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BRITISH BIRDS

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

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

EDITED BY

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Volume XXXI

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Rock-Pipit at entrance to nest.
(Photographed by H. N. Southern)

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SOME NOTES ON THE LATE BREEDING BEHAVIOUR OF THE ROCK-PIPIT.

BY

H. N. SOUTHERN.

(Plate I.)

IN view of the small amount of information available upon the late breeding habits, the break-up of territory, and the summer flocking of the Rock-Pipit (*Anthus s. petrosus*), the following few notes taken while I was conducting a breeding census of the birds on the Island of May in July, 1936, may be worth putting on record.

When I arrived on the island on July 2nd, two things were at once clear, that there were already large numbers of fledged young on the wing, belonging to the first and possibly to the second broods also, and that most of the adult birds were still breeding. During the 24 days of my stay the numbers of young birds increased greatly and many of the old birds relinquished their territories, all joining up in roosting flocks (see below). It was, however, possible to get a fairly accurate idea of the breeding population, since the plumage of the young birds was so distinct, and I assessed it at 24 pairs.

In a rocky cleft on the west side known as Colme's Hole I was able to concentrate observations on two pairs. At first I thought only one pair occupied this quite small area (*c.* half an acre) and I was puzzled by odd birds that kept turning up with food being received with equanimity by the main two adults, although fierce skirmishes took place whenever young birds drifted in, an almost continual occurrence. Later it turned out that there were two nests within ten yards of one another, and the old birds seemed to have achieved a state of tolerance to each other. This rather surprised me in view of the extreme territorialism of birds nesting round the rest of the coast, where in certain favourable stretches one could walk along escorted the whole way by Rock-Pipits, emerging from one territory to be met immediately by the birds in the next.

Possibly this state of amity between the two pairs in Colme's Hole was due to the different state of development of the two broods, for one was fairly near to fledging while the other had only just hatched and did not require so much feeding as brooding.

An interesting point which emerged from the census generally as well as from subsequent observation on flocking habits was that the habitat selection of the Rock-Pipit here tended

to favour places that were sheltered from the wind. This applied to feeding as well as to nesting places on rough days. Thus Colme's Hole may have represented ideal ground, for it was a deep cleft covered with steep grassy slopes and was the only one of this type on the west side of the island. In corroboration of this it was noticed that on days when there was a stiff breeze blowing the four birds tended to keep to the immediate neighbourhood of their nests, searching for food in the crannies of the rocks, but on calm sunny days they spread up over the thrift-covered slope above the gulley. The young birds modified their habits according to the weather in somewhat the same way, on fine days being found all over the central part of the island, which was seldom visited by the adults, while in a gale they retreated into the rock gullies.

Only three occupied nests in all were found, but they all agreed in showing a rather low fertility in the eggs: of the two in Colme's Hole one had one nearly-fledged young bird (it is possible that the small number was due to accident and not to infertility, of course), and the other contained two small young and two infertile eggs. The third nest found by accident some distance away had three week-old young and one infertile egg.

This was the state they were in about the second week of July, and it does seem probable that in such late broods there is evidence of a certain degree of exhaustion of the reproductive organs. If it is objected that these infertile eggs were due to exhaustion consequent upon nests being destroyed, I think it is unlikely, since in the first place the only three nests I found were all similarly circumstanced, and in the second place most of the adults were still holding territory and feeding young about the same time, though certainly some gave them up shortly after.

What interested me most of all, however, was to witness how with the waning of the territorial instinct, that of flocking for roosting grew. This was the only kind of flocking that I saw admittedly, since during the day the birds would be spread out round the coast in the usual way, perhaps wandering rather more as the month progressed, so it might be contended that it was convenience of roosting places and not a real flocking instinct that was the cause. This is difficult to settle out of hand.

July 12th was the first date upon which I noticed any gathering in the evening, and that was only a small one of three or four birds in a patch of thistles a little way over the

brink of the rocky slope that led down to the sea. For several evenings afterwards during my stay I put these birds out again, though their numbers did not increase upon any occasion by more than two.

However, on the 18th I went down to look at the nest with small young in Colme's Hole towards dusk and I was astounded to put out at least a dozen roosting Rock-Pipits from the same fissure as the nest was situated in, which was about four feet wide.

Further observation on subsequent nights confirmed the fact that there was a roost here, and presumably the adults belonging to the nest (to both nests in fact) had to give up their efforts to expel intruders when night fell. I tried to see something of what went on at this time, but everything was so dim that it was hopeless to sort things out. It was just possible to determine that the roost was not composed wholly of young birds by flashing a torch upon the birds as they were put out.

Perhaps the final and most significant fact in this series of observations is that two days later the nest in the fissure was found to have been deserted.

It certainly looks as if we have break-up of territory here occurring from the pressure of external circumstances (*viz.*, the fact that a flock of non-breeding birds covets the territory as a roosting place), before the actual breeding rhythm has died down. The nest concerned was a rather late one, and perhaps it is only such as these that come up against the increasing demands of the early broods. The hopeless chases conducted by the two adult pairs in Colme's Hole during the daytime against trespassing youngsters showed the beginning of the breakdown, for it was quite obvious that they were not going to be able to keep territory any longer in the strict sense. Evidently in some cases at least the response is upon the "all or nothing" principle, for in the case of the nesting bird the intrusion into the territory of the roosting party was sufficient to cause desertion of the nest probably because the breeding instinct had been overwhelmed by the next chronological phase, that of post-breeding behaviour.

In fine it looks as if the late extension of the breeding season in these Rock-Pipits was coming up against several barriers, that of the exhaustion of the reproductive system and that of the breakdown of territories from external causes being amongst the chief ones.

THE FUTURE OF THE "BRITISH BIRDS" RINGING SCHEME: TRANSFER TO THE BRITISH TRUST FOR ORNITHOLOGY.

The Editor of *British Birds* has for some time been anxious to make new arrangements for the continuance of the bird-ringing scheme which he instituted in 1909 and has since maintained with the co-operation of readers of the magazine. The work steadily increases in amount, and other claims prevent him from giving it as much personal attention as it requires. It has also become necessary to find accommodation for the records and work elsewhere than in the publishing office of his firm.

In these circumstances, the Council of the British Trust for Ornithology has very willingly agreed to accept responsibility for the future conduct of the scheme. It is intended, however, that *British Birds* should remain the medium of publication, and it is greatly hoped that readers will continue their present active participation in the work of marking birds.

Very happily, also, the Trustees of the British Museum (Natural History) have agreed to provide accommodation for the headquarters' work in the Bird Room at South Kensington. They have also kindly permitted the address of the Museum to be used for the purposes of the scheme, both on rings and on correspondence. The grant of these important facilities is highly appreciated.

To manage the scheme, a special Bird-Ringing Committee has been appointed by the British Trust for Ornithology. This body is constituted in the first instance as follows:—Dr. A. Landsborough Thomson (Chairman); Mr. A. W. Boyd; Mr. A. B. Duncan; Mr. P. A. D. Hollom; Lord Ilchester (representing the Museum Trustees); Lord Mansfield; Mr. H. F. Witherby (representing *British Birds*); and Miss E. P. Leach (Hon. Secretary). The headquarters' work will be in the hands of Miss Leach, who has in recent years been increasingly responsible for it in collaboration with Mr. Witherby: the Committee is most fortunate in her willingness to continue this onerous task, and the great experience which she already has will be invaluable.

The scheme passes formally to its new control on 1st June, 1937. It does so with all necessary equipment for carrying on the work. The running cost will be mainly covered, as hitherto, by the subscriptions from markers at the rate of six shillings for every hundred rings issued, but additional funds will be required to provide adequate clerical assistance. All new rings will be inscribed "BRITISH MUSEUM NAT. HIST. LONDON", but existing stocks with the inscription

“ WITHERBY HIGH HOLBORN LONDON ” will continue to be used. Arrangements for forwarding from the old address are, of course, being made, but so far as possible all communications should henceforth be sent to: Bird-Ringing Committee, British Museum (Natural History), London, S.W.7. It is to be particularly noted that applications for rings must in future be made well in advance of requirements.

A PERSONAL NOTE

By H. F. WITHERBY.

It is with the greatest satisfaction that I publish the above statement.

The arrangements described for the future conduct of what has been known for so long as the “ British Birds ” Marking Scheme seem to me ideal, and insure its continuance under the best conditions.

I have for some time been most anxious to see the scheme, which I have conducted for so many years, put on a surer and more lasting basis than can be afforded by any individual, and now that this has been done so very satisfactorily, I can only express my great gratitude to all concerned in bringing it about. That all those interested in ringing and the results achieved by ringing will endorse this expression of thanks I feel assured.

It would have been impossible for me to have continued to conduct the scheme in recent years had it not been for the collaboration of Miss E. P. Leach, who has given such unremitting attention to the great mass of detail involved. That Miss Leach has agreed to continue her work is, indeed, a great satisfaction.

The constitution and personnel of the new Committee under the leadership of so well known an authority on migration and ringing problems as Dr. Landsborough Thomson, afford a guarantee in themselves that the work will be conducted in future with great knowledge and interest, and I am very grateful to the British Trust for Ornithology for taking over the scheme and making such excellent arrangements.

Finally, we have to express our thanks to the Trustees of the British Museum for allowing us to make our headquarters at the Museum, and to Mr. M. A. C. Hinton, Keeper of Zoology, and Mr. N. B. Kinnear, head of the Bird Room, who have shown such great interest in the scheme and taken so much trouble in making the necessary arrangements.

In conclusion I have still to thank all those who have so keenly supported the Ringing Scheme in the past. That they will support it as keenly in the future, and that the scheme is entering upon a new era of usefulness I feel very confident.

ADDITIONS AND ALTERATIONS TO THE BRITISH LIST

BY

H. F. WITHERBY.

The last additions and alterations appeared in Vol. XXVIII, pp. 90-96 and pp. 186-7. These pages and pages 2 and 3 of Vol. XXVII must be consulted to bring up to date the full list of alterations published in Vol. XXVI, p. 16.

The British Ornithologists' Union List Committee has now published (*Ibis*, April, 1937, pp. 396-402) a further list of additions and necessary alterations and these are discussed below. The numbers and former names refer to the systematic list printed in the last part of the *Practical Handbook* and reprinted in the *Check-List*.

ADDITIONS.

45A. THE RED-HEADED BUNTING.—*Emberiza bruniceps*
Brandt.

EMBERIZA BRUNICEPS Brandt, Bull. Acad. Sci., St. Petersburg, IX., col. 12 (28th May, 1841—"Turcomania"—Russian Turkestan).
Emberiza icterica, G. Eardley Todd, Brit. Birds, XXV., p.66.

An adult male of this species was taken by Col. G. Eardley Todd on North Ronaldshay, Orkney, on June 19th, 1931, and a full account of it appears in *British Birds*, Vol. XXV., pp. 66-9. The specimen is now in the British Museum collection.

The name *Emberiza icterica* Eversmann was used tentatively for the species, and it was pointed out that *E. bruniceps* of Brandt might have priority. The B.O.U. List Committee has now been informed by Mr. B. Stegmann of the Leningrad Museum that while Brandt's *bruniceps* was published on May 28th, 1841, it is almost certain that Eversmann's *icterica* was not published until 1842.

150A. THE BOOTED WARBLER.—*Hippolais caligata caligata*
(Licht.).

SYLVIA CALIGATA Lichtenstein, in Eversmann's Reise von Orenburg nach Buchara, p. 128 (1823—Am Ilek = Ilek River, near Orenburg).
Hippolais caligata, G. Stout and G. Waterston, Brit. Birds, XXX., p. 226.

A female specimen in worn summer plumage of this species was obtained on Fair Isle, Shetlands, on September 3rd, 1936, as already announced in our pages (*ut supra*).

It may be mentioned that the name *caligata* was at one time discarded (*scita* the next name being used) because the type was said not to be a *Hippolais*. This has been proved to be a mistake, and the type is referable to this species, but has a somewhat abnormal bill (*cf.* E. Stresemann, *Orn. Monatsb.*, 1928, p. 51).

The Booted Warbler is much like the Olivaceous Warbler (*Hippolais pallida elæica*), but differs from it by its more buffish and less olivaceous upper-parts, and more creamy under-parts. It is also smaller and has usually a shorter second primary. My measurements of males are as follows:—

H. c. caligata: wing: 58-63; tail 45-51 mm.

H. p. elæica: wing: 64-68; tail 50-55 mm.

Mr. Jourdain supplies me with the following particulars of distribution of the Booted Warbler:—

“ In European Russia from Olonetz and Vologda Governments in north and from Moscow and Tula east to Perm, Orenburg and Ufa and south to Astrakan. In W. Siberia north to 61°N. in Yenesei Valley and to Tjumen in west. A zone extending from N. Mongolia, Altai, Syr Daria, etc., is inhabited by intermediates between this race and *H. c. rama*, but it is said to breed in E. Transcaucasia (Lenkoran). Winters in north and central India, and occurs on passage in Persia, Afghanistan and Baluchistan.”

340A. AUDUBON'S LITTLE SHEARWATER.—*Puffinus assimilis l'herminieri* Lesson.

PUFFINUS L'HERMINIERI Lesson, Rev. Zool., p. 102 (1839—ad ripas Antillarum = Straits of Florida).

Puffinus assimilis l'herminieri Lesson, J. M. Harrison, Brit. Birds, Vol. XXX., p. 48.

Dr. Harrison has already given an account of the finding of this bird on the beach at Bexhill-on-Sea on January 7th, 1936 (*ut supra*). Dr. Harrison took great pains to make as certain as possible that the bird's history was correct, and he put all the evidence before the Committee. The latter accepted the evidence as sufficient, but the fact remains that the bird was not seen in the flesh by an ornithologist, which is a pity.

In coloration Audubon's Little Shearwater, which inhabits Bermuda and the West Indies, is much like the Cape Verde Little Shearwater, having darker under tail-coverts and inner webs of the primaries and secondaries than the Madeiran Little Shearwater, while the upper-parts are usually browner

than in the Cape Verde form. It can easily be distinguished from either of these forms by its larger size. As there does not appear to be a noticeable difference in the sexes I give the following measurements (in millimetres) of both sexes combined :—

P. a. l'herminieri : wing 198-206 ; tail 85-96 ; bill 29-30.

P. a. baroli : wing 170-187 ; tail 68-80 ; bill 24-28.

P. a. boydi : wing 177-190 ; tail 71-82 ; bill 24-28.

It may be mentioned that the bill of *P. a. l'herminieri* is not only longer, but deeper and wider than in the others.

ADDITIONAL BRITISH SUBSPECIES.

37A. THE BRITISH CHAFFINCH.—*Fringilla cœlebs gengleri* Kleinschm.

FRINGILLA CŒLEBS GENGLERI Kleinschmidt, Falco, V., p. 13 (1909—England : typical locality, Hampstead).

Pastor Kleinschmidt originally separated the British Chaffinch under this name on account of a supposed difference in the number of tail-feathers with white markings, but this was shown to be an individual variation and of no importance as a racial character. Subsequently Gengler (*Verh. Orn. Ges. Bayern*, XVI, p. 109), Hens and van Marle (*Org. Club Ned. Vogelk.*, VI., p. 49) and J. M. Harrison (*Ibis*, 1934, p. 396) showed that there was a difference in the colour of the under-parts of the adult male.

The B.O.U. List Committee having compared a series of British breeding birds with a similar series from Sweden (typical locality), Norway and Germany, have confirmed the opinion that the British bird is separable from the typical form.

British breeding males have the sides of the head (i.e., lores, round eyes, ear-coverts and cheeks) paler and more brownish pink, not so dark and rich as in typical birds. This seems the best and most constant character, but the throat and upper-breast are also usually more brownish pink than Swedish, though some of the latter are not distinguishable in this. British, however, are never so pure a pink as a good many Swedish. There is no constant difference in the rest of the under-parts. It is on the wearing off of the pale fringes of the feathers that these differences are observable, birds in fresh plumage or winter cannot be so plainly determined, but in a series the generally purer pink and less brownish tone of the under-parts of the north European birds compared with

British-taken ones is noticeable. It must be borne in mind that a series of British-taken Chaffinches in winter is likely to contain some migrants from abroad.

The typical form can in any case be definitely retained on the British List, since a Chaffinch ringed in Worcestershire in February, 1934, was reported from Norway in May, 1936 (*antea*, Vol. XXX., p. 76) and a number ringed in Holland and Belgium in autumn have been recovered in England and Ireland.

412. THE BRITISH REDSHANK.—*Tringa totanus britannica* Mathews.

TRINGA TOTANUS BRITANNICA Mathews, Brit. Birds, Vol. XXIX., p. 152 (1935—no typical locality designated).

instead of the Common Redshank—*Tringa totanus totanus* (L.).

