and early October, and Nisbet recorded a September peak. Table 3 suggests that 1959, 1960 and 1967 were good, 1960 being exceptional, and that 1962 was bad; Ferguson-Lees recorded 1959 and 1960 as good, with 1963 and 1964 moderate and 1962 bad.

Dunlin *Calidris alpina*. At Eye Brook in 1958-67 during all months except June. Spring passage occurred from March to May, with an April peak. Brady noted a May influx, while Hinde and Harrison (1949) recorded an inland peak at the end of April and beginning of May. Nisbet showed peaks in March and early May. The autumn migration lasted from early July to the end of the year, flocks from October onwards often staying for long periods; there were three peaks, a small one in late August, a large one in late September and another large one in late October. Brady recorded influxes in mid-July, late September and October; Evans observed a peak in mid-August, with further arrivals in September. Nisbet recorded peaks at the end of July, end of August and end of September. Table 3 suggests that 1964 and 1967 were good, and 1962 exceptionally bad.

Curlew Sandpiper *Calidris ferruginea*. At Eye Brook in 1958-67 passage occurred from August to the first half of October, with a peak in late September, 77% being recorded in that month and 48% in the second half (table 2). Hollom recorded a peak in September, and Nisbet one in the first half of the month. Table 3 suggests that 1959, 1963 and 1967 were good, and 1962, 1965 and 1966 bad; Ferguson-Lees recorded 1959 and 1963 as generally good, with 1962 bad.

Sanderling *Calidris alba*. Of 101 in 1941-67, January and April-November, 66 (65%) were in May, 19 (19%) in August and eight (8%) in September (table 1). Brady and Evans noted flocks in May, late August and September, while Hollom, Hinde and Harrison (1949). Hinde (1951) and Nisbet all reported the May passage inland, and Nisbet recorded autumn passage in late July and mid-September.

Ruff *Philomachus pugnax*. At Eye Brook in 1958-67 reported in all months, but no regular spring passage. Nisbet recorded a May passage. In autumn a steady build-up in July reached a peak in late August and early September, falling rapidly in late September (table 2). Hollom recorded a peak in September. Nisbet and Vine (1956), analysing a large movement in 1953, showed that most arrived during 30th August-1st September. Nisbet recorded a peak in early September. Table 3 suggests that

1958 was exceptional, 1962, 1963 and 1965 good, and 1959 bad; Ferguson-Lees recorded 1962 and 1963 as good.

Black Tern *Chlidonias niger*. At Eye Brook in 1958-67 (excluding 1962, when details were not published) spring passage occurred from mid-April to early June, the actual peak being highly variable: in early May in 1961, 1965 and 1967, in late May in 1959 and 1966, and in June in 1963. Autumn passage extended from late June to late October, with a peak from mid-August to mid-September (table 2); a smaller peak in early July may have been caused by movements of unsuccessful breeding birds in some years.

Common/Arctic Tern *Sterna hirundo/paradisaea*. At Eye Brook in 1958-67 (again excluding 1962) spring migration lasted from mid-April to early June; as with the previous species the timing of the peak was variable, but most records were in late May. Autumn passage was extended, with two peaks in late August and late September (table 2). This may indicate a difference in the migration times of the two species.

Little Tern *Sterna albifrons*. Of 67 in 1941-67, April-October, 22 (33%) were in May and 33 (50%) divided between August and September (table 1). Hollom recorded a September peak.

Sandwich Tern *Sterna sandvicensis*. Of 78 in 1941-67, April-October, 20 (26%) were in May and 34 (44%) in September (table 1), the autumn movement appearing more contracted than in the Little Tern.

DISCUSSION

Leicestershire, in central England, lies in the Trent river system, its northern boundary following the River Trent, and a tributary, the River Soar, flowing roughly north-south through the county. Eye Brook Reservoir is on the south-east boundary, in the Welland river system. If moving waders follow major rivers from the coast, it seems likely that those seen in Leicestershire are coming from both the Humber and the Wash. The timings of movements shown in the present analysis are in general agreement with earlier published studies of inland migration and with coastal observations from north-east England.

In Leicestershire during 1941-67 the spring migrations of waders and terns were generally very small. As well as being in smaller numbers, the birds possibly migrated faster than in autumn, while some species (Green Sandpipers, for instance) may have taken a more easterly route. On the other hand, the spring movements of Grey Plovers, Turnstones and Sanderlings were more extensive than those in autumn, while Black and Common/Arctic Terns also often occurred in larger flocks in spring, though their peak passage then was usually very contracted.

The autumn movements were not only more extensive, but involved more species. The earliest autumn migrant was the Redshank, with a peak in late July; at Cambridge the peak for this species came earlier, at the end of June and in early July (Nisbet 1957), but in Northumberland not until late August (Brady 1949, Evans 1966), the reasons for these differences being unknown. Most of the waders, including Oyster-

catchers, Whimbrels, Black-tailed Godwits, Green, Wood and Common Sandpipers, Greenshanks and Sanderlings, showed August peaks through Leicestershire. The peaks for Ruffs and Black Terns extended from mid-August to mid-September. Later migrants, with September peaks, were Bar-tailed Godwits, Little Stints and Curlew Sandpipers. Ringed Plovers and Common/Arctic Terns both had bimodal peaks which may have been due to the movements of populations of different origins (and possibly to the movements of the two different species in the case of the terns, though there is no information on this point). Dunlins showed a trimodal peak in all these studies: a July peak recorded by Brady (1949) in Northumberland and Nisbet (1957) at Cambridge was not reflected in Leicestershire where, however, there was a distinct peak in late October.

Inland movements of waders and terns represent a relatively small proportion of the total migrating population, but it is suggested that it is a fairly constant proportion. In that case, regular inland counts could be used as an index to the movements of waders and terns through Britain each year. In the present study, relative abundance (of waders only) was calculated in an attempt to overcome the problem that various factors influence the numbers observed at inland sites. The actual population of each species migrating is of obvious importance. The numbers recorded also depend on the amount of exposed mud at the site: in a year of high rainfall there is little exposed mud and most waders fly over undetected, thus making absolute annual totals difficult to compare. The validity of relative abundance depends on the presumption that the factors determining whether a wader will stop at an inland water or not are the same for all species. It also requires that all species be counted on each day of observation (which appears to be true for Eye Brook Reservoir). It does not require that the same number of days of observation be used in each year, provided, of course, that counts are made fairly frequently throughout the period.

The greatest objection to the use of relative abundance must be that the area of available mud may fluctuate during the period of a single migration season. For example, a shortage of mud early in the season, when Redshanks and Common Sandpipers are passing through, and a fall in water level in September, during the passage of Curlew Sandpipers and Little Stints, might give undue bias to these latter species. A correction factor for the extent of feeding area would be difficult to apply. The relative abundance estimates for a single inland locality might then be worthless. Short-term fluctuations in the levels of inland waters tend, however, not to be synchronous. When one water-level is high, often deliberately maintained by a water authority, a neighbouring site may have much exposed mud. Sewage farms and gravel pits do not fluctuate in the same manner as reservoirs. If an index of relative abundance could be calculated from the totals at a number of

localities, the inaccuracies due to fluctuations in potential feeding areas at individual waters during the season might be cancelled out.