The British Redshank was differentiated from the typical Redshank by Dr. C. B. Ticehurst, who pointed out that the British bird in breeding dress was considerably less spotted and streaked below and less barred with rufous-buff and black above than the typical bird (*Bull. B.O.C.*, LIII., p. 17).

The Committee has had for comparison a series of Swedish breeding birds and a series of British, which were fully moulted and definitely breeding, and confirm Dr. Ticehurst's findings.

In winter plumage the two forms show no distinction, and readers may be reminded that this is also the case in the Golden Plovers.

Dr. Ticehurst remarked that a specimen from Hungary was like British birds and probably it was a question of a northern and southern race, but this does not seem to be so since breeding birds from south Spain are like Swedish birds in being heavily streaked and spotted.

With regard to the name Dr. C. B. Ticehurst considered that *Tringa bewickii* of Rennie in Montagu's *Ornithological Dictionary* could be used. This name was based on the "Red-legged Sandpiper" of Bewick (*History of British Birds*), the description and figure of which, however, do not apply to the Redshank. This was pointed out by Mr. Mathews (*antea*, Vol. XXIX., p. 152), who named the British Redshank, *Tringa totanus britannica*, based on Dr. Ticehurst's description. Dr. Ticehurst had given as type-locality Lincolnshire as the bird Bewick described came from Rippengale Fen, but as this was not a Redshank this type-locality cannot stand and unfortunately Mr. Mathews gave no other.

There is as yet no definite proof of the occurrence in this country of the typical form, so that the Redshank will be represented on the List by the British and Iceland forms.

465. THE BRITISH RAZORBILL—*Alca torda britannica* Ticehurst.

ALCA TORDA BRITANNICA C. B. Ticehurst, *Ibis*, 1936, p. 383 (1936—Skomer Is., Pembrokeshire).

instead of The Razorbill—*Alca torda* L.

Dr. C. B. Ticehurst is also responsible for showing that the British Razorbill is to be distinguished from the typical Swedish bird and the B.O.U. Committee has accepted this separation.

This is a question of size, the British birds have a smaller wing and bill than the Swedish. Dr. Ticehurst gives measurements of breeding birds in millimetres as follows:—

Swedish ♂♀; wing, 201-214.5; greatest height of bill, 22.5-26.

British ♂♀; wing, 186-198; greatest height of bill, 19.5-21.

One British wing is given as 200 mm. and one bill as 22 mm. out of 31 measured.

I have also measured a number of British adults and have found two with wings of 201 (both with bills of 22 in depth): one (Orkney) with a wing of 203 (bill 22), but another Orkney bird with a wing of only 190, and one co. Mayo, June 8th, with a wing of 207 but with a bill of only 21.5 (a good many other co. Mayo birds had wings under 200). I have also found several British birds with bills measuring 22 and 23 mm. in depth, but in these the wings were under 200. There appears therefore practically no overlapping between the two forms if both measurements are taken, and the large majority of British birds are well under the measurements of typical birds.

No British taken typical bird is as yet forthcoming so that "The British Razorbill" must be substituted for "The Razorbill" on our List.

CHANGES OF NAMES AND STATUS.

20A. THE BRITISH TWITE—*Carduelis flavirostris pipilans* (Latham).

FRINGILLA PIPILANS Latham, Synopsis, Suppl., I., p. 286 (1787—ex Pennant, Brit. Zool., I., No. 133, who quoted Willughby, Orn., p. 261, description of a bird from "Mountains of the Peak of Derbyshire.")

instead of *Carduelis flavirostris bensonorum* Meinertzhagen (see *Brit. Birds*, Vol. XXVIII., p. 95).

The distinction of the Outer Hebridean Twite, named by Col. Meinertzhagen, has already been acknowledged, but it has now been found that birds breeding on the Yorkshire-Lancashire moors are not to be distinguished from Hebridean Twites. Not many birds from other breeding localities are available, but birds from Ireland and other parts of Scotland appear similar, though it may be found that Shetland birds are like the typical form. Latham's name can be accepted for the British bird.

The typical form, number 20 of the *Check-List*, which may be called "The Continental Twite," *Carduelis flavirostris flavirostris* (L.), must be retained since skins in the British Museum collection prove that it occurs on migration.

127. THE NORTHERN WILLOW-WARBLER—*Phylloscopus trochilus acredula* (L.).

MOTACILLA ACREDULA Linnæus, *Syst. Nat.*, ed. X., I., p. 189 (1758—Europe, restricted typical locality, Sweden).

instead of *Phylloscopus trochilus evermanni* (Bp.).

The type locality for *Phylloscopus t. evermanni* is "Kazan and Orenburg". Dr. C. B. Ticehurst has shown (*Bull. B.O.C.*, LV., pp. 177-8) that Willow-Warblers from Sweden and Kazan are alike, and therefore that Linnæus's name *acredula*, which has reference to a bird described in the *Fauna Svecica* as from Upsala, can be used for this form of the Willow-Warbler. The name *evermanni* therefore becomes a synonym.

156A. THE SIBERIAN LESSER WHITETHROAT—*Sylvia curruca blythi* Tice. & Whist.

SYLVIA CURRUCA BLYTHI Ticehurst and Whistler, *Ibis*, 1933, p. 556 (1933—Siberia, ex Hartert, *Vög. pal. Fauna*, No. 888, p. 589).

instead of *Sylvia curruca affinis* Blyth.

Dr. C. B. Ticehurst and Mr. H. Whistler have shown clearly (*Ibis*, 1933, pp. 554-6) that Blyth's name *affinis* cannot be applied to the bird known as the Siberian Lesser Whitethroat. They have consequently given it a new name, and in doing so have based it upon Hartert's description of the bird in his *Die Vögel der paläarktischen Fauna*, Vol. I., p. 589, No. 888. They have also named a type from Cawnpore, but as the new name applies to Hartert's description the first locality given by him, namely Siberia, must become the typical one.

193. THE NORWEGIAN BLUETHROAT—*Luscinia svecica gaetkei* (Kleinschm.).

to be struck out of the List. No. 194 to be called the Red-spotted Bluethroat instead of the Lapland Bluethroat.

Dr. F. Steinbacher has discussed the question of the separation of the Norwegian Bluethroat and has shown by a series of measurements of breeding birds that this cannot be sustained (*Orn. Monatsber.* XLIII., March, 1935, pp. 38-41). The difference in measurement of the wing and "wing-tip" was based largely upon migrants and not on breeding birds. When a series of the latter is examined, it is found that the differences are individual and not racial. The Committee accepts Dr. Steinbacher's conclusions, which have been confirmed by the examination of a small series of breeding birds.

As the List will now contain only two Bluethroats, it will be advisable to call them the Red-spotted and the White-spotted.

MOVEMENTS OF RINGED BIRDS FROM ABROAD TO THE BRITISH ISLES AND FROM THE BRITISH ISLES ABROAD.

ADDENDA V.*

BY

H. F. WITHERBY AND E. P. LEACH.

As this series of articles has been appreciated and considered of value, we think it advisable to bring the records up to date periodically, and now list those which have been gathered together since our last instalment.

It will be seen that in the cases of the Starling and Black-headed and Common Gulls we have given summaries rather than full lists of the recoveries, since they do little more than to reinforce the information obtainable from previously published lists.

We must again express our gratitude to many ringing stations and correspondents for notifying recoveries and supplying details.

HOODED CROW (*Corvus c. cornix*).

Only two Hooded Crows have been reported previously, one from Sweden and the other from Denmark.

RINGED ABROAD AS YOUNG.

		<i>Ringed.</i>			<i>Recovered.</i>
O.	3880	Dovre, Norway	13.7.34	Sutherland	6.11.34
O.	3974	Opland, Norway	16.6.34	Norfolk	8.2.35

RINGED ABROAD. TRANSPORTED TO A DISTANCE AND RELEASED EXPERIMENTALLY.

		<i>Ringed.</i>			<i>Recovered.</i>
R.	D70115	East Prussia, released (470 m. W.)	Schleswig	Suffolk	12.12.35
			11.4.35		

ROOK (*Corvus f. frugilegus*.)

Ringed Rooks have now reached us from breeding places in Holland, north Germany, East Prussia, Lithuania and north Russia. Most of these have been reported from counties on the east coast of England, though one reached Hereford and one below is reported from Sussex.

RINGED ABROAD AS MIGRANT.

		<i>Ringed.</i>			<i>Recovered.</i>
R.	D73344	East Prussia	2.4.36	Norfolk	10.1.37

RINGED ABROAD AS NESTLING,

		<i>Ringed.</i>			<i>Recovered.</i>
L.	120514	Zuid Holland	12.6.36	Sussex	18.11.36

*For previous parts see Vol. XXV., pp. 110-128; 174-192; 245-268; 357-360. Vol. XXVI., pp. 352-361. Vol. XXVIII., pp. 106-112; pp. 133-141. Vol. XXIX., pp. 132-144.

JACKDAW (*Colæus m. spermologus*).

For discussion on this bird and the next see *antea*, Vol. XXX., p. 224.

RINGED ABROAD AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Sk. D11123	Slesvig, Denmark	17.6.33	Norfolk 10.12.33

SCANDINAVIAN JACKDAW (*Colæus m. monedula*).

RINGED ABROAD AS NESTLING.

<i>Ringed.</i>		<i>Recovered.</i>	
Sk. K1 1046	Jylland, Denmark	24.5.33	Sutherland 14.4.34

STARLING (*Sturnus v. vulgaris*).

There are 176 records of ringed Starlings since our last list and as these do not extend the area covered by previous records it seems not worth while to list them separately. We have now in all some 400 records of Starlings ringed abroad and found in the British Isles and ringed here and found abroad. The new records may be summarized as follows:—

Sixty-nine ringed as young or as adults at their breeding places between May and early July in Holland, Scandinavia, Germany, Latvia, Poland and Finland have been recovered in various parts of the British Islands between October and March.

Seventy-seven ringed as full-grown birds between June and March in Belgium, Holland, Heligoland, Germany, East Prussia and Lithuania have been reported in all parts of the British Islands between October and April, except those mentioned below. The majority of these birds were no doubt ringed at or near their breeding places, but some were probably on migration. The three cases set out below are worthy of special mention owing to the dates on which they were recovered being rather puzzling in relation to the dates on which they were ringed.

<i>Ringed.</i>		<i>Recovered.</i>	
L. 131287	Zuid Holland	29.10.34	Middlesex 3.6.35
B. CC7461	Belgium	31.7.33	Somerset 2.7.35
R. F252300	Memel Territory	23.7.35	Aberdeen 2.5.36

Twenty-six ringed in England between October and early March have been recovered at their breeding places in Holland, Scandinavia, Germany, East Prussia, northern Poland and Latvia between April and August.

Finally four ringed in England between November and February have been recovered in Holland and Germany between September and March, their breeding places being uncertain.

GREENFINCH (*Chloris ch. chloris*).

This is only the second ringed Greenfinch to be reported from abroad.

RINGED GREAT BRITAIN AS ADULT.			
	<i>Ringed.</i>		<i>Recovered.</i>
Cheshire	27.10.35	Seine-et-Marne, France	12.3.36

GOLDFINCH (*Carduelis c. britannica*):

This bird, which was kindly sent to us by Mr. R. M. Garnett, was found dead on a road near Cromer. It was in a very damaged condition and the plumage very worn, but sufficiently intact to determine that the bird belonged to the British race. It seems probable therefore that when ringed it was on its way back to its native place. It is the first case of a ringed Goldfinch being reported as having travelled over-sea.

RINGED ABROAD AS MIGRANT.			
	<i>Ringed.</i>		<i>Recovered.</i>
L. B18709	Zuid Holland	30.4.36	Norfolk 27.5.36

LINNET (*Carduelis c. cannabina*).

The Vizcaya recovery only slightly extends the range of previous records from the extreme south-west of France.

RINGED GREAT BRITAIN IN BREEDING SEASON.			
	<i>Ringed.</i>		<i>Recovered.</i>
Worcester	24.6.36	Gironde, France	17.10.36
Gloucester	22.6.35	Ditto	12.10.35
Berkshire	5.6.35	Vizcaya, Spain	3.11.35

RINGED GREAT BRITAIN AS ADULT.			
	<i>Ringed.</i>		<i>Recovered.</i>
Worcester	14.10.34	Loire Inf., France	15.3.36
Ditto	31.3.35	Ditto	18.12.35

RINGED ABROAD. BREEDING-PLACE UNCERTAIN.			
	<i>Ringed.</i>		<i>Recovered.</i>
B. 6A7878	West Flanders	18.4.35	Norfolk 19.7.36

CHAFFINCH (*Fringilla c. caelebs*).

Although we have had a number of records of Chaffinches ringed in autumn in Belgium and Holland and recovered in winter in the British Isles and *vice versa*, the Norwegian recovery below is the first ringed bird traced for certain to its breeding place. Now that the British breeding Chaffinch has been shown to be separable as a distinct race, this record is of some interest though doubtless all the other recoveries are also referable to the typical form.

RINGED GREAT BRITAIN AS WINTER VISITOR AND RECOVERED ABROAD IN BREEDING-PLACE.			
	<i>Ringed.</i>		<i>Recovered.</i>
Worcester	10.2.34	Ostfold, Norway	—5.36

RINGED GREAT BRITAIN. RECOVERED ABROAD. BREEDING-PLACE
UNCERTAIN.

	<i>Ringed.</i>		<i>Recovered.</i>	
Westmorland	9.3.35	Antwerp, Belgium		15.11.36
Worcester	11.2.35	Ditto		8.10.36
Gloucester	26.12.34	Ditto		3.10.36
Ditto	29.1.35	East Flanders		—.10.35
Ditto	29.12.34	Ditto		25.10.35

RINGED ABROAD. BREEDING-PLACE UNCERTAIN.

	<i>Ringed.</i>		<i>Recovered.</i>	
H. 8305657	Heligoland	3.10.36	Stafford	30.1.37
C. A20996	Zuid Holland	14.10.33	Monmouth	3.4.36
C. D16117	Ditto	8.10.35	Down	—.3.36
B. 5B286	Antwerp, Belgium	22.10.32	Dumfries	4.11.34

MEADOW-PIPIT (*Anthus pratensis*).

RINGED GREAT BRITAIN IN BREEDING SEASON.

	<i>Ringed.</i>		<i>Recovered.</i>	
Midlothian	19.5.35	Gironde, France		2.10.35
Cumberland	27.5.35	Basses Pyrénées, France		—.10.35
Norfolk	15.5.35	Estremadura, Portugal		9.12.35

RINGED GREAT BRITAIN AS ADULT.

	<i>Ringed.</i>		<i>Recovered.</i>	
Worcester	1.10.34	Basses Pyrénées, France		30.10.35

RINGED GREAT BRITAIN AS MIGRANT.

	<i>Ringed.</i>		<i>Recovered.</i>	
Leembroke	25.8.35	Cadiz, Spain		17.1.36

PIED WAGTAIL (*Motacilla a. yarrellii*).

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>	
Cumberland	30.5.35	Estremadura, Portugal		26.2.36

FIELDFARE (*Turdus pilaris*).

RINGED ABROAD AS MIGRANT.

	<i>Ringed.</i>		<i>Recovered.</i>	
H. 740062	Heligoland	19.5.33	Stafford	13.2.36

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

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>	
Sussex	17.4.35	Nord, France		24.11.35

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

The sub-species of Song-Thrush breeding in Holland is the same as ours.

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>	
Berkshire	11.5.36	Manche, France		23.10.36

RINGED GREAT BRITAIN AS ADULT.

	<i>Ringed.</i>		<i>Recovered.</i>	
Warwick	22.12.35	Utrecht, Holland		12.3.36

RINGED ABROAD AS NESTLING.

	<i>Ringed.</i>	<i>Recovered.</i>
L. D1875 Utrecht, Holland	14.6.35	Norfolk 5.11.35

CONTINENTAL SONG-THRUSH (*Turdus e. philomelus*).

RINGED ABROAD. TRANSPORTED TO A DISTANCE AND RELEASED EXPERIMENTALLY.

	<i>Ringed</i>	<i>Recovered.</i>
H. 757922 Heligoland, released Silesia (450 m. S.E.)	23.9.34	Perthshire 19.2.36

ICELAND REDWING (*Turdus m. coburni*).

This is only the second ringed Iceland Redwing to be reported.

RINGED ABROAD AS NESTLING.

	<i>Ringed</i>	<i>Recovered.</i>
Sk. T12603 Myvatn, Iceland	19.6.34	Harris, Hebrides —.12.36

BLACKBIRD (*Turdus m. merula*).

Although we have now a very considerable number of records of ringed Blackbirds visiting us in winter from northern Europe, only two of our native birds have so far been recorded from abroad.

RINGED GREAT BRITAIN AS WINTER VISITORS OR MIGRANTS.

	<i>Ringed</i>	<i>Recovered.</i>
Down	14.2.36	Västmanland, Sweden 17.8.36
Isle of May	24.4.35	Friesland, Holland 13.11.35

RINGED ABROAD AS NESTLINGS.

	<i>Ringed.</i>	<i>Recovered.</i>
Sk. H1 866 Jylland, Denmark	3.6.30	Northumberland 10.11.35
Sk. T.7601 Ditto	18.5.35	Fermanagh 13.1.36
Sk. T4804 Sjælland, Denmark	4.6.31	Cumberland 9.1.33
B. 3C2261 Antwerp, Belgium	9.5.35	Pembroke 1.12.35
H. 6005165 Westphalia, Germany	29.5.36	Cornwall 8.11.36

RINGED ABROAD AS MIGRANTS.

	<i>Ringed.</i>	<i>Recovered.</i>
H. 742107 Heligoland	31.10.33	Cumberland —.12.35
H. 751749 Ditto	26.3.34	York 9.2.36
H. 758765 Ditto	19.5.34	Pembroke 17.12.36
H. 787986 Ditto	28.10.35	Cork 24.12.36

RINGED ABROAD. TRANSPORTED TO A DISTANCE AND RELEASED EXPERIMENTALLY.

	<i>Ringed.</i>	<i>Recovered.</i>
H. 759957 Heligoland, released Silesia (450 m. S.E.)	6.3.35	Tyrone —.3.36

WHINCHAT (*Saxicola r. rubetra*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>	<i>Recovered.</i>
Cumberland	15.6.35	Gironde, France —.9.35
Westmorland	21.6.35	Ditto 19.9.35

SWALLOW (*Hirundo r. rustica*).

The records below bring our total of Swallows recovered in South Africa up to fourteen besides one from the Congo.

RINGED GREAT BRITAIN AS NESTLINGS.

Ringed.		Recovered.	
Carmarthen	18.8.33	Manche, France	Summer, 1935
Cumberland	3.7.35	Orange Free State, S. Africa	11.11.36
Huntingdon	27.8.32	Ditto	15.2.36
Cumberland	—.7.35	Cape Province, S. Africa	7.2.36

RINGED GREAT BRITAIN AS ADULT.

Ringed.		Recovered.	
Leicester	5.8.34	Orange Free State, S. Africa	—.2.36

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

RINGED GREAT BRITAIN AS NESTLING.

Ringed.		Recovered.	
Sussex	27.9.35	Zuid Holland	26.10.35

CUCKOO (*Cuculus c. canorus*).

This record is curious and one can only suppose that the bird reached Heligoland on its autumn migration from (Cumberland in 1935.

RINGED ABROAD AS MIGRANT.

Ringed.		Recovered.	
H. 676695A	Heligoland	16.8.35	Cumberland —.7.36

MERLIN (*Falco columbarius* ? subsp.).

RINGED ABROAD AS NESTLINGS.

Ringed.		Recovered.	
Rk. 5.288	N.W. Iceland	27.6.33	Dumbarton 15.4.36
Rk. 5.335	N. Iceland	7.7.35	Lancashire 30.11.35

COMMON HERON (*Ardea c. cinerea*).

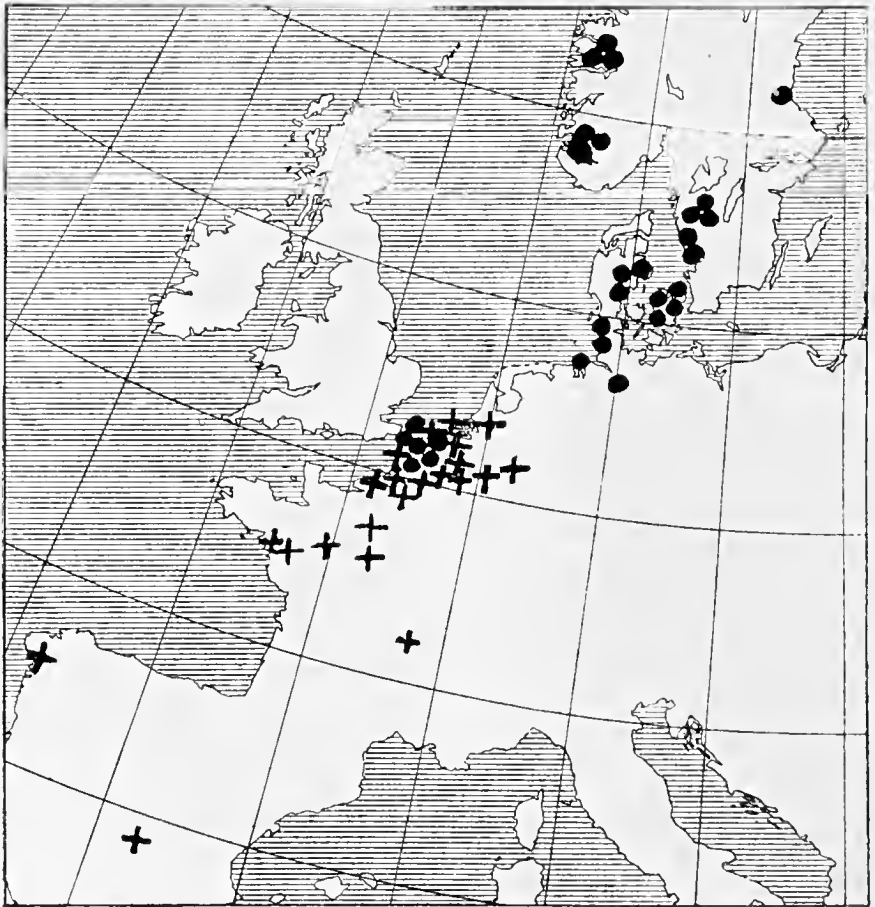
There are so many new records of Herons since our last instalment that we have thought it of interest to give a revised map. Most of our birds which have migrated have been from Kent and Sussex heronries, though it will be noted that one from Cambridge crossed the North Sea. We have received a number from Norway, Sweden and Denmark and these have spread well over the country.

RINGED GREAT BRITAIN AS NESTLINGS.

Ringed.		Recovered.	
Sussex	11.5.35	Zuid Holland	16.1.36
Ditto	11.5.35	Liège, Belgium	4.12.35
Cambridge	16.5.34	West Flanders	19.1.36
Sussex	11.5.35	Somme, France	11.10.35
Ditto	23.6.35	Pas de Calais, France	6.12.35
Kent	5.5.35	Eure-et-Loir, France	22.12.35
Sussex	11.5.35	Loir-et-Cher, France	—.8.35
Kent	23.5.35	Maine-et-Loire, France	27.12.35
Sussex	9.5.36	Loire Inf., France	2.9.36
Ditto	9.5.36	Ditto	10.10.36

RINGED ABROAD AS NESTLINGS.

<i>Ringed.</i>			<i>Recovered.</i>	
<i>Stav.</i> 1653	Sunnfjord, Norway	5.6.35	Unst, Shetland	22.2.36
<i>Stav.</i> 20005	Ditto	9.6.36	Burra, Shetland	20.2.37
<i>Stav.</i> 20007	Ditto	9.6.36	Ross	11.1.37
<i>Stav.</i> 237	Ryfylke, Norway	12.7.32	Scalloway, Shetland	14.2.33
<i>Stav.</i> 248	Ditto	25.5.33	Lewis, Hebrides	23.10.34
<i>G.</i> 769E	Västergötland, Sweden	10.6.34	Cornwall	12.11.34
<i>G.</i> 2215E	Ditto	10.6.34	Lincoln	4.1.36
<i>St.</i> S12	Halland, Sweden	11.6.34	Yorks	—.8.35
<i>St.</i> M7198	Hälsingland, Sweden	28.6.35	Berwick-on-Tweed	2.11.35
<i>Sk.</i> B1766	Jylland, Denmark	24.5.34	Dumfries	1.12.34
<i>Sk.</i> R10344	Ditto	19.5.34	Yorks	—.2.35
<i>Sk.</i> R10345	Ditto	19.5.34	Cambridge	23.12.35
<i>Sk.</i> B2419	Slesvig, Denmark	11.6.33	Essex	—.2.36
<i>H.</i> 214247	Hamburg, Germany	4.5.34	Devon	—.4.36
<i>V.</i> B2020	Pas-de-Calais, France	11.5.36	Buckingham	3.7.36



COMMON HERON
(*Ardea c. cinerea*)

+ Recovered here Ringed in Southern England as nestlings
● Ringed here as nestlings. Recovered in Great Britain

GREY LAG-GOOSE (*Anser anser*).

All the ringed Grey Lags so far recovered have come from Iceland.

RINGED ABROAD IN BREEDING SEASON.

	<i>Ringed.</i>		<i>Recovered.</i>
Rk. 2.53	N. Iceland	8.7.36	Perthshire 26.10.36
Rk. 2.255	Ditto	8.7.34	Wigtown 2.11.35
Rk. 2.180	S. Iceland	12.7.36	Orkney —.11.36 (caught and re-ringed Witherby 112700).

SHELD-DUCK (*Tadorna tadorna*).

This with several previous records shows that Sheld-Duck for some reason migrate to north-west Germany, not only from the east coast of Great Britain but also from the west and south coasts.

RINGED GREAT BRITAIN AS ADULT.

	<i>Ringed.</i>		<i>Recovered.</i>
Dumfries	23.5.36	Cuxhaven, Germany	6.9.36

MALLARD (*Anas p. platyrhyncha*).

These and previous records indicate that many (or perhaps most) of our immigrant Mallards come from Scandinavia and the region of the Baltic.

RINGED GREAT BRITAIN AS WILD YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
Kinross	12.6.35	Jylland, Denmark	9.10.36

RINGED GREAT BRITAIN AS ADULTS IN WINTER.

	<i>Ringed.</i>		<i>Recovered.</i>
Wigtown	5.3.26	Aland Is., Finland	15.4.27
Ditto	5.3.35	Pomerania, Germany	13.10.36
Ditto	7.3.35	Oslo, Norway	—.8.35
Ditto	6.3.34	Ditto	5.10.35
Ditto	29.2.36	Värmland, Sweden	19.8.36
Norfolk	8.3.30	Sjælland, Denmark	—.9.33

GADWALL (*Anas strepera*).

So far all ringed Gadwall have come from Iceland and, except for one which appeared in Sussex, all have been reported from Ireland.

RINGED ABROAD AS BREEDING ADULT.

	<i>Ringed.</i>		<i>Recovered.</i>
Sk. K4363	Myvatn, Iceland	29.6.33	Kerry 8.11.35

TEAL (*Anas c. crecca*).

We have so many new records since our last map of the Teal was published that a revised one would seem useful. Most of the records from birds ringed in this country in previous lists were derived from Cumberland and Wigtownshire, whereas in the present list almost all are due to the efforts of Messrs. C. W. Mackworth-Praed and H. A. Gilbert

at their decoy in Pembrokeshire and we are much indebted to them for supplying us with details of these cases.

It will be seen by the map that the area from which our winter Teal come is very large, extending as it does from above the Arctic Circle in Norway, east to Lakes Ladoga and Ilmen in north-west Russia and south to Poland.

Attention must be drawn to two records from north Spain and to a still more remarkable one from north-east Italy. These three birds were recovered in winters following those in which they were ringed here. Assuming they returned north-eastward to breed, the bird which reached Italy appeared to take an entirely different route for a different wintering place the next year, and it seems likely that the other two also made a different journey.

RINGED GREAT BRITAIN AS ADULTS IN WINTER.

	<i>Ringed.</i>		<i>Recovered.</i>
Pembroke	3.12.34	Pskov, Russia	15.8.35
Ditto	27.11.35	L. Ilmen, Russia	16.5.36
Ditto	25.12.35	West Finland	8.10.36
Cumberland	1.3.33	Kurland, Latvia	25.8.34
Pembroke	8.11.35	N.E. Poland	18.8.36
Ditto	1.12.35	Pomerania, Germany	19.7.36
Ditto	22.11.35	Tromsfylke, Norway	28.5.36
Essex	31.10.35	Hedemark, Norway	23.8.36
Pembroke	12.2.36	Västerbotten, Sweden	—.5.36
Ditto	29.12.35	Värmland, Sweden	12.10.36
Ditto	11.12.35	Örebro, Sweden	14.9.36
Ditto	19.12.35	Gotland, Sweden	29.8.36
Ditto	6.2.35	Jylland, Denmark	8.9.35
Ditto	8.2.35	Ditto	5.11.35
Ditto	13.11.35	N. Frisian Is., Germany	28.10.36
Ditto	1.1.36	Ditto	1.11.36
Ditto	13.2.36	Schleswig-Holstein	4.10.36
Ditto	23.1.36	E. Friesland, Germany	—.12.36
Ditto	10.11.35	Friesland, Holland	—.1.36
Ditto	26.12.35	Ditto	28.9.36
Ditto	28.12.35	Ditto	28.9.36
Ditto	20.12.35	Zuid Holland	5.9.36
Ditto	14.11.35	Dittó	18.11.36
Ditto	29.11.35	West Flanders	6.4.36
Ditto	14.12.35	Pas-de-Calais, France	28.3.36
Ditto	28.12.35	Calvados, France	26.3.36
Ditto	6.2.35	Maine-et-Loire, France	19.2.36
Ditto	12.11.35	Padua, Italy	8.3.37

RINGED GREAT BRITAIN IN WINTER, AND WINGS CLIPPED.

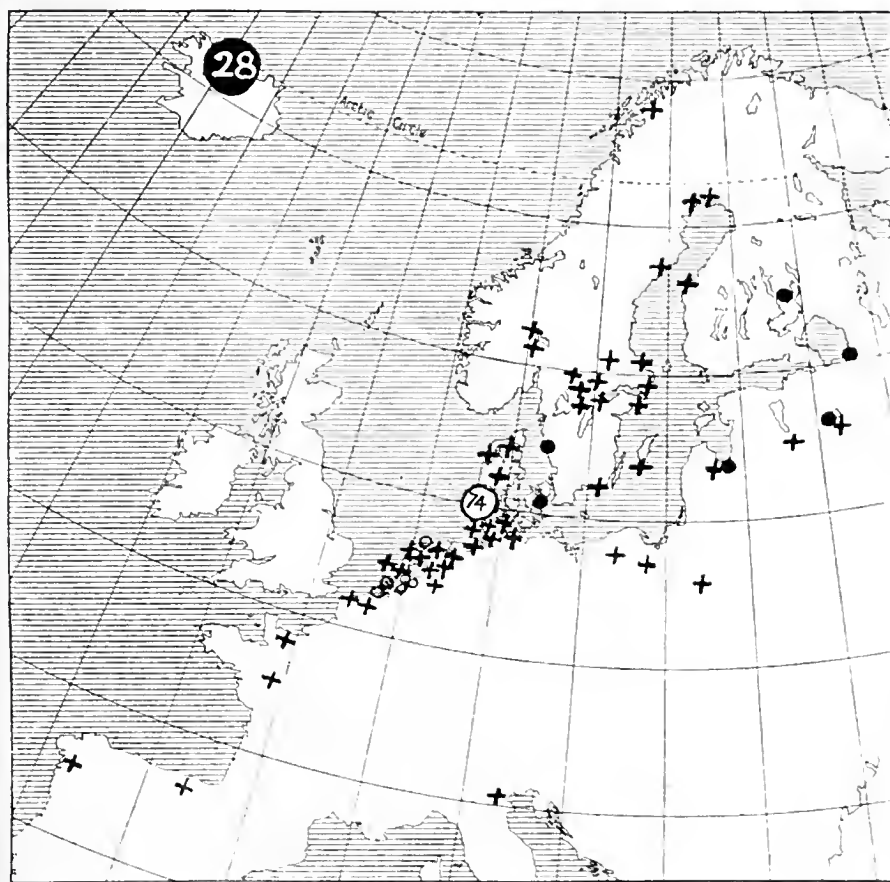
*Ringed.**Recovered.*

Pembroke, transported to	Drenthe, Holland	5.8.36
Sussex	25.1.35	
Ditto, ditto	28.12.34	Galicia, Spain
		13.9.35

RINGED ABROAD AS YOUNG OR IN BREEDING SEASON.

*Ringed.**Recovered.*

<i>Rk.</i> 5.346	N. Iceland	3.8.34	Antrim	—.8.35
<i>Rk.</i> 5.66	Ditto	1935	Cork	17.10.35
<i>Sk.</i> S117	Ditto	7.8.31	Galway	15.12.33
<i>Sk.</i> V6705	Husavik, Iceland	1930 or '31	Hereford	28.11.31
<i>Sk.</i> V6708	Ditto	1930 or '31	Orkney	22.12.33
<i>Sk.</i> V3558	N. Iceland	30.7.27	Londonderry	3.3.34
	(breeding adult)			
<i>St.</i> B3195	Halland, Sweden	25.6.32	Cambridge	27.8.32



TEAL

+ Recovered here. Ringed in Great Britain between August & March. ● (28) Ringed here as young or breeding Recovered in British Isles between August & March. ○ (74) Ringed here from decoys between July & December Recovered in British Isles between August & March

WIGEON (*Anas penelope*).