The advantages of using inland waters are several. Many are watched almost daily during the summer and early autumn, with waders the prime interest. These birds are in relatively small numbers and concentrated around a distinct edge, where they can be counted with a high degree of accuracy. Indeed, as at Eye Brook Reservoir, these counts are made and recorded by a large number of observers without prompting. Counts made on estuaries and other areas of high wader density are subject to a very large degree of error, and the picture in these coastal areas is further complicated by local daily movements caused by tides. It would seem that a better index of populations of waders moving through Britain each year could be obtained by pooling the total of a number of inland localities in the manner indicated than by attempting counts in areas of high wader density.

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SUMMARY

The Leicestershire records of 21 species of waders and five of terns were examined, the less common species for a period of 27 years (1941-67) and the more numerous ones for ten years (1958-67) at a single locality. The timing of peak movements agreed fairly closely with those recorded in the literature. An index of relative abundance was devised and its advantages over absolute counts in evaluating annual fluctuations in wader numbers is discussed.

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Studies of less familiar birds

156 Pin-tailed Sandgrouse

I. J. Ferguson-Lees

Photographs by Eric Hosking and Carlos Melgarejo

Plates 72-74

The sandgrouse (Pteroclididae) are an African, south Asiatic and marginally European family of 16 species in two genera: 14 in *Pterocles* and two in *Syrrhaptes* (which has no hind toe, feathered feet, and tarsi covered at back as well as front). They are usually placed with the pigeons in the Columbiformes, but this is surely a false relationship suggested by the convergent evolution of anatomical characters and inaccurate observation of behaviour (see later). Indeed, Maclean (1967) has proposed, on behaviour and egg-albumen studies, that the sandgrouse be included in the Charadriiformes, in their own suborder Pterocli close to the Charadrii (waders). They are plump, terrestrial birds with a superficial resemblance to partridges. On the ground their carriage is nearly horizontal (plate 72b) and they walk quite fast with a clumsy waddling gait on short legs. In the air, on the other hand, their rapid flight recalls Golden Plovers *Pluvialis apricaria*, though their long, pointed wings seem set too far forward owing to the disproportionate silhouette of a small head, a retracted neck and a long or very long tail. Their bodies are cryptically coloured to blend with the arid habitats in which they live, but they tend to have distinctive patterns on the head and under-parts, and the upper-parts barred, spotted, flecked and marbled with olive, yellow, buff, brown, grey, blue, purplish and black.

Pallas's Sandgrouse *S. paradoxus* is the only species ever recorded in Britain, and several were reported in 1969 (*Brit. Birds*, 62: 452-453). Two other sandgrouse, the Black-bellied *P. orientalis* and the Pin-tailed *P. alchata*, have limited ranges in south-west Europe, however, and the latter is the subject of the photographs on plates 72-74. In Europe the Pin-tailed breeds only in Portugal, Spain and the extreme south of France. Otherwise its range extends across north Africa from Morocco to Libya and across south Asia from the Syrian and Arabian deserts through Iraq and Iran to Turkestan and Afghanistan (see Vaurie 1965). The Afro-Asian race *P. a. caudacutus* is distinguished from the typical form of south-west Europe by paler coloration and broader white edges to the coverts, particularly of females (compare plates 73-74 with 72). Throughout much of its range the Pin-tailed is the commonest sandgrouse, sometimes occurring in vast flocks of several thousands. The species is mostly sedentary, but some wander south in winter, particularly to north-west India. The numbers in any area also vary greatly from year to year with availability of food and water. Vagrants have straggled to Italy, Sicily, Malta and Cyprus, but not north of the breeding range in Europe.

Although less bulky than the Black-bellied Sandgrouse, the Pin-tailed is brought to 12½ inches by its greatly elongated central tail-feathers (partly visible in plates 72b and 73a). Its most striking feature otherwise is the pattern of the under-parts, described for the female on plate 72; the male is more brightly coloured with a black patch on the throat in winter (becoming mottled with white in summer) and lacks the thick and rather broken black band down the sides of the neck and across the lower throat. The upper-parts of the two sexes are also very different: whereas the female is barred with yellow and black and flecked with blue-grey (plate 74b gives the best impression) and her wing-coverts are white fringed with black (especially plate 73a), the male has a grey crown, an orange-yellow face, rich chestnut wing-coverts and a barred rump and tail. His mantle, back and scapulars are mottled olive-yellow in winter, becoming more cryptically barred with yellow and black in summer. In having differently coloured upper-parts and throat in winter and summer (though the change from one to the other is not always complete), the male Pin-tailed is unique among sandgrouse. In flight both sexes also show conspicuous white under-wings edged and tipped with black. In general, however, plumage characters are of little value in identifying distant or high-flying sandgrouse and the sounds they make are of more help: fortunately, they call frequently in flight and the Pin-tailed has a particularly loud and distinctive 'catar-catar'.

The Pin-tailed Sandgrouse occurs in a wider range of habitats than some of the other species. In Europe it overlaps with the Black-bellied in such semi-desert areas as stony plateaux and dusty plains,

as well as at the edges of cultivation, but it is typically more of a desert bird in north Africa and south-west Asia. There it is found in a variety of sites from areas of scattered tamarisk, *Retama* and other bushes, and patches of wretched cultivation in the dried-out flashes of the winter rains, to the 'hammada' of limestone chips with or without scattered xerophytic plants and other dwarf vegetation (plate 74) and totally barren hard-baked clay or flat sand. On the other hand, it also nests around marshes where the receding water has left dried mud and sometimes a good cover of grass and bushy vegetation, as in the Spanish 'marismas' (plate 72). Like most sandgrouse, the Pin-tailed is entirely vegetarian, feeding mainly on the seeds of chenopods, grasses and other wild plants, and grain, and occasionally taking shoots and green leaves. In some areas it regularly picks seeds from the droppings of camels. It also swallows much grit, quartz and sand: 'sometimes one-third in weight of stomach content' (Meinertzhagen 1964).

Although so well adapted to desert conditions, sandgrouse must have regular access to water and this has resulted in the evolution of some remarkable behaviour. First, however, it is neccessary to understand the general pattern of breeding. The winter flocks of Pin-tailed Sandgrouse start to break up in late March and early April, and the gradual separation into pairs continues in May. The start of nesting varies from season to season as a result of temperature and winter rainfall, and in an early year the first clutches are laid from late (or even mid) April, but the normal peak in north Africa, the Middle East and south France is from the second week of May through to late June, though egg-laying continues into August (Guichard 1961, Marchant 1961, 1963, Meinertzhagen 1954, personal observation, etc.). Two broods have been recorded in captivity (Meade-Waldo 1906), but it is not known whether fresh clutches in July are second broods or replacements (Marchant 1961). Like other sandgrouse, this species is strongly gregarious out of the breeding season and for drinking purposes, and often several pairs nest quite close together in loose groups, but many others are more isolated. Little has been recorded of display postures, but I have twice watched a male following a female, both of them walking deliberately with heads held low and tails raised and partly fanned. This seems to be similar to what Maclean (1968) described as 'strutting' in the Namaqua Sandgrouse *P. namaqua* of southern Africa and which he suggested might be connected with pair formation.