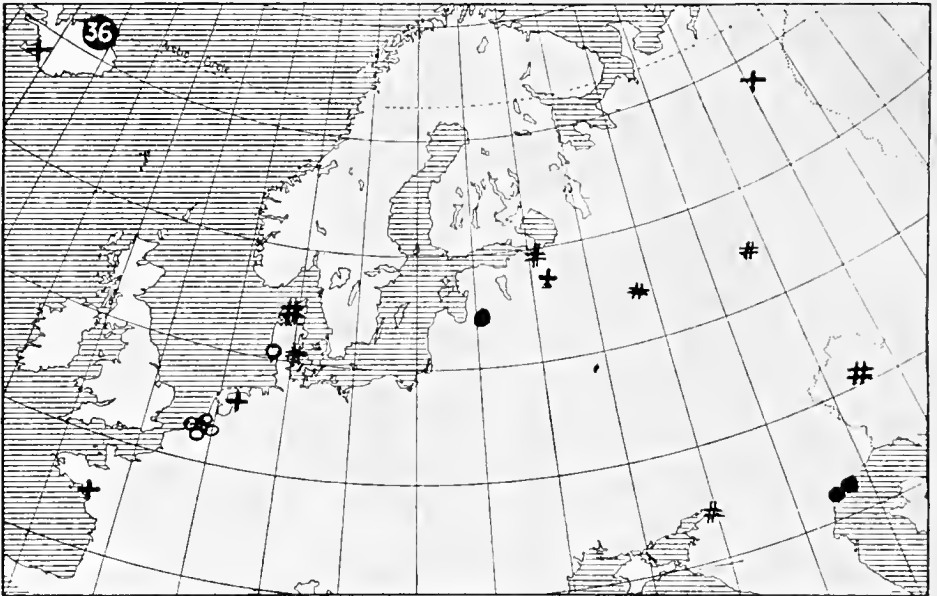
Records are accumulating to show how enormously widely separated are the areas from which Wigeon visit us, as will be seen by the revised map here reproduced.

RINGED GREAT BRITAIN AS ADULTS IN WINTER.

<i>Ringed.</i>		<i>Recovered.</i>	
Pembroke	22.2.35	Sanczursk, Central Russia	3.9.35
Ditto	2.2.36	Itlar, Central Russia	—.10.36
Wigtown	25.2.36	Leningrad, Russia	10.5.36
Pembroke	1.1.36	Rostof, S. Russia	9.9.36
Ditto	23.2.35	Fyen, Denmark	17.8.35

RINGED ABROAD AS YOUNG OR IN BREEDING SEASON.

<i>Ringed.</i>		<i>Recovered.</i>	
<i>Sk.</i> V7325	Husavik, Iceland	26.7.31	Moray —.1.34
<i>Sk.</i> M2454	Myvatn, Iceland	22.6.35	Sutherland 13.12.35
<i>Sk.</i> V9071	Ditto	2.8.36	Norfolk 27.11.36
<i>Sk.</i> V7935	Ditto (breeding adult)	3.8.34	Clare 7.11.34
<i>Sk.</i> V4426	Saudarkrok, Iceland	28.7.32	Wicklow —.1.33
<i>Rk.</i> 4.588	Myvatn, Iceland	27.6.35	Caithness 30.10.35
<i>Rk.</i> 4.38	Ditto (breeding adult)	6.6.33	Orkney 15.10.35

WIGEON. (*Anas penelope*)

+ Recovered here. Ringed in Great Britain as young. # Recovered here. Ringed in Great Britain as adults. 36 ● Ringed here as young or as adults in wing-moult. Recovered in British Isles between September & March. ○ Ringed here from decoys Recovered in British Isles between November & February.

[To be continued.]

NOTES

NUMBER OF EGGS LAID BY THE JACKDAW.

IN the *Practical Handbook* (p. 21) the number of eggs laid by the Jackdaw (*Coloeus m. spermologus*) is given as "4-6, sometimes 7." It may, therefore, be worth recording that a nest at Comlongon Castle, Dumfriesshire, contains 8 eggs. The nest is also the bulkiest I have ever seen. The birds, entering by a bow-shot window of the fourteenth-century castle, have practically blocked the winding stone staircase which leads to the roofs, with a pile of sticks which measures 6 feet long by 6 feet high and 3 feet broad, on the top of which the nest is precariously perched. MANSFIELD.

[Since the publication of Part I of the *Practical Handbook* in 1919, I have noted four or five cases of eight eggs in a clutch, and once nine. For notes on a staircase blocked by a solid mass of sticks 10 feet high, etc., see Yarrell, Ed. IV., III., p. 308.—F. C. R. JOURDAIN.]

HOUSE-SPARROW FEEDING YOUNG HEDGE-SPARROWS.

ON July 5th, 1936, there was a nest of a Hedge-Sparrow (*Prinella m. occidentalis*) with four feathered young in my garden in Cambridge. They were calling for food, and a hen House-Sparrow (*Passer d. domesticus*) flew down and fed them. The following day she was seen to visit the nest again. That evening, two of the fledglings left the nest and the House-Sparrow was in attendance. The two remaining young ones did not fly till July 7th, and the House-Sparrow was twice observed to go to the nest and feed them. Throughout these three days, the female Hedge-Sparrow brought food regularly, but the two birds were never seen to meet at the nest. M. D. BRINDLEY.

MORTALITY AMONGST REED-BUNTINGS AND OTHER BIRDS IN MARCH STORM IN MIDLOTHIAN.

ON March 21st, 1937, after a period of snow and frost, I found dead, at Duddingston Loch, Midlothian, ten Reed-Buntings (*Emberiza s. schœniclus*) three Blackbirds (*Turdus m. merula*) and one Meadow-Pipit (*Anthus pratensis*).

All the birds were in the same state of decomposition and all were found in old nests of Song-Thrush and Blackbird

built in young conifers. The fourteen birds were distributed in nine nests. Three nests contained single Blackbirds, and three, single Reed-Buntings, and the remaining three contained respectively, two Reed-Buntings, three Reed-Buntings, and two Reed-Buntings and one Meadow-Pipit.

Possibly these birds—unable to secure sufficient food—sought the shelter of these nests in an unsuccessful effort to conserve their body heat and energy, and perished there of starvation.

WILLIAM SERLE (JUN.)

WATER-PIPITS IN CHESHIRE AND SUFFOLK.

ON March 21st, 1937, on a patch of mud beside the marshes of the Dee, half a mile south of Parkgate, I had close views of a Water-Pipit (*Anthus s. spinoletta*). It settled within ten yards of me, and twice I put it up. Both on the ground and as it flew up I could see the white outer-tail feathers distinctly. It showed no trace of spring plumage, the head being dull grey with only a very short whitish eye-stripe. I was first attracted by the call-note, but that is hardly distinguishable from a Rock-Pipit's note and, owing to the bird's dark head, I had some doubt of its identity at the time. The white outer-tail feathers, however, appear to be decisive.

On April 3rd, 1937, at the south side of Easton Broad, Suffolk, within half a mile of the sea, I had good views of two Water-Pipits. These, too, were on muddy ground at the edge of a marsh; and, as with the bird seen in Cheshire, they were more or less in the company of Meadow-Pipits. Again, it was the white outer tail-feathers that were decisive, together with the call-note. Neither of these two birds was in full spring plumage, but one in particular had an almost blue-grey head, with a distinct eye-stripe, and at a distance its whole head and throat looked pale. In this case, I had the satisfaction of seeing several Rock-Pipits (*A. s. obscurus*) a quarter of an hour later at the edge of the shingle. Although I could not detect any difference in the call-note, the absence of white in the outer-tail feathers and the more uniform grey-brown of the upper-parts of these birds made a noticeable contrast with the Water-Pipits, which I found still at the same place half an hour later.

I understand that the Water-Pipit has not been definitely recorded from either county before. Possibly it has been overlooked. Muddy or brackish marshes seem to be favourite haunts of the species, and March and April are perhaps the months when it is most likely to be seen. H. G. ALEXANDER.

RED-CRESTED POCHARDS IN LINCOLNSHIRE AND WESTMORLAND.

I HAVE recently seen some Red-crested Pochards (*Netta rufina*) in a swamp on the East Lincolnshire marshes.

I first saw three drakes and one duck, on the evening of April 11th, 1937. On the following evening, one of the drakes had disappeared, the other three birds remaining on the swamp until April 26th, when there were again three drakes, presumably the same drake had returned. On my approach this time, however, one drake flew up when I was about 300 yards away, whereas the others, as they had always done, allowed me to approach to within 80 yards before taking wing, then flying only about 150 yards away and alighting again in the swamp. The next evening, April, 27th, I only saw one drake, which was feeding in company with a pair of Mute Swans. This drake flew up and away out towards the sea when I was about 200 yards away. I have not seen any of the birds since then.

I was able to obtain excellent views and noted among other details the drakes' orange-red bills and feet, golden breasts and black breasts. In flight a white patch on the wings was noticeable and a "whirring" noise was very audible.

E. L. ROBERTS.

ON April 8th, 1937, a drake Red-crested Pochard (*Netta rufina*) was reported from a tarn in the Westmorland hills, and was watched during the next few days by many competent observers. When I saw it on April 10th, it was keeping company with a female Common Pochard and a female Tufted Duck. There is no reason to think this bird an escape, as the place is very remote, and more than a hundred miles from any "ornamental waters". The bird was not very shy, but on the alert and when flushed rose and flew freely. There is only one previous record for Westmorland (1896).

SIBYL CROPPER.

[Full-winged Mandarin Ducks ringed and put down on the Buckingham Palace lake wandered as far as Sweden and Hungary, so that remoteness from a place of captivity is no bar to suspecting such birds as those recorded by Miss Cropper to be escapes. In May, 1935, the late Duchess of Bedford wrote to me:—"We have bred Red-crested Pochards (at Woburn) for some years. They are hatched in incubators and reared under hens, and as soon as they fly they go where they please." Under these circumstances it is difficult to accept as those of truly wild birds occurrences of this species.

[F.W.]

TURNSTONE IN SURREY.

DURING the afternoon of May 4th, 1937, at Barn Elms Reservoir, I was able to watch a solitary Turnstone (*Arenaria interpres*) under perfect conditions at a range of 20 yards. The bird was in summer plumage and both the black and white markings of the cheeks, neck and breast, and the chestnut of the wings and mantle were conspicuous features.

REGINALD C. B. LEDLIE.

SCARCITY OF IMMATURE LESSER BLACK-BACKED GULLS ON SPRING MIGRATION ACROSS PENNINES.

DURING the past ten years or so, I have spent a great deal of time in watching the overland migrations of the British Lesser Black-backed Gull (*Larus f. graellsii*) across the Pennines. The almost total absence of immature birds on this route in spring is so remarkable as to call for special comment. Unfortunately, several seasons passed before I realized that the scarcity was a permanent feature, so that I only commenced taking systematic notes in 1931. West-bound birds in spring cross the Pennines apparently via Wharfedale and the Aire Gap, whence in the course of a season thousands of Gulls follow the Ribble on its way to the sea. The spring movement is at its height in late March and the first three weeks in April. From Waddington Fell there are several points where one can always find crowds of resting birds, preening and sleeping. To two of these, viz. : the sewage of the Co-operative Estates at Great Mytton, and (on the Lancashire side) an alluvial flat near the Calderstones Sewage Farm at Whalley, I have paid special attention, making frequent visits every spring accompanied at different times by my wife, Mr. E. Battersby and Mr. E. Davis.

The resting flocks are not only easy to observe at short range but may be taken as typical because their composition is constantly disturbed as birds arrive and depart. Most of these parties have been meticulously counted—a simple matter generally, as Lesser Black-backs tend to assemble together away from other species. Congregations of 50 to 70 birds are usual but numbers may reach anything up to 150.

Out of the immense number of these birds which I have watched in the period 1931 to 1937 inclusive, I have noted a total of 27 in immature plumage. Four out of this total were seen in one day (April 14th, 1933). It is, of course, possible that a few birds may have been overlooked, and that

a greater number of visits would have increased the total to some slight extent. But after making these allowances the number of juvenile birds seen in this locality is so small as to be negligible. No reason can be put forward for this scarcity, but the solution would seem to lie in the intensive study of purely coastal migrants in spring. In autumn, the proportions are more what would normally be expected considering the nearness of the breeding stations in north-western England.

As negative evidence is useful, it may be worth mentioning that I have had the binoculars on thousands of Lesser Black-backs during the last few years in this district without satisfactorily identifying the Scandinavian form (*Larus f. nauscus*).
CLIFFORD OAKES.

GOLDEN ORIOLE IN DEVONSHIRE.—The Earl of Mansfield informs us that he had a very good view of a female Golden Oriole (*Oriolus o. oriolus*) in Devonshire on April 12th, 1937.

RUDDY SHELD-DUCK IN DUMBARTON.—Mr. N. Hopkins records (*Scot. Nat.*, 1936, p. 142) a duck which he identified as a Ruddy Sheld-Duck on Summerston Loch on May 20th, 1936. This may well have been an escaped bird.

BEHAVIOUR OF MALE MALLARDS WITH BROODS.—Mr. Bertram Lloyd in his article under this title (*antea*, Vol. XXX., pp. 34-6) gives some references to previous observations, but it must be pointed out that this subject has been treated somewhat fully by Herr Ludwig Schuster in the *Beiträge zur Fortpflanzungs-biologie der Vögel*, 1928, pp. 103-6, in which he gives conclusive evidence from various sources showing that the male, although generally a "bad father," does from time to time take an active part in the care of the young. This is not only the case with the Mallard (*A. platyrhynchos*) as observed by Helm (*Journal f. Orn.*, 1905, p. 582) and Mantzsch (*Vogelwelt Islands*, p. 172), but the latter writer also describes similar conduct in the case of the male Pintail, Teal, Scaup, Goosander and Barrow's Goldeneye. This is also confirmed by Faber, who records instances of the male Sheld-Duck, Pintail and Teal behaving in the same way.

Rosenius also cites the Shoveler; Hortling the Tufted Duck (*Ornis Fennica*, 1927, p. 69) and H. J. and C. E. Pearson (*Ibis*, 1925, p. 243) give similar evidence with regard to the Scaup in Iceland. This behaviour is not, however, confined to the north, as Dombrowski (*Ornis Romaniae*, 1934) cites the Goldeneye, and references are also given

to cases mentioned by Hermann, Komjáthy and Graf von Zedlitz. In the case of the Pochard (*N. ferina*) similar behaviour is normal (Schuster and others).

For further details Herr Schuster's paper should be consulted, but it may be worth recording that Mr. J. Atkinson photographed a male Mallard in the act of arranging the down over the eggs after the duck had hurriedly left the nest without covering the eggs, and later on accompanied her back to the nest. In *Wild Life*, Vol. VIII, p. 140, there is a photograph of this incident, and also one of the duck and drake together at the nest. F. C. R. JOURDAIN.

GARGANEYS IN FIFESHIRE, KINROSS AND LANARKSHIRE.—Miss E. V. Baxter and Miss L. J. Rintoul note seeing three Garganey (*Anas querquedula*) on a loch near Burntisland on April 30th, 1936 (*Scot. Nat.*, 1936, p. 149), and two on Loch Levan on September 30th (p. 172), while Mr. W. Rennie records (p. 150) a pair at Possil Marsh on March 19th.

PINTAILS BREEDING IN ANGUS AND SUTHERLAND.—Miss E. V. Baxter records seeing a Pintail (*Anas acuta*) with a brood of downy young on a loch in Angus in the summer of 1936 (*Scot. Nat.*, 1936, p. 141) and Mr. J. H. B. Munro saw a party of six and a duck with a young one on a loch in Sutherland in June, 1936 (*t.c.*, p. 163).

SHAGS INLAND.—Mr. E. G. Pedler writes that three Shags (*Phalacrocorax aristotelis*) on the River Thames in the middle of April and beginning of May, 1937, frequently rested on the buttresses under Barnes Railway Bridge, and are quite undisturbed by trains going overhead and barges passing alongside.

Mr. K. B. Rooke reports several Shags in Cambridgeshire—one at the University Farm on February 17th, one found dead near Cambridge in the same week, several in the washes near Mepal about the 14th, and one on the Cam at Grantchester on March 7th.

BLACK-TAILED GODWITS IN GLOUCESTERSHIRE.—Mr. H. L. K. Whitehouse informs us that he, with Messrs. R. Gulliford and R. N. H. Whitehouse, saw three Black-tailed Godwits (*Limosa l. limosa*) on April 15th, 1937, at the edge of some floodwater between the River Severn and Hasfield, Gloucestershire.

LITTLE GULL IN NORFOLK IN SPRING.—Miss Judith M. Ferrier writes that on April 27th, 1937, she watched an immature Little Gull (*Larus minutus*) in company with Black-headed Gulls at Scolt Head. The bird is infrequently seen in spring.

REFLECTED COLOUR OF NIGHTJARS' EYES.

To the Editors of BRITISH BIRDS.

SIRS,—In the course of 5 years spent in Ceylon, I made many excursions through Nightjar-infested roads by night in a car, and in every case the light reflected from the Nightjars' eyes was red.

The same applies to a single similar instance in this Island.

JERSEY.

RODERICK DOBSON.

[Mr. George Brown writes again that if Mr. Humphrey Neame's explanation (*antea*, Vol. XXX., p. 379) is correct, it is strange that in view of the numerous times he has seen the reflection, it should always have appeared reddish, both to him and his friends, indicating that the eyes were always viewed obliquely. In Mr. Marples's case (*t.e.*, p. 322) the colour appeared green.—Eds.]

ON THE BEHAVIOUR OF MALE MALLARDS WITH BROODS.

To the Editors of BRITISH BIRDS.

SIRS,—Mr. Bertram Lloyd in his article on the above (*antea*, p. 334) comments on the constant appearance of some male Mallards with their respective females and their broods, and states that he can find no reference to such behaviour in the literature.

The following notes taken from my diary appear relevant:—

(1) At Slipperfield Loch, Peeblesshire, on May 23rd, 1931—"quite a number of broods of Mallard on the loch, accompanied by the duck and the drake in some cases." (*Italics in original note.*)

(2) At Duddingston Loch, Midlothian, on May 31st, 1935—"near the Curling Pond a flock of 30 male and 3 female Mallard . . . as long as the ducks are sitting, the drakes hang about the breeding sites in parties of two or three. Once or twice I have seen the drake with the duck and her ducklings. As the season advances the drakes segregate into this large grass-widower party."

I can recollect one drake Mallard particularly in 1935 which constantly accompanied the duck and her brood for some weeks after they were hatched.

WILLIAM SERLE (Jun.)

DUDDINGSTON,
EDINBURGH.

THE INFLUX OF GREBES AND DIVERS.

To the Editors of BRITISH BIRDS.

SIRS,—I should like to add some comments about the influx of Grebes and Divers at the end of January (*antea*, Vol. XXX., pp. 370-4).

Although some individuals seem to have remained on one sheet of water for a good many weeks, I think it is clear that there was also a fair amount of movement from one pool to another. It was no doubt impossible to show this in the table, but that is, perhaps, the reason for drawing special attention to it. Thus, I believe the coming and going of individual Grebes at Bartley (Warwicks.) was more complex than the table suggests. This is certainly true also of the birds seen at Upper Bittell (Worcester), where, for instance, two

Red-necked Grebes appeared at the end of January and remained for over a fortnight. By February 25th, however, there was only one; a month later (March 24th) a second bird appeared again. So, too, with the Black-necked Grebe. One appeared at Upper Bittell early in February, but did not stay very long. Another (or the same again) arrived there early in March, and stayed till near the end of April (26th, if not later). By that time it was in practically full breeding plumage.

The Staffordshire birds (Bellfields and Gailey) were not, I am afraid, completely reported. A number of observers visited these pools during February, March and April. Slavonian Grebes were reported in varying numbers at Bellfields all through these three months; the largest number at one time was four. One remained (though not, I think, always present) till May 1st. A notable omission from the published list is a Black-throated Diver, seen by Mr. H. L. Wilson and Miss James at Gailey, on March 20th, and by myself on the 29th. Nearly a month had elapsed since the two Red-throated Divers (recorded in the list) had disappeared.

As to the cause of the influx, I would like to venture a possible explanation. If the strong east winds made it difficult for these birds to find food on the west side of the North Sea they would, I believe, be reluctant to leave the sea for the west until the wind had decreased. My own experience, at any rate, is that birds strongly object to flying any distance with a tail wind—or even, perhaps, with any violent wind. A few birds seem to have come inland on the night of the 29th, when the wind was abating, but most of them not till the following night, when the wind had practically ceased. I am aware that there is much controversy at present with regard to the effect of wind on flight. Without entering into the technical aspect of the matter, I think I may be allowed to state that, after thirty years' observation of migration, I have yet to see any considerable movement of birds down wind, except when the wind is less than, say, 10 miles an hour.

SELLY OAK,

BIRMINGHAM.

H. G. ALEXANDER.

[The Black-throated Diver at Gailey mentioned by Mr. Alexander, was reported but was purposely omitted as it did not appear to be connected with the influx of the end of January.

It may here be noted that under Northants (p. 373) Stamford should read *Stanford*.—EDS.]



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SOME ACTIVITIES OF RESIDENT BLACKBIRDS IN WINTER.

BY

AVERIL MORLEY

“ A THRUSH . . . sings . . . with greater vigour from late November onwards . . . but with much greater vigour . . . after about the middle of January. The Blackbird . . . is rarely heard until February, and its best song is hardly heard till April or May. . . . It would seem, then, that what we call ‘ song ’ represents something different in the lives of the two species. The Thrush’s song seems to be its normal outlet for surplus energy ; the Blackbird’s is . . . mainly used during the breeding-season, and is probably more closely correlated to it. Possibly the Thrush’s territorial sense is stronger, and its song may be more closely related to that.” (H. G. Alexander, *Brit. Birds*, Vol. XXV, p. 101.)

For some time the Blackbird (*Turdus m. merula*) was the species most accessible to me, and though a country ornithologist would put my notes to shame, still I think they support that part of Mr. Alexander’s statement which suggests that the sense of territory is weaker in the male Blackbird than in the Thrush—because the species has come to express much of its emotions during the winter months in another form, by communal gatherings.

From early winter to spring, mostly in the mornings and evenings, an average of six to eight birds will collect together, to indulge in chases and pursuits, in a kind of tourney or fencing. At first it appears that the scene of these activities is not fixed, but in about a fortnight the birds I watched had confined themselves to a definite place. The gathering ground fixed, it remains so until the break-up in April, unless unfavourable circumstances arise, such as undue attention from cats (which will happen in a city). On downland I found the gatherings took place around the scattered drinking and bathing places ; elsewhere the ground seemed chosen because several territories there met in a no-man’s-land ; sometimes I did not know the district well enough to find out if there was a reason at all for some particular stretch of lawn or field being the scene of the meetings ; but they all had this in common, an open space (which could be four square yards or large as a field) with cover near by. Because so much of the activities at these gatherings takes place on the ground, the birds will not meet in dense undergrowth, thick woodland, bracken and so on.

Now the male Blackbird has been somewhat of a stumbling block to those who believe that song and territory are bound up together, for here was a bird apparently as closely linked as the Song-Thrush and the Robin to his territory, which yet did not sing in winter. But the male Blackbird is not so closely linked, his interest largely shifts during the winter from the territory to the communal ground, the gathering place ; and surely it is this shifting of his interest which causes the absence of the species from the singing band of residents in winter.

It is known of some species that if resident birds, through natural causes, are forced to abandon their territories, or if they leave of their own free will, they lose their combativeness (*cf.* Huxley on Coot, *Brit. Birds*, Vol. XXVII ; Howard on Lapwing, *Territory in Bird Life*, p. 60-61). So, as the Blackbird has changed some of its territorial combat into communal tournaments at a gathering place, one would expect to find, and one does find, a certain loss of vigour and energy, a tendency for the encounter to become formal and conventional, unwilling to turn to physical violence. This is most noticeable when Thrushes and Blackbirds are active on the same piece of ground at the same time. It would be interesting to know if this tendency of the Blackbird to concentrate communally at certain places is the first step to a prescribed courting ground such as obtains in the Ruff and Blackcock.

Whereas in watching Moorhens (*Brit. Birds*, Vol. XXX, p. 120) I was soon able to recognize individual birds both by their temperament and appearance, I found Blackbirds more uniform and with less distinct personalities. However, the birds I most constantly watched were in a city, and my view was limited to three trees in a road, one front and two back gardens, so that the birds spent a great deal of their time out of my sight on the other side of houses. This observed area, roughly 836 square yards, was the greater part of the possessions of a female which I could recognize as an individual. She had a strong territorial instinct, more so than the male which fed unmolested in the area. I do not even know whether it was always the same male. At any rate he spent much more of his time out of this region than she did ; days would go by and I would not see him actually in it, whereas nearly every afternoon I would see the female feeding or preening, until the dusk came, when gradually she became more and more excited, would by fits and starts chuckle to herself, until at last the noise of other birds drew her out of her retreat, and I might see her no more that day.

The biggest gatherings in the observed area took place in a corner of the front garden where a rowan and a holly tree may first have attracted the birds. The gatherings were never very large, generally the number was five or six. This may have been caused by the strong anti-social feeling often exhibited by the resident female or by the fact that there were not many birds to come. On nearby downland nine or ten birds were sometimes seen.

The few notes I have for October show that the territorial instincts are, in the female, first shown by her desire to get rid of young females (very likely in most cases her own offspring) which are still remaining in the territory. I have not seen the male take part in these scraps, nor have I known a territory where any young male Blackbirds have been present at this season, besides the "rightful" owner, which at the very beginning of their lives is, I think, a slight indication of the female's greater love of home than the males.

In the first week of November, just as dusk falls, both sexes begin to get excited, making a great deal of noise, uttering the alarm cry, the chuckle, and a tinkling cry not previously heard. When in mid-November, 1936, the gathering place was fixed to a corner of the observed area, the resident female often objected, not only to the other females, but to the presence of the males, and would drive them off when they advanced towards her (and also when they were paying no attention to her) in no uncertain manner, her attacks even as early as November being noticeably more determined than the tournaments of the males. A typical action of these, which begins in this month, is the intimidation of a rival or interloper by near presence; the pursuer perches close to the pursued which seems so afraid of the proximity that it moves a little farther on, is again followed by the pursuer, and so on. I have only one note of a female using this method, on open ground, the pursuer making short flights after the pursued. In November I was a few times lucky enough to see the male coming in to roost in the observed area, and to see how other males, evidently meaning to roost in the same place, darted away when they saw it occupied, although the time just previous to roosting was one of the most sociable of the day and birds made a point of gathering together.

By December, Blackbirds are as noisy in the early morning as they had been at dusk in November. Towards the middle of the month there are indications that the male spasmodically takes a greater interest in the female in the territory, away

from the communal ground. He will chase her in the trees, she chuckling excitedly as she retreats with tail cocked up and wings drooped, in an attitude tense and strained. So far it has been noticed that the male is the first to tire and to fly from the female.

At the gathering place the encounters seem to have little or no territorial significance for males, and a bird will be onlooker, then join in on one side of a pair of contestants, then on the other, lastly to be himself attacked by both; while the roles of pursuer and pursued are frequently reversed, sometimes by the pursuer flying over the head of the pursued, and being now in front, becoming the chased one. Meanwhile birds feeding at the gathering ground are entirely unmolested and indeed ignored by males, whereas the resident female would allow no bird but her mate (?) to feed in her territory. The presence of males had an apparent attraction for strange females to come into the territory, which, of course, brought them into conflict with the resident female, and the subsequent fights showed all the seriousness and bitterness which is not seen in the territorial combats of the males till the latter half of February. Indeed, throughout January the resident female in the observed area conducted her fights single-handed, often against two or three birds, and I have seen her drive away from the gathering place, two males and one female in about two minutes.

As, however, some females, far from attacking the males, make every advance and thrust themselves on the notice of the males, so that the latter will fly away from them, I suppose that the truculence of the resident female of the observed area was caused by her possessing a mate and territory, as otherwise I cannot see how these courting females, if they had mates of their own, would be so eager to invade alien ground in pursuit of the males.

At the gathering grounds the females have nearly always been in the minority, not I think because of actual numerical inferiority, but because as a sex they are more stay-at-homes than the males; yet that they recognize the implications of the gathering ground is shown by their flying to it independently and purposefully, and beginning the tinkling and chuckling cry as if seeking to attract attention. This cry attracts not only males but females, just as in late March the rather similar excited tinkle of the female when her mate amorously pursues her will draw, it seems irresistibly, other unmated females to interrupt the actual mating. When at the

gathering ground the attentions of the males becomes too over-powering, the female flies away. She may be followed a little way, but soon the males are back on the gathering ground, and finally she must return also if she wishes to get attention, so that it seems that unmated females must attend the communal gatherings if they are to attract the males.

In a gathering ground in a field at Clevedon, which was used by six to ten birds, the presence of a sea-mist every morning in February did not discourage activities. Here I may say that a warm damp day, though it may be cloudy, is more likely to produce activity than a sunny but frosty one, while a cold blustery day is the worst of all for seeing anything.

Sometimes inactivity settles on the birds at the gathering ground, and they will sit about, silently, among the bushes. This seems to happen when one bird is dominant and extra aggressive. If it persists in fierce attacks the others will, one by one, fly away. At a gathering-place, which centred round a drinking and bathing place, a male was seen to object strongly to others sitting quietly in cover, and to one engaged in bathing, which is unusual, as birds at the gathering ground which are engaged in feeding, preening, washing, etc., are generally ignored by the others. It was on this occasion I was able to see from what long distances birds come to these gathering places, for an escaping male flew away until, a tiny smudge in the sunlight, he dropped into some gardens at an estimated distance of half a mile.

A female, after dallying with a male on the communal ground, will become bellicose, and attempt to drive off other females from the place, especially if they are being run after by a male, thus demonstrating the awakening of the anti-social instincts of the mated female. This anti-social instinct is important; in February, 1937, in a garden in Gloucestershire there was found to be only one male to three females—two light-coloured ones continually disputing and a very dark female half-heartedly objecting to both. She seemed more or less mated to the male, but he frequently ran with lowered head (an action used for expressing both animosity and amorousness) after the light females and then after the dark one. It was noticed that the light female which seemed his fancy at the moment (I could not say if it was always the same bird) took the initiative in scraps with her companion. The position was somewhat similar to that on the observed area in October. I think that the duty of getting rid of superfluous females lies on the female in possession, and where she is too old or lazy to do so, she brings on herself her own

partial or complete divorce, not only because her mate will be attracted by the too close proximity of other females, but also because they will never be able to perform the actual marital act without the attentions and consequent interruptions of the extra females. I only know of one case of a male consorting with a female which his mate had not got rid of before she began to sit. I watched the trio in February, but it was not till the end of April that the proper mate had eggs—a serious delay caused I think by the extra female.

The female has a special soft note "sip" when she and the male are engaged in "playing" in the territory; while the male (so far I have seen only him to do it) between the chases repeatedly wipes his beak on a branch. This action seems with some species to be a common accompaniment of the male's courtship activities; for instance, the male House-Sparrow invariably wipes his beak immediately just after or just before coition. Hendy records it in the courtship of the Woodlark (*Bird Watching*), Pycraft for the Lesser Bird-of-Paradise (*Camouflage in Nature*). Significantly in these interludes if the male hears the cries of birds on the gathering ground he will leave his mate and fly there.

At the end of February and beginning of March the male Blackbird's dealings with other males becomes more serious—off the gathering ground—and the "pushing" method does not always act so that claws are more often used, and sometimes, both birds attacking, there is what we would call a stand-up fight in a manner reminiscent of Song-Thrushes. Some males, however, appear too weak to ensure the sanctity of their homes, and their unfortunate mates are harried by interloping males when in the very act of building the nest. I have known only two cases of this, but in both the female showed anger and intense dislike of the intruding male, though in one case he was physically a far more splendid bird than her puny, almost female-coloured mate.

At the end of February, 1937, I left Bristol where was the observed area, and had no more opportunities of watching the Blackbirds I had lived with throughout the winter. It was a great pity as I could not find out whether at this time of the year the male Blackbird begins to desert the gathering place and to cling more and more to the territory kept warm for him, as it were, by the female. If he does this, it explains why the song is again heard and why it has not been heard before. Up to the date of February 23rd I had not noticed the male presumably belonging to the observed area living in it more

than usual, but also there was no male singing in the area. Occasionally there had been heard songs from other birds, and I noticed these were always sung away from the gathering place, which point I noticed in previous years, but none of these birds or their territories could be watched by me daily as those of the observed area. I have heard a male Blackbird sing during the intervals of an encounter with another male, but that is quite a different thing from the gatherings. However, I would not like to say the song is never sung at the gathering place.

Towards mid-March the gatherings seem to get more excited and persistent, and at the same time, less intelligent—if one can use that phrase. The birds are like clockwork mice running in all directions, chasing and being chased as they cross each other's paths. Indeed, sometimes it seems that a bird running after another is mechanically forced to drop the pursuit if a third should come between, and perhaps turn off at right angles to follow the fresh trail. Often the birds grow too impatient to run, and use flight as a means of progression, a low skimming flight just over the top of the grass. An entire lack of what we would call constancy is the characteristic of these meetings, any female is pursued by any male; yet in the territory when he is courting his mate prior to coition, the male will violently repulse intruding females.