The Pin-tailed Sandgrouse nests I have seen have been shallow scrapes 10-12 cm across, 1-4 cm deep and devoid of any lining (plate 73b) apart from wind-blown material. Marchant (1961), however, emphasised that 15 out of 23 nests he found were in unaltered hoofmarks, probably all of camels, 'up to three inches or so below the

general surface': it proved worthwhile to follow a line of hoof-marks across the desert because 'somewhere along it' he often came across a nest. Even where a sandgrouse makes its own scrape, it does not show the same tendency as many other desert birds to locate it beside a shrub: although some nests may be shaded for part of the day (plate 72a), most are entirely exposed to the full sun (plate 74b).

Like all other sandgrouse so far studied, the Pin-tailed seems almost invariably to lay three eggs and, despite the statements of a number of authors (e.g. Meinertzhagen 1954), clutches of two are probably rare in normal conditions. For instance, Marchant (1963) found that 23 out of 24 complete clutches in Iraq had three eggs, although he also quoted a report from B. L. Sage that all the nests he saw in that country held two eggs, so there may be local variation due to food or climate. All sandgrouse eggs are elliptical and rather shiny, and those of the Pin-tailed vary from stone or pale brown to pinkish, with smears and blotches of dark or reddish brown and underlying grey (plate 73b); Hüe and Etchécopar (1957) gave maximum and minimum measurements of 30 eggs as 50 × 31 mm and 42 × 29.5 mm. Maclean (1968) found that Namaqua Sandgrouse generally lay at 24-hour intervals and Meade-Waldo (1897) stated that Pin-tailed eggs are laid 'with the interval of a day between each'. Marchant (1961) pointed out that the latter statement is ambiguous, however, and produced evidence to suggest that there may sometimes be 48 hours between eggs (i.e. a clear day's interval). Eggs seem to be laid in the first half of the day, but not particularly early.

The male Namaqua Sandgrouse covers the nest from the first egg until the clutch is complete (Maclean 1968), but in the case of the Pin-tailed Sandgrouse Marchant (1961, 1963) concluded that until the last egg is laid it is the female who broods by day only, though often accompanied by the male. Moreover, Guichard (1961) found that in France the female began incubating with the first egg while the male stood guard at about 100 metres; that she left the nest unattended while feeding and drinking with the male for periods of about half an hour; and that the different stages of development in the three eggs of one clutch suggested a prolonged hatching period. These French observations are completely at variance, however, with those from the Middle East and Africa, and with others on captive birds.

In the first place, both sexes of most, if not all, sandgrouse have brood-patches and, once the clutch is complete, they incubate in turns, the female by day and the male by night (Meade-Waldo 1897, 1906, St Quentin 1905, Marchant 1961, Maclean 1968, etc.). In Iraq Marchant found that the female Pin-tailed sits from about 08.00 to 18.00 (ten hours) and the male from around 18.00 to 08.00 (14 hours). Incubation is certainly continuous in hot desert conditions and various authors have suggested that this is necessary to prevent the eggs from

being baked. On the other hand, Bannerman (1959) quoted P. Sushkin's belief that the embryo development of Pallas's Sandgrouse was helped by the sun. Perhaps there are differences according to latitude and temperature, in which case the European race of the Pin-tailed may, as suggested by Guichard's observations, behave rather differently. The more cryptic summer plumage of the male Pin-tailed raises the possibility that he may take a greater share by day (see also Meinertzhagen 1954). I know of no such evidence, however, and only rarely in the Middle East does he come near to the nest by day once the clutch is complete (not even the 100 metres of Guichard).

The female Pin-tailed Sandgrouse generally incubates with head low and body flattened (plate 74b), usually facing into the wind. She may raise her head and neck into an upright posture if suspicious and she will sometimes ruffle her feathers (plate 74a) as a comfort movement or flutter her throat as a means of cooling. (Sandgrouse also have thick undercoats of downy feather bases which may act as a protection against solar radiation.) At least in desert areas she does not normally leave the nest by day unless disturbed. If a man approaches on foot, she usually bobs her head (a common action before running or flying) and then walks or runs from the nest when the intruder is 100-200 yards away, but she may sit very tight when the eggs are near hatching and will allow the approach of a car to within a few yards. Then she may fly up with a loud clatter, accompanied by the male if he is anywhere near, or run off with dragging wings, spread tail and a high-pitched croaking churr. Nest relief does not seem to include any ceremony. Marchant (1961) found that the male alighted 20-300 metres from the nest, that the female flew directly from the eggs when he was still up to 60 metres away, and that he settled on the nest 3-15 minutes later, staying there all night (as Marchant proved once by keeping a continuous watch from his car). In the mornings the female landed 200-300 metres away and then took 6-28 minutes to run to the nest; before departing, the male usually waited at a distance of about one metre until the female was settled.

Meade-Waldo (1906) gave the incubation period as 21-23 days for captive Pin-tailed, but, on incomplete evidence from one nest, Marchant (1961) suggested that it might only be 19-20 days in the wild. The eggs hatch on the same day or over a period of 48 hours or more (suggesting variation in the regularity of incubation while the clutch is incomplete) and the adults carry off the shells. The cryptically coloured young leave the nest as soon as they are dry, within 12-24 hours, and are able to feed themselves from then on; this is very different from young pigeons, of course, nor are young sandgrouse fed or watered by regurgitation as stated by Meinertzhagen (1964). They feed entirely on minute seeds: Maclean found that a week-old Namaqua had 1,400 such seeds in its crop. They seek the shade of

shrubs in the heat of the day, but otherwise follow their parents closely at first; often only two survive and each then tends to follow one parent. Apparently they soon become independent, though they still remain loosely with the adults and must rely on the male for water (see later). Maclean found that at three weeks young Namaqua were almost fully feathered and used their wings to balance when running from danger; at four weeks they could fly a few yards and at six weeks they were capable of full flight. Young Pin-tailed can fly quite strongly when 'feathered and a third to a half grown' (Marchant 1961). During fledging there is an increasing tendency for families to join and adults to flock. In their first autumn young Pin-tailed are mainly yellowish-buff with dark crescentic markings on upper-parts and breast, and the belly is white with a few black bars, but they assume full adult plumage within a few months.

So far the importance of water has been mentioned only briefly. Sandgrouse, and their young, must normally drink at least once a day and this is most commonly from one to three hours after sunrise, the times varying somewhat between species. Some may then drink again in the evening from one to two hours before sunset, especially in hot weather. In the breeding season the pattern is set by the incubation behaviour and, again, has been best studied by Maclean (1968) for the Namaqua Sandgrouse. Then the first flights to water in the morning consist largely of females which feed and drink before relieving the males at the nests. The second wave involves chiefly males which afterwards return to the general area of their nests to feed. Following a period of inactivity in the heat of the day, the males then feed again before relieving the females who, having been exposed to the full sun for some ten hours, often fly to drink once more before returning to the vicinity of their nests for the night.

Sandgrouse flying to water gather in flocks first and are joined by others as they go. Where they are common, therefore, hundreds or even thousands will fly to a large oasis in a steady stream of smaller parties. They are conservative about their drinking sites and become confused if the normal place is unavailable through disturbance, drought or flooding (Meinertzhagen 1960). The longest flights to water recorded by Meinertzhagen (1964) were 38 miles 'at a rate of a little over 40 miles an hour' and Maclean (1968) similar recorded Namaqua Sandgrouse travelling up to 40 miles at 45 miles an hour. This maximum of about an hour's flight would thus involve an absence of two hours from the nest area. Sandgrouse call continuously on their way to drink, presumably thereby attracting others to join the flight, but are more silent on the way back.

Sandgrouse are often stated to drink like pigeons by sucking or pumping the water up through the immersed bill in one continuous draught (e.g. Meinertzhagen 1964) and this has been one of the reasons

for regarding the two families as closely related. It has now been established, however, that at least four species of sandgrouse, including Pin-tailed, drink by taking in a short draught and then raising their heads to swallow like most other birds (Cade, Willoughby and Maclean 1966 and personal observation). Sandgrouse usually drink for less than half a minute (often only five to ten seconds) before flying straight up and away, but in that time they take five to 20 or more sips totalling 5-30 ml in the cases of Namaqua and Burchell's Sandgrouse *P. burchelli* (Cade, Willoughby and Maclean) or up to a 'cup' (about 150 ml) in Black-bellied (see Salt and Zeuthen 1966). The normal morning intake appears to be around 15% of the body weight (Maclean 1968). Sandgrouse seem very vulnerable to predators while drinking (Meinertzhagen 1959, Cade 1965): they are especially alert then, often circling before landing and watching before entering the water, and the whole process is very hurried.

The most remarkable part of the drinking behaviour of sandgrouse is their method of supplying the essential water to the young. At the end of the 19th century Meade-Waldo (1896, 1897, 1922) first described how, as soon as the young were out of the nest twelve hours after hatching, the males of captive pairs of Pin-tailed (51 pairs during 1895-1915), Chestnut-bellied *P. exustus* and Black-bellied Sandgrouse would rub their breasts on the ground until the feathers were awry and then saturate these by standing in their drinking water before running back to the female and young, whereupon the latter would run out and suck the water by running the feathers through their bills—'the appearance being that of a mammal suckling her young'. Meade-Waldo's observations were borne out by St Quentin (1905). Yet for 70 years, although many people saw male sandgrouse wetting their feathers at water holes, it was doubted that water could possibly be carried thus to the young in the wild. Even within the last 15 years Hüe and Etchécopar (1957) wrote that 'cette théorie relève du domaine de la fantaisie' and Meinertzhagen (1964) categorically stated 'that is not so'.

In 1960-61, however, Marchant (1961, 1962) watched both Pin-tailed and Spotted Sandgrouse *P. senegallus* watering their young thus: the male came back 'flying awkwardly and not with its normal ease. As soon as it landed, it walked to where the chick was with a waddling, open-legged gait and not in the usual manner in which each foot appears to be placed more or less in front of the other'. The chick or chicks would then run to the male who 'stood erect and the young nestled around and below him, with heads inwards, like a litter of suckling puppies'. They remained in this position for one to three minutes during each of four separate observations. Two Pin-tailed broods were 'three-quarters grown and well able to fly'.

Then Cade and Maclean (1967) confirmed this behaviour in detail

with Namaqua Sandgrouse in the Kalahari Desert and they also studied the feather soaking of both this species and Burchell's Sandgrouse. After rubbing the abdominal feathers on the ground, probably to 'de-oil' them, the male squats in the water with feet crossed and rocks his body 'in short, rapid bursts of five to six rocks at intervals varying from a few seconds to a minute or more'; head and tail are held high and the body is lifted so that only the tips of the feathers touch the water. The soaking process lasts from a few seconds to more than 15 minutes: 'Some individuals . . . appear to be in a kind of dazed or trance-like state, similar to that often seen in sun-bathing or anting birds . . .' Cade and Maclean's description of the behaviour when the male returns to his family is similar to Marchant's, but they were able to see that the young clustering round the male's belly 'take the wet feathers in their beaks, and remove the absorbed water by a "stripping" motion'. Young Namaqua do not themselves fly to water until almost two months old (Maclean 1968) and so this daily process is presumably continued for some four weeks after they take their first flights.

Cade and Maclean then studied the structure of the belly feathers, which are slightly curved and unusually long in relation to their breadth. They found that these have specialised barbules whose structure is unlike that recorded for any other species. The barbules on the proximal four-fifths of each feather have no hooks or grooves, but are coiled into spirals terminating in straight hair-like tips. The spirals intertwine to form a network that is 'very resistant to mechanical disruption'. On contact with water, the coiled barbules spring open and project their hairy tips. Water is held 'in this meshwork by interfacial tension, and possibly also by capillarity'. After the water evaporates, the coils spring back to form a strong web. The feathers retained their structure after repeated wetting and stripping with the fingers, whereas belly feathers of other birds and other feathers of sandgrouse quickly became frayed and matted. These specialised belly feathers are a feature of all but one of the 16 species of sandgrouse, the exception being the high montane Tibetan Sandgrouse *S. tibetanus* which breeds at 12,000 to 16,000 feet and apparently does not fly to water as regularly as the others; it seemingly has a greater need for insulation than water-carrying and has soft, downy belly feathers.

Finally, Cade and Maclean also investigated the water-holding capacity of sandgrouse feathers. The belly feathers of the males of four species were found to hold 15-20 times their own weight (two or three times as much as a paper towel or the corresponding feathers of other birds tested) and those of the females about 11-13 times. The females' feathers have the same structure as the males', but the area of specialised barbules is smaller and they have a more developed

downy part at the base. In this connection, female sandgrouse do sometimes soak their belly feathers in the same way as the males do and it seems likely that they will occasionally transport water to the young, but probably only if the male is dead or injured. A male sandgrouse can hold 25-40 ml of water (about a sixth to a quarter of a cup) in his belly plumage, and, allowing for different rates of evaporation according to temperature and humidity, Cade and Maclean calculated that he should be able to deliver 10-18 gm (= ml) for a distance of 20 miles in the early part of the morning when air temperature has not yet reached a maximum and humidity is still likely to be high from the night-time effect of cooling and condensation.

This dependence on water, and particularly the amount that may effectively be carried to the chicks, must limit the areas in which sandgrouse can nest. In some parts, however, the sinking of wells and bore-holes has probably made extensions of range possible.

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Notes

Alleged skeleton of Osprey attached to Carp In October 1968 we published a photograph showing the supposed skeleton of an Osprey *Pandion haliaetus* attached by its embedded talons to the body of a Carp *Cyprinus carpio* (*Brit. Birds,* 61: 465, plate 58a). Doubts were subsequently raised, however, which led to prolonged further enquiries, and it has since been established conclusively that the skeleton in the photograph was not an Osprey, but a buzzard *Buteo sp.* Moreover, it seems unlikely that the assumed preceding events described to us, of which a translated summary appeared in the previous note, could have taken place. By permission we publish below a statement on the relevant anatomical issues by G. S. Cowles, of the British Museum (Natural History), and plate 75 reproduces the original photograph and another to illustrate the differences between *Pandion* and *Buteo.* We are indebted to Mr Cowles and to several German ornithologists, particularly Dr E. Bezzel and Dr Wolfgang Makatsch, for their help in calling attention to the misidentification and investigating the circumstances. We must also apologise for our incautious acceptance of this record, which should now be deleted. THE EDITORS