Towards the end of March many females are collecting nesting material, yet these, if they venture near the gathering place, are pestered as fervently as less obviously mated birds. The female thus engaged resents and dislikes these attentions. She runs at the objectionable male to keep him at his distance, and flies away to continue her work in peace.

This increased activity at the gathering place would contradict my belief that at this time the males begin to take a greater interest in their territories, signaled by the reappearance of their song, if it were not that I think some of the males at the gathering place are birds which have no mates and which indeed may not breed that year. Also that those which will breed, having now so much greater energy and force than in the winter owing to the physiological changes in their bodies, are capable of attending the gatherings *and* attending to their territories, first of all by short frequent visits, which become more and more protracted until in April a complete break is made—"and its best song is hardly heard until April or May." (H. G. Alexander) Moreover, ninety per cent. of my records of male fighting male in private territory by physical and not suggestive means occurs after mid-February,

mostly in March. This is surely not accidental, but on account of the increasing value the male attaches to his own home and mate. Strictly speaking, however, as March is really spring, descriptions of activities seen in this month do not belong to an account of winter behaviour.

I should like to draw attention to one fact which was much impressed on me while watching Blackbirds, that is, the great importance of the female in preserving the standards and ways of life of the species. There are signs that on her devolves the duty of driving away all other females from the territory, and that if she neglects this duty, as an individual she lays herself open to partial or complete abandonment, while as regards the species there may be the serious result of polygamy, first of all countenanced by the weak female, and at last becoming the custom for all. I think most ornithologists agree that monogamy is a higher, better state of affairs, gives a better chance to the offspring, than polygamy.

Also; from my experience with the resident female on the observed area, it seems largely the female which reserves and cares for the territory in winter, not relinquishing her share of guardianship until it is time for nest-building.*

Now, it is this love of territory which makes the female a perhaps unconscious stickler for monogamy, a love through which the species is guarded from the evils of promiscuity, for both males and females she drives away, thus getting rid of temptation for her mate and herself. For so many male Blackbirds I have watched have not seemed at all averse to indiscriminate courtship, and therefore, presumably, to indiscriminate mating; hence the female's sense of territory is of great value to the Blackbird, for it is their sixth commandment.

*There are good but inconclusive grounds for believing that the female sings in winter a sort of Thrush-like sub-song; this seems to take place always in heavy cover. Mr. W. B. Alexander thinks this so, and he and I have heard one such song which was almost certainly sung by a female, in Bagley Wood, Oxford.

MOVEMENTS OF RINGED BIRDS FROM ABROAD TO THE BRITISH ISLES AND FROM THE BRITISH ISLES ABROAD.

ADDENDA V.

BY

H. F. WITHERBY AND E. P. LEACH.

(Continued from page 24)

SHOVELER (*Spatula clypeata*).

RINGED GREAT BRITAIN AS ADULT.

	<i>Ringed</i>		<i>Recovered.</i>
Pembroke	3.11.35	Pomerania, Germany	30.8.36

COMMON POCHARD (*Nyroca f. ferina*).

This is the first Pochard ringed abroad and reported here, but we have had one ringed here in winter and reported in August in northern Germany.

RINGED ABROAD AS YOUNG.

	<i>Ringed</i>		<i>Recovered.</i>
Hs. D4319	Helsingfors, Finland	13.6.33	Buckingham 22.12.33

TUFTED DUCK (*Nyroca fuligula*).

RINGED ABROAD AS YOUNG OR IN BREEDING SEASON.

	<i>Ringed.</i>		<i>Recovered.</i>
Sk. V7882	Myvatn, Iceland	8.7.34	Fife 5.11.34
Sk. V6920	Ditto	26.7.32	Cavan 20.2.33
Sk. D1580	Ditto	6.7.29	Tyrone 2.10.34
Rk. 4.581	Ditto (breeding adult)	20.6.35	Fife 5.12.36
Rk. 4.649	Ditto (ditto)	7.7.35	Fermanagh 25.1.37
Rk. 4.591	Ditto (ditto)	28.6.35	Clare —.1.36

SCAUP-DUCK (*Nyroca m. marila*).

RINGED ABROAD AS YOUNG OR IN BREEDING SEASON.

	<i>Ringed.</i>		<i>Recovered.</i>
Sk. V6942	Myvatn, Iceland (breeding adult)	20.6.33	Orkney 23.12.33
Sk. V9716	Ditto (ditto)	22.6.34	Firth of Forth 18.1.36
Sk. V6893	Ditto	5.7.32	L.erne, Ireland 18.10.35
Sk. V9791	Ditto (ditto)	19.6.34	Ditto 25.1.36
Sk. V6173	Ditto (ditto)	29.6.31	L. Neagh, Ireland 12.2.34
Sk. V6874	Ditto	7.7.31	Ditto —.3.34
Sk. V9719	Ditto (ditto)	23.6.34	Mayo —.2.35
Rk. 4.570	Ditto (ditto)	15.6.35	Limerick 18.12.36
Rk. 3.419	Ditto (ditto)	18.6.35	Kerry —.11.36

CORMORANT (*Phalacrocorax c. carbo*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
Wigtown (Eleven)	Summer, 1935	Brittany, France	16.9.35 to 29.11.35
Ditto	3.7.35	Ditto	15.8.36
Ditto	15.7.36	Ditto	6.9.36
Ditto	3.8.34	Ditto	—.11.35

CORMORANT—(continued).

RINGED GREAT BRITAIN AS NESTLINGS.

Ringed.		Recovered.	
Northumberland	7.7.35	Brittany, France	18.8.36
Anglesey	11.7.36	Ditto	21.11.36
Merioneth	7.6.36	Ditto	—.12.36
Pembroke	1.7.34	Ditto	20.12.35
Wigtown (Two)	Summer, 1935	Galicia, Spain	18.9.35 to —.12.35

SOUTHERN CORMORANT (*Phalacrocorax c. sinensis*).

As has already been pointed out (*antea*, Vol. XXIX., p. 358) these records form interesting proof of this race of Cormorant visiting our shores.

RINGED ABROAD AS YOUNG.

Ringed.		Recovered.	
R. B49371	Rügen, Germany	30.5.34	Kent 5.2.35
R. B31930	Ditto	28.5.33	Sussex 11.2.36
L. 117003	Zuid Holland	27.6.32	Suffolk 11.12.35
L. 150629	Ditto	26.5.35	Dorset 8.1.36

GANNET (*Sula bassana*).

These records show that some immature Gannets remain south at all events until April, while others are to be found on the North Sea. Mauritania remains the most southerly point reached by ringed birds.

RINGED GREAT BRITAIN AS NESTLINGS.

Ringed.		Recovered.	
Grassholm	17.7.34	Oslofjord, Norway	—.9.35
[Pembroke]			
Ditto	2.7.33	N. Frisian Is., Germany	—.9.35
Ditto	17.7.34	Mecklenburg, Germany	2.3.36
Ass Rock	—.9.34	Heligoland, Germany	4.12.35
Ditto	—.9.34	Ditto	4.12.35
Wilsa Craig	29.7.35	Texel, Holland	11.8.36
Grassholm	17.7.34	Seine Inf., France	15.11.35
Ditto	17.7.34	Ditto	17.9.35
Ditto	17.7.34	Finistère, France	—.10.35
Ditto	17.7.34	Ditto	22.9.35
Ditto	29.6.35	Ditto	25.8.36
Ass Rock	29.7.35	Ditto	30.8.36
Grassholm	17.7.34	B. of Biscay	17.9.35
Wilsa Craig	25.8.34	Ditto	—.12.35
Ass Rock	—.9.34	Ditto	4.10.35
Grassholm	26.6.33	Morbihan, France	25.9.35
Ditto	17.7.34	Charente Inf., France	31.5.36
Ditto	17.7.34	I. d'Yeu, W. France	16.2.36
Ditto	17.7.34	Belle Ile, W. France	18.1.36
Ditto	17.7.34	Gironde, France	—.2.36
Wilsa Craig	29.7.35	Landes, France	9.10.35
Ditto	29.7.35	Ditto	23.9.35
Grassholm	17.7.34	Vizcaya, Spain	31.10.35
Ditto	26.6.33	Santander, Spain	—.9.35
Ass Rock	29.7.35	Ditto	9.10.35
Grassholm	29.6.35	Asturias, Spain	6.9.35
Ditto	29.6.35	Ditto	27.5.36

GANNET--(continued).

RINGED GREAT BRITAIN AS NESTLINGS.

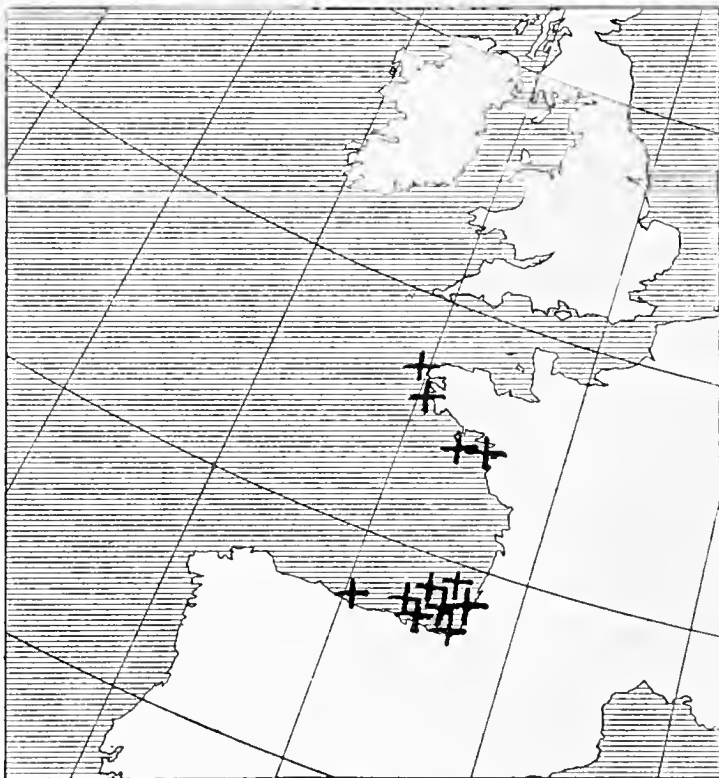
<i>Ringed.</i>		<i>Recovered.</i>	
Ailsa Craig	25.8.34	Minho, Portugal	—.2.36
Grassholm	17.7.34	Lisbon, Portugal	24.1.36
Ditto	17.7.34	Algarve, Portugal	—.3.36
Ditto	17.7.34	W. Coast, Marocco	—.4.36
Ailsa Craig	26.7.35	Ditto	11.12.35
Ditto	31.7.35	Canary Is.	17.11.35
Ditto	26.7.35	Rio de Oro, W. Africa	3.2.39
Ditto	26.7.35	Ditto	16.12.36
Ditto	29.7.35	Mauritania, W. Africa	24.11.35

RINGED GREAT BRITAIN AS ADULTS.

<i>Ringed.</i>		<i>Recovered.</i>	
Grassholm	17.7.34	North Sea, 53°48'N., 2°53'E.	4.8.35
Ditto	21.7.33	Galicia, Spain	2.2.36

MANX SHEARWATER (*Puffinus p. puffinus*).

A map showing the positions reached by Manx Shearwaters ringed at Skokholm and Skomer may be of interest. The late date at which some of these birds were found has already been commented upon by Mr. Lockley (*vide antea*, Vol. XXIX., p. 105).



MANX SHEARWATER

† Recovered here. Ringed in breeding season at Skokholm and Skomer

MANX SHEARWATER—(continued).

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
Pembroke	5.9.36	Seine Inf., France	8.9.36

RINGED GREAT BRITAIN AS ADULTS.

	<i>Ringed.</i>		<i>Recovered.</i>
Pembroke	19.7.34	Belle Ile, W. France	—.3.35
Ditto	16.7.34	Santander, Spain	9.9.35

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

This is the first Wood-Pigeon ringed abroad which has been recorded here.

RINGED ABROAD AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
W. York.	D1269	Jylland, Denmark	2.6.25 Queen's Co. 14.2.34

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

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
W. Sussex	7.7.33	Gironde, France	27.5.36

OYSTER-CATCHER (*Hæmatopus o. occidentalis*).

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
W. Norfolk	21.6.34	Loire Inf., France	2.11.36

NORTHERN GOLDEN PLOVER (*Charadrius a. altifrons*).

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
W. York.	A56073	N. Iceland	24.6.29 I. of Islay 28.2.36
W. York.	G5362	Ditto	8.7.28 Galway 1930 or '31
W. York.	6.1521	Ditto	24.7.36 I. of Skye 17.12.36
W. York.	5.934	N.W. Iceland	25.7.35 I. of Islay 14.12.35
W. York.	5.865	Ditto	5.7.35 Devon 28.11.35
W. York.	5.721	Myvatn, Iceland	25.6.35 Roscommon 4.3.36

LAPWING (*Vanellus vanellus*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
W. Yorkshire	—.5.31	Finistère, France	29.10.35
W. Cumberland	2.6.35	Vendée, France	15.3.36
W. Wensfrew	26.5.35	{ Gironde, France Noord Holland	{ 17.3.36 3.7.36
W. Cumberland	3.5.35	Gironde, France	5.2.36
W. York	7.5.33	Ditto	24.12.35
W. Wenshire	12.5.35	Hérault, France	—.1.36
W. Westmorland	19.6.35	Asturias, Spain	4.1.36

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
W. York.	E2801	Salamiestis, Lithuania	2.6.35 Lincoln 30.1.37
W. York.	17214C	Gotland, Sweden	25.5.33 Ditto 1.10.34
W. York.	X152	Öland, Sweden	28.5.34 Ditto 5.11.36
W. York.	34404C	Ditto	3.7.35 Ditto 8.12.35
W. York.	A3967	Malmö, Sweden	9.6.31 Ditto 2.12.34
W. York.	A4372	Ditto	20.5.31 Clare 8.12.36
W. York.	A6014	Jylland, Denmark	12.6.30 Lincoln 12.1.33

LAPWING--(continued).

RINGED ABROAD AS YOUNG.

		<i>Ringed.</i>	<i>Recovered.</i>	
<i>Sk.</i>	S10865	Jylland, Denmark	15.8.34	Lincoln 19.11.34
<i>Sk.</i>	T3445	Ditto	15.6.32	Pembroke 11.2.33
<i>Sk.</i>	X10707	Ditto	4.6.31	Roscommon 22.11.34
<i>Sk.</i>	S10686	Ditto	24.5.36	Clare 3.1.37
<i>Sk.</i>	T4896	Sjælland, Denmark	5.6.32	Lincoln 3.11.32
<i>Sk.</i>	X10771	Ditto	5.6.33	Kildare 14.1.35
<i>H.</i>	677538A	Schleswig-Holstein	29.5.35	Lincoln 1.1.37
<i>R.</i>	E47394	Hanover, Germany	21.5.31	Norfolk 23.1.37

ICELAND REDSHANK (*Tringa t. robusta*).

RINGED ABROAD AS YOUNG.

		<i>Ringed.</i>	<i>Recovered.</i>	
<i>Rk.</i>	5.475	Myvatn, Iceland	5.6.35	North Ronaldshay, Orkney 23.10.35
<i>Sk.</i>	T4722	Ditto	19.6.32	Flint 26.12.36

AVOCET (*Recurvirostra avosetta*).

This unexpected case of an Avocet from the south of France has already been commented on (*vide antea*, Vol. XXX., pp. 50 and 95).

RINGED ABROAD AS YOUNG.

		<i>Ringed.</i>	<i>Recovered.</i>	
<i>P.</i>	F3211	Camargue, S. France	26.5.34	Essex 8.8.34

CURLEW (*Numenius a. arquata*).

RINGED ABROAD AS YOUNG.

		<i>Ringed.</i>	<i>Recovered.</i>	
<i>St.</i>	B839	Lake Vänern, Sweden	28.6.32	Clare —.11.32
<i>G.</i>	12303D	Gotland, Sweden	13.6.30	Roscommon 30.9.35
<i>G.</i>	22619D	Öland, Sweden	23.6.34	Dumfries —.9.36
<i>G.</i>	3523D	Ditto	26.6.27	Lincoln 6.1.35
<i>G.</i>	23720D	Ditto	24.6.35	Ditto —.11.35
<i>G.</i>	22609D	Ditto	22.6.34	Norfolk 1.9.34

COMMON SNIPE (*Capella g. gallinago*).

RINGED ABROAD AS YOUNG.

		<i>Ringed.</i>	<i>Recovered.</i>	
<i>H.</i>	671478A	Schleswig-Holstein	6.6.35	Mayo 30.9.35

RINGED ABROAD AS MIGRANT.

		<i>Ringed.</i>	<i>Recovered.</i>	
<i>H.</i>	787994	Heligoland	28.10.35	Devon 25.1.37

FÆROE SNIPE (*Capella g. færoensis*).