There are several good anatomical characters which show that the skeleton in the photograph (plate 75a) was not that of an Osprey *Pandion haliaetus.* First, in *Pandion* the sternum is never fenestrate, the posterior part is narrow, the central keel extends fully to the posterior edge and this edge is also more deeply notched; the fenestrae, flared posterior part, short central keel and nearly straight posterior edge are all features of *Buteo* (compare the sternum in plate 75a with those of a Buzzard *B. buteo* and an Osprey in plate 75b). Second, the tarsometatarsus (= tarsus) is short and robust in *Pandion* and the ulna is at least $3\frac{1}{2}$ times its length, whereas plate 75a shows the ulna to have been only twice as long as the tarsus (again compare with plate 75b where the tarsus and ulna of an Osprey are illustrated). Third, the rear view of the tarsus nearer the head end of the fish in plate 75a shows a 'rolled' lateral ridge running the length of the bone, but this is not a feature of *Pandion* and also no hypotarsus is present as there should be. Fourth, the right humerus in plate 75a shows the nutrient canal distinctly, but this would not be visible in *Pandion.*

Apart from these anatomical characters, other features in plate 75a should also be noted. One of the two feet embedded in the fish has been turned through an arc of 180° (note the hind toe visible nearer the head end and the three front toes nearer the tail end), but it is impossible for a bird to strike with its feet diametrically opposed. When macerated in water, the ligaments of a carcass soften and

without care the specimen becomes disarticulated. The suggestion that this bird of prey remained attached to the back of a live fish until the flesh decomposed to the extent shown in plate 75a is very surprising. If true, one would be lucky to find even the tarsi remaining attached to the fish, and certainly not the complete skeleton. It is also surprising to see the rhamphotheca of the beak still present, for this quickly becomes detached in water.

To sum up, it is evident that the skeleton was not an Osprey, but a buzzard. In my view, the skeletal state was not the result of maceration in water while attached to the fish, but was produced by the natural activity of insects on land or a high tide line. Also, it would seem that at least one foot was implanted into the fish artificially after the latter's death.

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Multiple copulation by Black-headed Gulls On 4th May 1969 I was watching Black-headed Gulls *Larus ridibundus* from a hide in the gullery at Needs Oar Point, Hampshire. Birds were mating all over the colony, and one pair started to copulate on a patch of shingle immediately in front of my hide, on the fringe of the nesting area. This pair was surrounded by resting gulls (off-duty and non-breeding) which became very excited by its activities. One of them mounted the copulating male and then another mounted the back of the third, making a column of four with the top three each apparently trying to mate with the one underneath. The original pair showed no reaction at all to the intervention of the other gulls, and after several seconds the column broke up.

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Professor N. Tinbergen informs us that he has never observed any comparable behaviour during his studies of Black-headed Gulls. He adds that one cannot assume that the third and fourth birds were males from the fact that they actively mounted, because occasional reversals of the role do occur in some animal species and conceivably in gulls too. Eds

Blackcap mimicking song of Lesser Spotted Woodpecker On 11th May 1969, near Bath, Somerset, I heard a fairly loud 'pee-pee-pee-pee-pee' call which, by the rhythm and pitch, I thought was the song of a Lesser Spotted Woodpecker *Dendrocopos minor*. I was surprised to discover, however, that the sound was coming from a male Blackcap *Sylvia atricapilla*. During each burst of this song it held its head upward, slightly drooped its wings and frequently flicked its tail, while its whole body vibrated rather like that of a Wren *Troglodytes troglodytes*

in full song. This distinctive utterance continued throughout the remainder of May and for the first two weeks of June; not once was the bird heard to sing normally or seen with a female Blackcap, although it was also watched by a number of other observers. A recording was made by A. D. Lucas.

Twelve species known to have been mimicked by the Blackcap were listed by Eliot Howard (1907-15, *The British Warblers,* 1: 77) and others since have included Nuthatch *Sitta europaea*, Blackbird *Turdus merula*, Willow Warbler *Phylloscopus trochilus*, Pied Flycatcher *Ficedula hypoleuca* and Chaffinch *Fringilla coelebs*. I cannot, however, trace any reference to a Blackcap mimicking the song of a Lesser Spotted Woodpecker.

R. M. CURBER

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Spotted Flycatcher catching rose petals In August 1969 a pair of Spotted Flycatchers *Muscicapa striata* nested in a climbing rose in my garden at Chew Stoke, Somerset. During incubation the male often fed the female on the nest in the usual way. I also frequently saw what I assumed to be the male (though, as both sexes incubate, I could not be certain) catching the falling rose petals; these were light yellow and about the size of a small butterfly. He took each to a perch, nibbled it and then discarded it, but never carried one to the nest. I did not otherwise see this pair try to catch a butterfly, only flies and small moths.

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Reviews

Handbook of the Birds of India and Pakistan. By Salim Ali and S. Dillon Ripley. Oxford University Press, Bombay. Vol 1 (1968): 380 pages; 18 colour plates; many line-drawings and maps. 95s. Vol 2 (1969): 345 pages; 13 colour plates; many line-drawings and maps. 88s.

In few inhabited parts of the world is the presence of birds as obtrusive as in the 'sub-region' of India, Pakistan, Nepal, Sikkim, Bhutan, Ceylon and the oceanic islands on the east and west of the Indian peninsula. Excepting those which have come to be regarded as 'game', they are unmolested in this vast area and so it is common to find, for example, a dozen species of waders in the borrow-pits along a crowded main road or sharing a pond with herdsboys and their livestock. For the majority of visitors and an increasing minority of 'locals' whose interest is thus aroused, Hugh Whistler's *Popular Handbook of Indian Birds* (1949, 4th ed) and Sálim Ali's *Book of Indian Birds* (1961, 6th ed)

are the only recent guides and, as they cover less than a third of the species of the region, they have badly needed the backing of a comprehensive reference book, more up to date than E. C. Stuart Baker's *Fauna of British India: Birds* (1922-30).

The need is now approaching fulfilment with the publication of the first two volumes of this new ten-volume handbook. The work could not be in more experienced hands than those of Dr Sálim Ali and Professor Dillon Ripley. Although, in acknowledging as their model *The Handbook of British Birds,* they say that 'information in most topics of the life history and ecology of Indian birds—even of distribution—is as yet quite elementary compared with that in the British Handbook', the wealth of data they have assembled is remarkable and—what is only a little less valuable—the way is at last clearly signposted for filling the gaps. The introductory section of volume I includes a history of Indian ornithology and accounts of migration, zoogeography and systematics. It is interesting that of the 176 *endemics,* out of a total of 1,060 species ascribed to the sub-region, only about 18% have affinities with the Palearctic avifauna, as compared with over 60% with the south-east Asiatic. But in these first two volumes, which follow the Wetmore order and end with the diurnal raptors and waders respectively, at least 40% of the 434 species and races described are of direct interest to the student of British birds.

Descriptions closely follow the British model, including consecutive numbering of all forms, so that, for instance, 17 goshawks and sparrowhawks swell the total although they represent only seven species. This has the disadvantages of repetitiveness and of attaching overmuch importance to races, and it might have been preferable to restrict accounts of subspecies (other than that about which most is known) to a tally of differences in morphology and habits. The main departure from the British *Handbook* is the omission of detailed descriptions of plumage (except in a few special cases), their place being taken by a 'Museum diagnosis', which includes references, measurements and the colour of bare parts (a more sensible phrase than the traditional 'soft parts').

In general, there is quite enough information to ensure correct identification in the hand or in the field and this is facilitated by a liberal ration of colour plates and drawings. The former are contributed by six artists, Paul Barruel, C. J. F. Coombs, D. V. Cowen, D. F. Harle, G. M. Henry and A. M. Hughes, all in their various styles pleasing. The last mentioned are reprinted from B. E. Smythies's *Birds of Burma* (1953, 2nd ed), which leads to an occasional anomaly, and the arrangement of plates is also a little confusing, some species being depicted in one volume, but described in another. Nevertheless, cross-referencing from text to plates is very adequate.

These minor flaws and an inevitable tendency for one or two heads

of information to be already out of date—notably 'Extralimital distribution' which largely follows J. L. Peters's *Check-List of Birds of the World* (though often also supplemented by excellent maps) and which, for example, rates the Osprey as breeding in 'Scotland (formerly)'—scarcely detract from the overall value of this work. Particularly useful, and often entertaining, are the accounts of 'General habits' of species the authors know well, while the 'bringing to book' of numerous interesting records of the last two or three decades—such as that of the first observed occurrence of the Red Kite in India (over 50 together) or the first breeding of Avocets (about 1,000 of them), both in the Rann of Kutch in 1945 and both by Sálim Ali—will be a boon to all future observers and students.

HUGH F. I. ELLIOTT

Letters

Reassessment of rejected rarities As ornithological recorder for vice-county 64 (Yorkshire, West Riding North), I read with interest the letters from P. J. Oliver (*Brit. Birds,* 62: 43-44) and Dr Estlin Waters (*Brit. Birds,* 62: 289-290). I fully agree with the points made in the editorial accompanying the former and certainly with the reassessment of the Pallas's Sandgrouse *Syrrhaptes paradoxus* in Kent in 1964.

As the editors point out, greater scrutiny should be given to a winter record of a Willow Warbler *Phylloscopus trochilus* than to one of a Chiffchaff *P. collybita.* Allied to this difference in treatment, and in my view far more important, is the different consideration to be given to individual observers. It is, I believe, impossible to judge with confidence a record from a completely unknown observer, no matter how good the written description. On the other hand, one can accept a poorly documented record from a person who knows his birds and has a sound approach, but is not capable of producing a word-perfect and scientifically presented description. The Rarities Committee is in close contact with the county records committees and frequently turns to these bodies for advice on the competence of an observer. This is an essential liaison, without which the committee would be unable to view any record in its true perspective.

The problem is far more acute at county level where we are called upon to assess descriptions of birds not rare enough to qualify for inclusion on the Rarities Committee's list. These descriptions are not always what they appear to be at first. It is often too easy to read into them what an inexperienced claimant has suggested and presumably believes to be the case. They are very often proved wrong. In my view, therefore, thorough knowledge of the observer is far

more important than the excellence of the presented description. Each record must be treated on its *individual* merits with a full knowledge of the background and the observers. Any 'computerised' standardisation in assessing such a personal event as the sighting of a rare bird is most undesirable—nay, impossible.

Reassessment is an inevitable procedure if we are to document the truth. Rejection in retrospect, which Dr Waters suggests may warrant investigation, should not prove necessary if the Rarities Committee is strict in its approach. The occasional genuine record will be turned down along with all those deserving rejection on the present grounds for a decision, but I suspect that the reverse will not often happen, if at all. For the Rarities Committee to admit unnecessary rejection on the original submission of a record and then to set the record straight is surely commendable.

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Spotting rare birds Your editorial in the January 1969 issue (*Brit. Birds,* 62: 1-3) stated: 'Critics of the enjoyable sport of spotting rare birds have complained that it provides little of scientific value'; and it then went on to dispute this. Why bother? Who cares? Is not birdwatching a hobby, an interest, a pastime, any more?

I have yet to learn of the additions to science from the players of golf or the devotees of angling. My work and main interest is a form of biological research; my second hobby has no obligations in this direction whatever. I am a tally-hunter, a tick-hunter, a list-grubber, who owes no-one any explanation, and I will not stoop to pretend that I am ashamed to be so. Anyone else is free, if he wishes, to spend all his spare time advancing science by observing minutely the way a House Sparrow preens, but it bores me stiff and I will not spend my time reading it. Ethology, on the other hand, does interest me, and so some of his findings may come my way, for I am not saying that such things are useless. Like dentistry, I am glad someone is prepared to do it, but I want no hand in it myself. On the other hand, one remembers all those dimensions of eggs, with mean values to hundredths of millimetres—quite useless.

The occurrence of rarities may be completely random or may be correlated with some patterns of weather. Except in the vital interest of seeing more of them, it does not matter at all. Given such rarity, they cannot be helped much except by conservation of their habitats, like any other bird. The value of scientific findings is usually expected to be either in increasing some production or other, which need not concern a hobby, or in preserving something, in this case birds. Preserving them to be watched; why else? So let us watch and enjoy them now, too.

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News and comment *Robert Hudson*

Urban attitudes to wildlife The widely publicised European Conservation Year 1970, or ECY 70, is upon us. Naturalists appreciate the need for conservation, and governments are becoming increasingly sympathetic; but what of the general public? During 1965 a privately-sponsored public-opinion survey was carried out in Bristol to ascertain the views of town-dwellers on various aspects of wildlife conservation, and during 1969 a similar survey was made in Shrewsbury; a comparison of the results was published in December. Admissions of disinterest in natural history were made by 17% of the Bristol and 18% of the Shrewsbury samples, but only 1% of all persons interviewed regarded conservation as unimportant. The majority of urban interviewees (over 80%) believed that wild animal and plant life is being adversely affected by building development, the use of pesticides, and excessive hunting and poaching; but only 54% appreciated the effects of wetland drainage. Though most people were aware of the existence of local, national and international conservation bodies, only 39% (Bristol) and 49% (Shrewsbury) had heard of the Nature Conservancy. Only 2% of people interviewed belonged to a wildlife organisation. In Bristol 70% and in Shrewsbury 54% of replies admitted influence by press, radio and (especially) television articles and programmes. As many as 89% to 93% were prepared to contribute to conservation funds by flag-day methods, but far less would give annual subscriptions or other more substantial contributions.

These surveys support the belief that there is widespread general interest in wildlife among town-dwellers, as well as an appreciation of the need for conservation. The author of this 20-page report cautions, however, that it would be wise 'to bear in mind that many of the encouraging views held may be somewhat superficial and might not persist when conservation interests conflict with personal needs.' *An Urban Survey of Views on Wildlife Conservation* is available, price 2s 6d, from the author: C. Fuller, Arondale, Pulverbatch, Shrewsbury, Shropshire.

Sound recording competition As a contribution towards ECY 70, the European Broadcasting Union is sponsoring an international wildlife tape recording competition. Entries may be of bird, mammal, fish, reptile, amphibian or insect, and must last between 20 and 120 seconds with a minimum tape speed of $3\frac{3}{4}$ inches per second.

Entries will be divided into four classes: birds; other vertebrates; insects; stereophonic recordings. Enquiries for entry forms and rules should be addressed to the Wildlife Sound Librarian, BBC Natural History Unit, Broadcasting House, Whiteladies Road, Bristol BS8 2LR.