RINGED ABROAD AS YOUNG.

		<i>Ringed.</i>	<i>Recovered.</i>	
<i>Rk.</i>	6.956	Myvatn, Iceland	21.6.35	N. Uist, Hebrides 21.10.35
<i>Rk.</i>	6.1224	Ditto	8.6.36	Limerick 8.11.36

JACK SNIPE (*Lymnocyptes minimus*).

This is the first Jack Snipe ringed abroad which has been reported here.

RINGED ABROAD AS MIGRANT.

	<i>Ringed.</i>		<i>Recovered.</i>
B. CC1095	Namur, Belgium	3.10.36	Pembroke 26.12.36

WOODCOCK (*Scolopax r. rusticola*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
Stirling	27.6.34	West Flanders	24.10.36
Ditto	9.5.35	Guipuzcoa, Spain	6.11.35
Foray	28.4.35	Estremadura, Portugal	13.12.35

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
B. E191	Scania, Sweden	28.5.32	Dumfries 28.1.35
B. X906	Ditto	29.6.34	Mayo —.1.35

RINGED ABROAD AS ADULT.

	<i>Ringed.</i>		<i>Recovered.</i>
B. 579838	Heligoland	9.3.36	Aberdeen 22.1.37

SANDWICH TERN (*Sterna s. sandvicensis*).

In this list is included a recovery reported from Natal, this being the second Sandwich Tern which has reached that distance point. Several further cases of birds staying south into the summer may be noted.

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
W Lancashire	3.6.34	Nord, France	5.7.36
W Norfolk	14.6.36	Pas-de-Calais, France	20.8.36
W Ditto	12.6.35	Calvados, France	—.9.36
W Ditto	14.6.36	Vendée, France	3.10.36
W Ditto	8.6.33	Charente Inf., France	24.9.35
W Ditto	10.7.29	Aude, France	21.7.35
W Ditto	12.6.35	Galicia, Spain	29.9.35
W Ditto	25.6.35	Murcia, Spain	3.11.35
W Lancashire	23.6.35	Algeria	17.5.36
W Northumberland	29.6.36	Spanish Marocco	17.10.36
W Cumberland	—.6.35	Western Marocco	15.11.35
W W. (Two)	6.7.35	{ Ivory Coast	21.7.36
		{ Angola	—.2.36
W Ditto	4.7.36	Gold Coast	—.11.36
W of May	6.7.35	Ditto	—.2.36
W Cumberland (Two)		{ Gold Coast	—.2.36
		{ Angola	—.6.36
W Lancashire (Four)		{ 3 Gold Coast	19.11.35 to 25.1.36
		{ 1 Angola	28.3.36
W Norfolk	14.6.32	Gold Coast	—.11.33
W Ditto (Three)	15.6.34	{ 1 Gold Coast	14.10.35
		{ 2 Angola	25.3.36 ; —.6.36
W Ditto (Fifteen)	—.6.35	{ 9 Gold Coast	26.11.35 to 6.2.36
		{ 6 Angola	—.1.36 to —.6.36
W Ditto	25.6.35	Gold Coast	29.9.36
W Ditto	12.6.35	Gabun, W. Africa	2.7.36
W Northumberland	25.6.35	Angola	25.3.36
W Cumberland	15.6.33	Ditto	—.11.36

SANDWICH TERN—(continued).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
Cumberland	—.6.34	Angola	14.4.36
Lancashire	10.6.36	Ditto	—.11.36
Norfolk (Two)	19.6.33	Ditto	20.12.35 ; —.11.36
Ditto (Three)	—,6.35	Ditto	—,11.36
North Ireland (Two)	12.7.35	Ditto	—,3.36 ; 30.5.36
Ditto	12.7.35	Ditto	—,11.36
Cumberland	—,6.34	Natal, S. Africa	12.3.37

COMMON TERN (*Sterna h. hirundo*).

We have not previously had ringed Common Terns reported south of Spain. It will be noticed that one of the two recorded here from West Africa was found there in May.

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
Norfolk	20.7.33	Nord, France	1.9.35
Ditto	3.8.35	Ditto	4.10.35
Dorset	4.7.29	Vendée, France	—,9.36
Ditto	9.7.30	Ditto	1936
Firth of Forth	6.8.36	Galicia, Spain	1.10.36
Lancashire	30.6.35	Senegal, W. Africa	10.5.36
Norfolk	19.7.35	Gold Coast, W. Africa	—,1.36

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
G. B4464	L. Malaren, Sweden	2.7.33	Lincoln 27.8.35

ARCTIC TERN (*Sterna macrura*).

It is curious that while a fair percentage of Common Terns ringed here is reported a very small percentage of Arctic has so far been recovered, and this is the first ringed in this country which has been reported from abroad.

RINGED GREAT BRITAIN AS NESTLING.

	<i>Ringed.</i>		<i>Recovered.</i>
Orkney	—,7.35	Portugal	—,9.35

BLACK-HEADED GULL (*Larus v. ridibundus*).

Reference may be made to the summary of the records of birds ringed abroad and recovered in this country, made on pages 250-1 of the Vol. XXV. and the map appearing on p. 256 of the same volume.

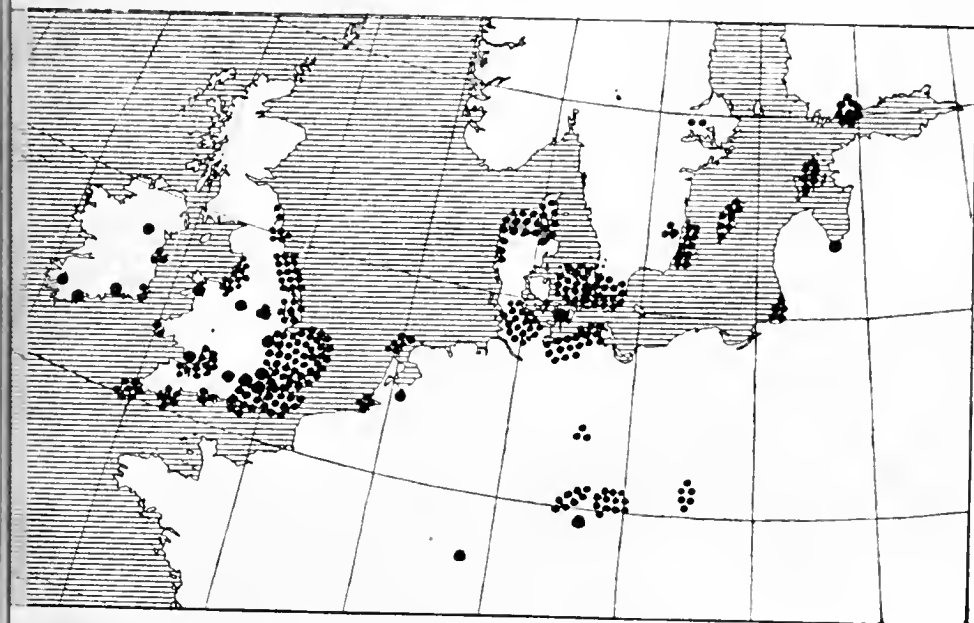
Details of recoveries since published and those which have accumulated since our last "Addenda" do not greatly alter the summary mentioned and as only slight revisions are required it seems unnecessary to publish details here of all the recent records.

The Black-headed Gulls ringed in their breeding-places and recovered here now number 320, a total only surpassed by the Starling. Of this total 58 have been received since our last published list.

With one exception the areas of origin and dispersal are the same as given previously.

The exception is a bird ringed in Iceland as a young one in June, 1934, and recovered in Orkney in November or December, 1935. This is the first ringed Black-headed Gull which has reached us from Iceland and the first which has been reported from Scotland. Of the large number of those ringed on the continent none has been so far reported from Scotland, though there are three Northumberland recoveries.

With regard to the dispersal of the birds over the British islands the percentages given on page 251 of volume XXV. should be somewhat modified and made approximately 2 per cent. for the eastern half of England, 25 per cent. for the western half and 3 per cent. for Ireland. Of the eastern birds approximately 80 per cent. have been reported from Norfolk southwards.



BLACK-HEADED GULL

Map to show places abroad where ringed as nestlings and places of recovery in winter in British Isles.

The large dots represent records of single birds. The small dots in the thickly-covered areas can only show a proportion of the total number of records.

The months of the unpublished recoveries have been from August to March with a few in April, while a few exceptional records in May and June deserve special mention and are set out below:—

<i>Ringed.</i>		RINGED AS YOUNG.	<i>Recovered.</i>	
land, Denmark	22.6.32	Wexford		—5.36
to	22.7.35	Cheshire		—6.36

BLACK-HEADED GULL—(continued).

RINGED AS YOUNG.

<i>Ringed.</i>		<i>Recovered.</i>
Öland, Sweden	16.6.34 Lancashire	1.6.35
Västmanland, Sweden	7.6.34 Essex	4.5.35

RINGED AS ADULT.

<i>Ringed.</i>		<i>Recovered.</i>
Zeeland, Holland	18.7.32 Kent	1.6.34

Of these the four-year-old bird recovered in Wexford in May and the adult bird in Kent in June are remarkably late, but were not found in breeding places. The others being only one year old would still be immature.

In the case of this species and the Common Gull the areas of dispersal in this country of birds ringed as nestlings abroad are of considerable interest, and we have prepared maps showing approximately by a dot where each bird was reported in England, Wales and Ireland, as well as the places on the Continent where they were ringed.

In considering the areas from which the birds were derived it must be borne in mind that some of our winter visitors doubtless come from breeding places where no ringing takes place. In the case of the Starling we can get a surer idea of the extent of the breeding area, because in addition to those ringed at nesting places abroad, a number of birds ringed here in winter have been subsequently reported at breeding haunts abroad. Only three or four Gulls ringed here in winter have been so far reported on their return to summer quarters, and the places on the Continent marked on these two maps are only those where ringing has been carried on.

COMMON GULL (*Larus c. canus*)

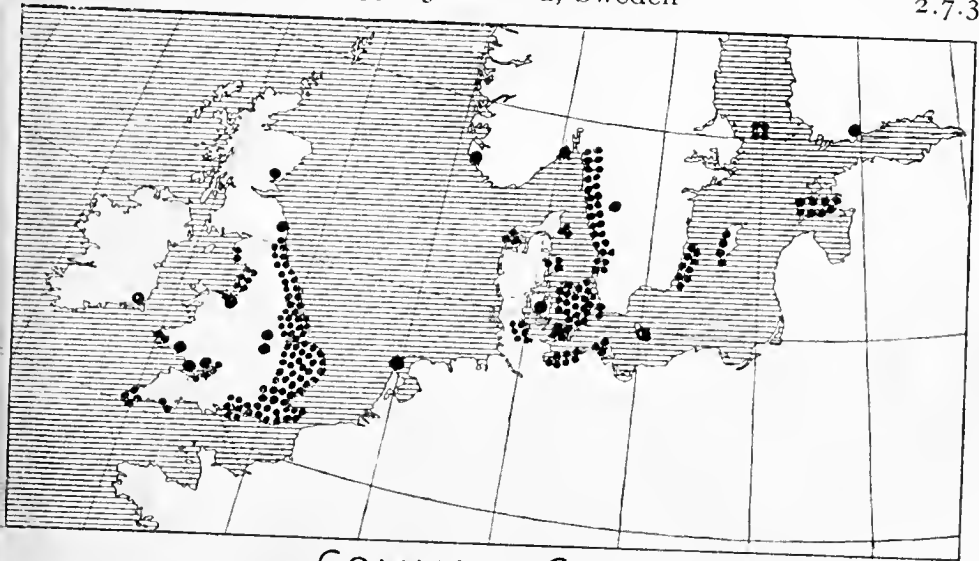
We have now some 170 records of Common Gulls ringed abroad and recovered in this country. Of these 58 have taken place since the publication of our last list, but as these do not extend the area of origin as given in the map on page 259 of Vol. XXV., it has been decided not to list them separately.

The numbers of recoveries in various parts of the country somewhat alter the proportions given in the account on page 256 of Vol. XXV. Approximately these percentages now are 80 per cent. for the eastern half of England and 20 per cent. for the western half. There are only four recoveries recorded for Wales, one for Ireland (Wexford) and one for Scotland, all of which have been published in previous lists. Only one has been reported from as far north as Northumberland and two from Cumberland, but the proportion of those

reported on the east side above Norfolk is rather higher than in the Black-headed Gull, being approximately 30 per cent. against 20 per cent.

No ringed example of a British-bred Common Gull has yet been reported from abroad, but two adults caught and ringed at a Middlesex reservoir have been reported from the north, where they were presumably native. These are:—

	<i>Ringed.</i>		<i>Recovered.</i>
Middlesex	4.2.35	Nordmor, Norway	14.8.36
Ditto	31.7.35	Jamtland, Sweden	2.7.36



COMMON GULL

Map to show places abroad where ringed as nestlings and places of recovery in winter in British Isles

The large dots represent records of single birds. The small dots in the thickly-covered areas can only show a proportion of the total number of records.

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

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
ent	9.6.35	Nord, France	7.8.35
itto	22.6.35	Pas-de-Calais, France	—.3.36

RINGED GREAT BRITAIN IN WINTER.

	<i>Ringed.</i>		<i>Recovered.</i>
iddlesex	4.2.35	Tromsfylke, Norway	—.6.35

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>	
ov. 1539	Hovden, W. Norway	22.6.36	Yorks	29.12.36
1416E	Halland, Sweden	20.6.29	Essex	17.9.35
RK6700	Jylland, Denmark	25.6.35	Middlesex	13.2.36

SCANDINAVIAN LESSER BLACK-BACKED GULL

(*Larus f. fuscus*).

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>	
32044I	Jæren, Norway	2.7.35	Yorkshire	14.9.35

LESSER BLACK-BACKED GULL (*Larus f. graellsii*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>	
Orkney	24.7.35	Nord, France		7.11.35
Lancashire	9.6.35	Ditto		31.10.36
Ditto	30.6.35	Finistère, France		21.8.36
Ditto	16.6.36	Morbihan, France		4.10.36
Westmorland	27.7.34	Gironde, France		—.9.35
Ditto	24.7.36	Lisbon, Portugal		11.10.36
Lancashire	9.6.35	Estremadura, Portugal		6.3.36
Ditto	30.6.35	W. Marocco		17.10.35

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

RINGED ABROAD AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>	
<i>Stav.</i> 30062	Sunnfjord, Norway	21.6.36	Lincoln	10.1.37
<i>Stav.</i> 30016	Ditto	21.6.36	Norfolk	23.1.37

KITTIWAKE (*Rissa t. tridactyla*).

Previous records have shown that Kittiwakes bred here cross the Atlantic, and the two recorded below from Iceland and Greenland are of considerable interest. It may be noted that the Greenland bird was in its first autumn whereas those previously recorded from Davis Strait, Labrador and Newfoundland were all more than a year old.

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>	
Northumberland	22.6.35	West Iceland		13.5.36
Ditto	21.6.36	South Greenland		1.10.36
Ditto	25.6.34	Heligoland, Germany		29.12.35
Berwick	20.6.36	Finistère, France		29.10.36

RAZORBILL (*Alca torda*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>	
Pembroke	10.7.36	Ille-et-Vilaine, France		18.9.36
Ditto	8.7.36	Landes, France		10.11.36
Ditto	8.7.36	Genoa, Italy		30.11.36

NORTHERN GUILLEMOT (*Uria a. aalge*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>	
I. of May	6.7.35	Stavanger, Norway		—.9.35
Caithness	2.7.36	Kristiansand, Norway		9.10.36
I. of May (Four)	27.6.36	South Norway	27.10.36 to	23.12.36

SOUTHERN GUILLEMOT (*Uria a. albionis*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
Pembroke	20.7.34	Bergen, Norway	6.10.35
Ditto	19.7.34	Landes, France	31.1.36

RINGED ABROAD AS YOUNG.

	<i>Ringed.</i>		<i>Recovered.</i>
H.322407	Heligoland	30.6.36	Essex —.12.36

PUFFIN (*Fratercula a. grabø*).

RINGED GREAT BRITAIN AS NESTLINGS.

	<i>Ringed.</i>		<i>Recovered.</i>
Northumberland	28.6.36	Haugesund, Norway	10.11.36
Ditto	12.7.36	Flekkefjord, Norway	8.12.36

RINGED ABROAD IN BREEDING SEASON.

	<i>Ringed.</i>		<i>Recovered.</i>
P. D2682	Côtes-du-Nord, France	6.7.34	Scilly Is. (nesting) —.5.36

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

RINGED ABROAD AS MIGRANT.

	<i>Ringed.</i>		<i>Recovered.</i>
H. 676719A	Heligoland	4.10.35	Norfolk 11.11.35

NOTES

NOTES FROM THE BRISTOL DISTRICT.