B.T.O. conferences: winter 1969/70 (I am grateful to C. J. Mead for the following notes.) The British Trust for Ornithology's Annual Conference and its Ringing and Migration Conference were held at Swanwick (Derbyshire) and Nottingham in December and January respectively. The Annual Conference was thought by many to be the best yet. Dr David Lack, Director of the Edward Grey Institute, delivered the second Witherby Memorial Lecture, taking 'The number of species on islands' as his theme; this paper provoked a lively discussion. Dr Martin Holdgate, who has transferred his allegiance from the British Antarctic Survey to the Nature Conservancy, spoke of the place of birds in the antarctic ecosystem, and suggested that a limiting factor on populations of some species may be lack of suitable breeding habitat, since most of the antarctic coastline is completely inhospitable. The guest speaker from abroad was Jan Wattel from the Netherlands, whose slides of breeding Ruff, Avocet and Black-tailed Godwit titillated the orni-

thological palates of those hoping to attend the International Ornithological Congress in that country in 1970. The new B.T.O. film on ringing, 'Rings for Research' was given its première, and there were the usual reports of staff members and the annual meeting of regional representatives. The Ringing and Migration Conference was hit by the influenza outbreak, and several speakers had to withdraw at the last minute. Sessions on ringing techniques and policy were balanced by reports of investigations either finished or in progress. Dr Ian Newton provided a high point on 'Crossbill irruptions—a re-analysis'. About 20% of all ringers attended. Next winter, *both* conferences will be held at the Hayes Conference Centre, Swanwick, whose informal atmosphere is unrivalled—even to the provision of a discotheque for the benefit of Presidents, Directors and other young-at-hearts.

Wicken Fen natural history Wicken Fen in Cambridgeshire is surely known, at least by repute, to the majority of English naturalists, for it is an important relic of the sedge-fen habitat that was once so typical of a district that is still referred to euphemistically as the Fens. Since 1968, to borrow words written in another connection more than a hundred years ago (*Ibis*, 1: preface), 'a few gentlemen attached to the study of Ornithology, most of them more or less intimately connected with the University of Cambridge, had been in the habit of meeting together' at Wicken Fen. A formal Wicken Fen Group was established, and their first annual report, for 1968 and 1969, is now to hand. Concentrating on ringing studies, this report contains (in addition to the inevitable systematic list) papers on diurnal and seasonal weight changes in *Acrocephalus* warblers, weight variations of certain finches, buntings and sparrows, and brood-patches as a guide to sexing. There is, also, an interesting introduction to the vegetation of the fen. This 36-page report is available, price six shillings, from M. J. Allen, Stuart House, Mill Lane, Cambridge CB2 1RY. May it prove as acceptable as that other ornithological bantling hatched by the gentlemen of Cambridge.

Dispersol: a correction I have been asked to correct a misconception in the paragraph on Dispersol OS in 'News and comment' in the August issue. As stated there, the purpose of this new I.C.I. emulsifying agent is the treatment of fresh oil slicks before these come ashore; *but it is not designed for cleaning already oiled surfaces and should not be used in that way*. If, however, Dispersol OS is mixed with the oil before it strikes birds or beaches, these are then more easily cleaned. Since the use of this product would not only make birds less liable to damaging contamination but would also make beaches easier to clean, conservationists may welcome it as likely to reduce the amount of conventional (and toxic) detergent used on beaches.

Requests for information

Great Shearwaters in 1969 and 1970 There was some evidence of abnormality in the migrations of Great Shearwaters *Puffinus gravis* in the North Atlantic in the summer of 1969. According to the Smithsonian Institution Center for Short-lived Phenomena, the species suffered unprecedented mortality along the coasts of North Carolina and Maryland during the northward migration into the western Atlantic in June; and subsequently there were several reports of unusual numbers off western Ireland and Brittany in September. The Seabird Group is investigating the situation and would be pleased to hear of any observations of Great Shearwaters in 1969; these should be sent to the **Seabird Group, c/o British Ornithologists' Union, British Museum (Natural History), Cromwell Road, London SW7.** It would also be helpful if any corpses of this or other shearwaters found in 1970 could be sent for examination to the **Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire.**

Photographs of seabird colonies The Seabird Group is anxious to obtain photographs of seabird colonies in 1969 as a permanent record of numbers present during the 'Operation Seafarer' census, and to provide a baseline for future evidence of change. Photographs from earlier years would also be most welcome, even if the dates are not exactly known. Those which show a whole colony or an easily definable part of it are most valuable, especially if full details of the year and locality are recorded, but unknown sites may be identifiable. Negatives, prints or transparencies will be copied where appropriate and returned to their owners as soon as possible. They should be sent to the 'Seafarer' organiser, **David Saunders, 'Tom the Keepers', Marloes, Haverfordwest, Pembrokeshire.**

Recent reports

P. F. Bonham and J. T. R. Sharrock

These are largely unchecked reports, not authenticated records

This summary completes the analysis of scarce and rare migrants during August-December 1969. The previous two surveys (*Brit. Birds,* 62: 452-456, 501-504) covered the non-passerines during this five-month period and the following deals with the passerines, apart from the winter-visitors which will be considered in the next issue.

LARKS TO THRUSHES

There was the now usual scattering of **Short-toed Larks** *Calandrella cinerea* during August-October, three in the Isles of Scilly, two on Whalsay (Shetland) and singles at Minsmere (Suffolk), Spurn and Redcar (both Yorkshire) and Fair Isle (Shetland). Another autumn rarity at Spurn was a **Golden Oriole** *Oriolus oriolus,* apparently the first at this season in northern England since at least 1958. Six or seven **Nutcrackers** *Nucifraga caryocatactes* on widely scattered dates in Yorkshire, Norfolk, Suffolk, Kent and Hampshire were doubtless connected with the 1968 invasion of western Europe, as only six had been recorded in the ten years 1958-67.

Early **Fieldfares** *Turdus pilaris,* now becoming more usual, included singles at Eye Brook Reservoir (Leicestershire/Rutland) on 27th July and Cley (Norfolk) on 10th August. The first **Bluethroat** *Luscinia svecica* occurred well inland at Aston Clinton (Buckinghamshire) on 31st August, followed by a trickle of records in the south-west. This pattern was broken by a large-scale arrival of Bluethroats down the whole east coast of Britain about 17th September. About 50 were reported, numbers trailing off towards the end of the month. Further isolated records came from several scattered coastal localities, the last one on Whalsay on 21st October. Lastly, a **Black-eared Wheatear** *Oenanthe hispanica* stayed at Clyth (Caithness) for the first fortnight of July, the first for the Scottish mainland.

WARBLERS

There has been speculation recently about the possibility of **Cetti's Warblers** *Cettia cetti* breeding in southern England, but one at Stodmarsh (Kent) on 13th September was probably a Continental migrant; this locality is, of course, the stronghold of a small breeding population of **Savi's Warblers** *Locustella luscinioides,* another expanding species. A Savi's Warbler summered on the north Norfolk coast and there were further reports from two Lincolnshire localities in August. Much more remarkable were two almost simultaneous **River Warblers** *L. fluviatilis,* one on Fair Isle on 16th September and the other found dead at the lighthouse on Bardsey (Caernarvonshire) the following day. There is only one previous record of this east European and Asiatic warbler, also on Fair Isle eight years ago.

Among vagrant *Acrocephalus,* the most numerous were **Aquatic Warblers** *A.*

paludicola, as is usual, but the year's total of 24 was more than ever before and over twice the average since 1958. Most were on the south coast, but reports came from as far afield as Bardsey and Shetland, and the largest concentration was five on Fair Isle in mid-August. **Great Reed Warblers** *A. arundinaceus* were found at Bridgwater (Somerset) on 25th August and at Thurlestone (Devon) on 12th October, the latter the latest on record. A warbler at Hartlepool (Co. Durham) from 18th to 21st September was trapped and identified in the hand as a **Blyth's Reed Warbler** *A. dumetorum,* but subsequently its identity has been in doubt and most of the original observers now consider that it was a **Paddyfield Warbler** *A. agricola.* A **Blyth's Reed Warbler** was, however, identified on Cape Clear Island (Co. Cork) from 13th to 19th October, the first Irish record. Both species are extremely rare vagrants from the east with no more than a dozen records all told; although Blyth's Reed Warbler breeds as far west as Finland and Estonia, the nearest Paddyfield Warblers are found no closer than southern Russia. About 30 records of **Icterine Warblers** *Hippolais icterina,* very near the average for recent years, were in the usual localities, mostly observatories and ringing stations, from Shetland south to the English Channel and west to southern Ireland. They spanned a wide range of dates, from a very early one on Fair Isle on 3rd August to others very late at Ballycotton and Cape Clear Island (both Co. Cork) on 19th and 26th October. The maximum concentration was on Fair Isle (seven or so in mid-August). Altogether there were at least nine, and possibly twelve, **Melodious Warblers** *H. polyglotta* on Cape Clear Island between 7th August and 5th October, but the only others reported were singles at Portland (Dorset), St Mary's (Isles of Scilly) and the Calf of Man. This is far fewer than usual and it may be that we did not receive all the records.

Seventy or 80 **Barred Warblers** *Sylvia nisoria* between 11th August and 17th October conformed to the usual pattern, the bulk being on the east coast from Shetland to Norfolk, apart from four at Beachy Head (Sussex), three on Bardsey and singles at Sandwich Bay (Kent) and Cape Clear Island. The greatest number was again on Fair Isle, no less than 14 on 14th September, and the last was seen at Hauxley (Northumberland) on the exceptional date of 4th November. A **Spectacled Warbler** *S. conspicillata* at Porthgwarra (Cornwall) on 17th October was just four days before the anniversary of the first record in 1968. It is odd that this largely Mediterranean species should go unnoticed in the British Isles until so recently, and then occur in two successive years. Not a single record of Pallas's Warbler *Phylloscopus proregulus* was received, all the more surprising after the remarkable influx of 18 in October 1968, but records of other eastern *Phylloscopus* were much as usual: three each of **Arctic** *P. borealis* (Shetland and Yorkshire) and **Greenish** *P. trochiloides* (Shetland, Norfolk and Co. Cork) between late August and early October, and over 30 **Yellow-browed** *P. inornatus.* All but three of the Yellow-browed were in October, extreme dates being 19th September and 5th November, and they ranged from Shetland south to Kent and west to Co. Cork, with three on the Calf of Man. The peak of observations in southern England (19th-20th October) was generally about a fortnight later than in Shetland (5th-6th), the dates at intermediate localities falling in between, a pattern typical of several eastern passerines.

PIPITS TO STARLINGS

In recent years **Tawny Pipits** *Anthus campestris* have been reported in ever-increasing numbers and 1969 was no exception with over 30 records, nearly all in autumn between 7th September and 25th October. Localities, as usual mostly on the south coast, extended from Norfolk to Co. Cork, with the exception of Hartlepool, Hayes (Middlesex) and Silchester Common (Hampshire). The 60 to 70 **Richard's Pipits** *A. novaeseelandiae* made a poor total compared with the exceptional numbers in 1967 and 1968: after an early record on Fair Isle on 19th August, they extended

from 12th September to 5th November, apart from a series later in November at Donna Nook (Lincolnshire), the last being two on 22nd; about 14 were seen in the Isles of Scilly, being reported from all five inhabited islands. Five **Red-throated Pipits** *A. cervinus,* bringing the year's total to six, were seen in the north-east and south, on Whalsay on 16th September, on Gugh (Isles of Scilly) on 18th and 29th, on Fair Isle on 22nd and at Beachy Head on 19th-20th October. Yet another rarity on Fair Isle was a **Citrine Wagtail** *Motacilla citreola* from 14th to 16th September, the island's seventh but only the fourteenth British record.

There is not much to say about the 25 or so **Red-breasted Flycatchers** *Ficedula parva* between 30th August and 26th October: they were mainly at the usual well-watched places on the east coast, but included others on Lundy, Bardsey, Cape Clear Island and St Agnes (Isles of Scilly). The third **Lesser Grey Shrike** *Lanius minor* of the year in Britain stayed at Spurn from 30th August to 7th September. A **Woodchat** *L. senator* was seen at Fyfield Down (Wiltshire) on 5th September, and another on Cape Clear Island for a few days in early October. The year's fourth **Rose-coloured Starling** *Sturnus roseus* spent most of October at Southwold (Suffolk), but records of this species are always open to the possibility of escapes from captivity.

FINCHES AND BUNTINGS

A **Hawfinch** *Coccothraustes coccothraustes* on St Agnes from 9th to 11th October coincided exactly with another on Cape Clear Island on 9th, and one reported by a lighthouse keeper on Fastnet (four miles south-west of Cape Clear Island) on about the same date may have been a third individual. At Donna Nook, where the species had never been recorded before, one appeared on 4th August and a second on 22nd November. The origin of these migrant or vagrant Hawfinches is unknown. Ten or so **Scarlet Rosefinches** *Carpodacus erythrinus* appeared in three or four groups: two on Fair Isle on 16th August and again on 19th were followed by two on the Out Skerries (Shetland) on 26th-27th; then singles arrived at Spurn, Fetlar (Shetland) and the Out Skerries on 17th or 18th September; and finally, one or two occurred in the Isles of Scilly from 8th to 10th October and another on Fair Isle on 11th. A **Two-barred Crossbill** *Loxia leucoptera* was seen at Blakeney Point (Norfolk) on 15th September. There were single **Serins** *Serinus serinus* at Portland on 20th October and Christchurch (Hampshire) on 2nd November, but this species was probably under-reported—as surely were **Ortolan Buntings** *Emberiza hortulana* with a mere 16 or 17 records, the only unusual occurrence an early one at Hartlepool on 14th-15th August. The rarer buntings were all seen in the far north: a **Yellow-breasted Bunting** *E. aureola* on Fair Isle from 14th to 19th September and another there from 20th to 25th, followed by two on Whalsay on 1st October; and a **Little Bunting** *E. pusilla* on Fair Isle from 16th to 21st October, with two (possibly more) on the Out Skerries during 23rd-26th.

ESCAPES OR VAGRANTS?

Two sedentary birds of the high mountains of southern Europe and Asia appeared in England in the autumn of 1969: a **Wallcreeper** *Tichodroma muraria,* described as 'almost unbelievably beautiful', was found near St Albans Head (Dorset) on 9th September and was still there in late March 1970, and a **Snow Finch** *Montifringilla nivalis* frequented the air base at Lakenheath (Suffolk) from July to at least February. Only six Wallcreepers have been recorded in Britain before, the last in 1938, but there seems no reason to doubt that this is a genuine vagrant. The origin of the Snow Finch is more of a puzzle, particularly in view of the remarkably early date and the very sedentary nature of this species, but as yet no escapes have come to light and it is just possible that this, too, is a wild bird which has somehow reached the British Isles. The only previous records were among the Hastings Rarities and the species is therefore not currently on the British and Irish List.

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