FIRECREST (*Regulus i. ignicapillus*).—The skin of one picked up on Clifton Downs, Bristol, in the autumn of 1914 is in the Bristol Museum collections. It has only rarely been recorded from Gloucestershire.

NORTHERN WILLOW-WARBLER (*Phylloscopus trochilus acredula*).—A male from Lympsham, Somerset, April 8th, 1926, is in the Bristol Museum collections. This is the first definite record for Somerset. (*Report on Somerset Birds*, 1936, p. 10.)

DARK-BREADED BRENT GOOSE (*Branta b. bernicla*).—A flock of these Brent Geese varying in numbers up to a maximum of thirteen (on February 21st) was seen on the flats between Avonmouth and Severn Beach on nine dates between February 7th and March 28th, 1937. On the last occasion there was only one bird. The numbers varied from three on February 7th and 11th, to six on February 15th, thirteen on the 21st, ten or eleven on the 27th and 28th and March 6th and 7th, and one on the 28th. They were seen at close range, and were all dark-breasted. As we have no recent records at all of Brent Geese from these flats and as they all belonged to the dark, or eastern form, it seems safe to assume that their presence was also due to the wintry weather mentioned previously. (*B.B.* XXX., p. 370-371.)

SCANDINAVIAN LESSER BLACK-BACKED GULL (*Larus f. fuscus*)—There was at least one of this race at Sea Mills, Bristol, on the boundary between Somerset and Gloucestershire on April 20th, 1937. The bird was seen, both at rest and in flight, in a very good light though a strong wind was blowing, and there were for comparison adults of the Great Black-backed Gull (*L. marinus*) and of the British Lesser Black-backed Gull (*L. f. graellsii*). At one time an adult of each of these three races was settled close together. The only previous definite record for this district, also from Sea Mills, is given by K. B. Rooke and K. D. Smith (*B.B.*, XXVIII., pp. 117-118).

CORMORANT (*Phalacrocorax c. carbo*).—On a recent visit to Steep Holm, Somerset, on May 1st, 1937, by members of the

(Ornithological Section of the Bristol Naturalists Society, some large young could be seen in one of the nests of this colony sitting up beside the parent bird. These young would be more than a fortnight old, which would give April 17th as the approximate date of hatching and March 17th as the date when the eggs were laid, allowing an incubation period of about 28 days. This seems unusually early as the breeding season given in the *Practical Handbook* is "usually latter half of April or early May" and is specially remarkable in view of the fact that about that date (March 11th to 14th) there was very wintry weather with snow and gales. Other nests contained eggs and small young but only a few could be examined.

H. TETLEY.

UNUSUAL DISPLAY BY CHAFFINCHES.

ON June 12th, near East Horsley, I saw an unusual display by a cock and hen Chaffinch (*Fringilla cœlebs*). I turned my glasses on a singing Chaffinch and was watching it when it half fell and half fluttered through the leaves on to a bough two feet below, where a hen bird was feeding. He continued to sing and strutted towards her, there is no other word for it, with his body upright, chest out and head back very much indeed like a pouter pigeon. The hen meanwhile had turned so as to be at an angle of some 145° towards the end of his body with her tail therefore almost facing him. The tail and head were held out horizontally and the wings, half open, vibrated very rapidly. She made no noise. As the cock came nearer, the hen's tail was elevated four or five times rapidly and on the last two occasions so high as to show her distended cloaca very clearly. The cock was now a foot away when something disturbed him, he immediately flew to another branch while the hen recovered herself and went on feeding. The whole display lasted about four minutes—it was not timed and this is a conjecture—and the cock sang throughout.

E. M. CAWKELL.

SHORT INCUBATION PERIOD OF SKYLARK.

ON April 22nd, 1937, I flushed a Skylark (*Alauda a. arvensis*) from a bare scrape in black soil under a grass tuft on the West Lancashire Golf Links. On the next day, a slight ring had been built round the hollow forming a rim to the nest. This remained unaltered on the 24th, 25th and 26th, but by 10 a.m. on the 28th the nest was well lined and contained two eggs. At 5 p.m. on the 29th, the bird flew

off three eggs and was sitting at the same time on the following day. By 5 p.m. on May 10th, two eggs had completely hatched and the old bird was feeding the young ones. The third egg turned out to be addled. At 2 p.m. on the 19th one young was still in the nest, but had gone by the evening of the 20th. This gives an incubation period of twelve, and possibly only eleven days and a fledging period of nine to ten.

J. B. TAYLOR.

[See *British Birds*, XXIII., pp. 126 and 189 for similar instances of short incubation period.—F. C. R. JOURDAIN.]

WAXWINGS IN YORKSHIRE.

ON April 8th, 1937, a Waxwing (*Bombycilla garrulus*) was seen at very close quarters in Peasholm Glen, Scarborough, by Mr. C. B. Horsman. It was feeding on hips. Mr. Hyde-Parker told me of two seen at Filey, feeding on pyracanthus berries on March 2nd.

W. J. CLARKE.

PIED FLYCATCHER IN PERTHSHIRE.

As the records for the Pied Flycatcher (*Muscicapa h. hypoleuca*) in Scotland, particularly north of the Forth and Clyde, are rare, it is worth recording that I was able to observe at close quarters a male, in the Loch Achray district of Perthshire, on May 18th, 1937. Even with the naked eye the white patch on the forehead and on the wings could be clearly seen. Further corroboration was provided by its frequent song, uttered in phrases of three notes at a time, from birch trees overhanging a rocky and rapidly flowing stream. After being disturbed the bird returned three times to the same place which led me to believe that the female was nesting near by.

EDWARD T. VERNON.

THE NEST-BUILDING INSTINCT OF A BLACKBIRD.

THE following is an interesting example of the limitations of a bird's perception. In an outside passage way adjoining the house in which I live, a ladder hangs flat to the wall upon two hooks. The rungs are just nailed on and so a ledge is formed against the wall by the lower pole, which is interrupted at fixed intervals by the rungs, which are in an upright position and form a number of square openings to this continuous ledge behind.

A Blackbird (*Turdus m. merula*) began to build a nest here and was completely baffled by the similarity of the openings; so much so that there are nest foundations all along the ledge, each of the six openings having been favoured in turn by the building bird.

When this stage was past, she was evidently nearly as baffled by the continuation of the nest, for there are three separate focal points, where a "chassis", so to speak, of the nest has been carried on up from the foundations.

There is evidently a progressive frame of mind, as the nest proceeds, for whereas previously *every* entrance was visited now only three were.

In the early stages clearly the perception in the bird's mind is just "a space to lay something flat, as a beginning", so naturally there was no differentiation between the entrances even if some still had no primary foundations. Then this phase passes and the predominant idea in the bird's mind is "building up"; the starting of this new process is still difficult enough to make her continue simultaneously at three separate points, but there is a wider perception involved, and an extension of "nest" to include a part of the surroundings as well. There is a difference in degree in the importance of the "nest" idea in the bird's perceptual field finding its expression in an almost quantitative absorption by the "nest" of more and more of that field, so the logical conclusion is that by degrees two and then only one of the focal points will continue to occupy the bird's mental interpretation of the field perceived.

Interestingly this is just what happened. One of the "built up" places is very rudimentary, a second is larger and has the slight beginnings of a cup, while the third has grown to the dimensions of an ordinary nest. Thus we have remarkable confirmation of the theoretically probable train of mental images developing in the bird's mind.

That this third nest never got as far as having its mud consolidation laid down may indicate that an exhaustion of the nest-building instinct had occurred consequent to the abnormal demands made upon it. The spreading out of the usual time sequence of the various phases of nest building, which should follow quite rapidly upon one another, probably made it impossible for the whole associated train to remain coherent. By "monkeying about" with the parts, so to speak, the whole lost its coherence.

H. N. SOUTHERN.

[As in other cases of multiple nest-building, it is the artificial nature of the sites (which exactly resemble one another, owing to the fact that they are man-made) which causes confusion in the bird's mind. Such exact resemblances do not exist in nature.—F.C.R. JOURDAIN.]

BLACKBIRD BROODING DUCK'S EGG.

THIS instance of curious behaviour on the part of a Blackbird (*Turdus m. merula*) was brought to my notice recently by a gamekeeper in Wirral, Cheshire. A Mallard (*Anas platyrhyncha*) had made a nest—rather a scanty one—and laid one egg, in the fork of a tree growing in a pond about nine or ten feet from the bank. The nest was about eighteen inches above the water. This egg remained for about a fortnight, and it was then noticed that a hen Blackbird was brooding it. She continued to do so for about seventeen days, and then the egg disappeared. It is thought to have been taken by a Carrion-Crow, which had been frequenting the wood and taking Ducks' eggs. I visited the place a few times, once with a friend, and each time the Blackbird sat closely, and only flew off when the branches of the tree were shaken.

MARY HENDERSON.

WHINCHAT AND CHIFFCHAFF ON ACHILL ISLAND, CO. MAYO.

AT close quarters on May 14th, 1937, I saw a Whinchat (*Saxicola v. rubetra*) singing on the top of a turf dyke at Bull Mouth on Achill Sound, and on the 18th heard a Chiffchaff (*Phylloscopus c. collybita*) in Glendarary Wood, perhaps the only place on the island to suit its needs. Ussher, in his report on the birds for the Clare Island Survey, 1909-1911 (*Proc. Roy. Irish Acad.*, XXXI., pl. 20, 1912) does not record the Whinchat for Achill or elsewhere in the area with which the survey was concerned, nor the Chiffchaff from any of the islands in the area, although he found it not uncommon in wooded districts on the mainland, as about Westport.

CHAS. OLDHAM.

BREEDING OF COMMON POCHARD IN CARMARTHENSHIRE.

THE nesting of the Pochard (*Nyroca f. ferina*) has been recorded from North Wales in Anglesey and Merioneth, but there appears to be not a single instance of its breeding in South

Wales; consequently, the writer is pleased to state that he found a nest in south Carmarthenshire during 1937.

The species is present at this particular spot in varying numbers during the winter, some years averaging over 120, others only 20 or 30.

Before going into details, it should be mentioned that Messrs. G. C. S. Ingram and H. Morrey Salmon visited the spot on July 5th, 1936, and were much intrigued by the behaviour of a duck Pochard, which was continually flying in and out of some reeds in an agitated manner; they were convinced that she had young there.

During the second half of April, 1937, the writer paid several visits to this piece of water, and soon came to the conclusion that at least two, and probably four, pairs of Pochards were breeding there.

The first real attempt to obtain definite proof was made on May 7th, 1937, and was successful in finding a nest containing nine fresh eggs. Most books, when referring to the nesting of the Pochard, mention Coots' nests, but this nest was in a situation often adopted by Mallards (at any rate in this district), *i.e.*, on the sheltered side of a thick clump of sharp-pointed, dark-green rushes (*Juncus acutus*); the greenish eggs were well covered with down, which is darker than a Mallard's, in fact almost black. The few feathers obtained were small, and grey with white tips.

The next day the duck was flushed from within two yards of the nest, and she then flew to the open water where she was immediately joined by a very perturbed drake Pochard.

J. F. THOMAS.

COMMON EIDERS IN KENT.

IN view of the fact that Eiders (*Somateria m. mollissima*) have been recorded during this last winter off the Kent and Sussex coasts (Vol. XXX., pp. 295, 323), it is a matter of some interest that on May 17th, 1937, we saw seven brown birds and an immature drake of this species flying together close inshore past the eastern point of the Isle of Sheppey.

R. B. SIBSON,
P. W. E. CURRIE,
E. H. GILLHAM.

SQUACCO HERON IN LANCASHIRE.

LAST year whilst examining a number of skins in a taxidermist's shop in Southport, the writers noticed a mounted Squacco Heron (*Ardeola ralloides*) and were informed that it had been shot some years ago in the district but had never

been claimed after it had been mounted. Recently, further investigation revealed that the bird was actually shot in August, 1930, by Mr. John Ryding on his farm at Banks, near Southport. According to the shooter, with whom we have been in correspondence, the bird appeared from inland about seven o'clock in the evening and flew straight into some trees on the farm, amongst which it was shot. The weather at the time was dull, after heavy rain.

The specimen, which we have examined in conjunction with comparative material, is, we believe, fully adult, but as we were not able to remove it from its case, a thorough critical examination was impossible. The bird was not sexed.

It is now in the possession of Mr. D. D. Pennington of Birkdale, Southport, and it may seem strange that a bird so rare in this country, could be shot without its obituary notice appearing before now. This was accounted for, however, when we learned that the shooter passed the bird in the flesh to Mr. Pennington, who took it to be mounted. Subsequent prolonged illness caused Mr. Pennington to overlook the existence of the specimen and it was only recently, when we drew his attention to it, that he remembered the occurrence.

From our enquiries, we are absolutely satisfied as to the reliability of this record and believe it can unreservedly be accepted as a first record of the species in Lancashire, although the possibility of the bird being an "escape" cannot be overlooked.

REGINALD WAGSTAFFE,
JOHN CLEGG.

BLACK-NECKED GREBE IN KENT IN SPRING.

ON April 25th, 1937, I saw a Black-necked Grebe (*Podiceps n. nigricollis*) on a fleet in the Marshes near High Halstow. It was in full summer plumage.

P. W. E. CURRIE.

DOTTEREL ON HOLY ISLAND.

IN misty weather with a north wind, when I was staying on Holy Island, three Dotterel (*Charadrius morinellus*) were found feeding on a recently-sown cornfield on May 13th, 1937. During the night they were joined by a fourth bird. All were very tame and allowed of a close approach. During the night of the 14th, when the weather cleared, the birds all moved on. As far as I could gather from the Islanders several of whom had noticed the birds, for the field was just outside the village, this was the first time Dotterel had ever been seen on the island.

SYDNEY H. LONG.

KENTISH PLOVER IN CHESHIRE.

ON May 21st, I spent half an hour watching a Kentish Plover (*Charadrius a. alexandrinus*) near Sandbach in south Cheshire. Although there are odd autumn records for this species at Altrincham Sewage Farm, it has only been observed once before on the spring migration in this county; namely, by T. A. Coward, who saw two at Marbury Mere, Northwich, on April 29th, 1908. (*British Birds*, Vol. II., p. 32.)

My bird was with a Ringed Plover (*C. hiaticula*) on a spit of sandy mud which juts out into a 'flash,' or subsidence slowly caused by brine-pumping and now a pool of some size. This spit is a regular halting place for Ringed Plovers and Dunlins in spring, and they frequently drop in in the evening. On May 21st I examined the spit at 6.15 p.m. and drew a blank, but returning at 7 p.m. after visiting some other 'flashes,' found the Kentish and Ringed Plovers, side by side and asleep. They remained very inactive, hardly fed at all and were evidently tired.

I never had a moment's doubt about identification. Both birds were fully in the open at less than fifty yards. The light was excellent, with the sun directly behind me, and I had a telescope. I know the Kentish Plover well in Texel and the Camargue.

R. B. SIBSON.

INCUBATION PERIOD OF REDSHANK.

FINDING out incubation-periods of certain species of birds is often a very trying business, and so it may be worth while mentioning that accurate data for the Redshank (*Totanus calidris*) were obtained in 1937 on the Carmarthenshire coast. The period is within that given by the *Practical Handbook* (i.e., 23-25 days).

April 10th	nest found with 2 eggs.
„ 11th	2 eggs.
„ 12th (11 a.m.)	3 eggs.
„ 13th (11 a.m.)	3 eggs.
„ 14th (noon)	4 eggs.
May 7th (10 a.m.)	one bird poking its head out of the shell, and 3 eggs.
(3.30 p.m.)	all 4 hatched.

This gives a period of 23-24 days. It will be noticed that the eggs were laid on alternate days (so also in another nest), a fact which the *Practical Handbook* does not mention. The nest itself was completely open to the sky, being about 2 inches deep in a small patch of thick moss and dwarf willow, and without the least sign of lining. There was a similar nest, also with four eggs, only 13 yards distant.

J. F. THOMAS.

INCUBATION PERIOD OF WATER-RAIL.

As the incubation period of the Water-Rail (*Rallus a. aquaticus*) seems to be unknown, the following data may be of interest. I found the nest of a Water-Rail in Norfolk on May 24th. It contained then seven eggs. Two days later there were nine, and on that afternoon the bird was put off from the nest showing that she had already begun to sit. At 11 a.m. on June 14th the bird was on the nest and covering seven young ones and an egg that appeared to be addled. The young were only just dry. The incubation period is thus 19 to 20 days, which is shorter than I should have suspected. J. VINCENT.

[The incubation period of this species has been determined by Herr A. Heinroth as 19-20 days, thus agreeing with Mr. Vincent's result. Incubation does not always begin with the completion of the clutch.—F.C.R.J.]

BLUETHROAT IN NORFOLK.—Mr. G. M. King informs us that on May 15th, 1937, he saw a male Bluethroat (*Luscinia svecica*) in suæda bushes at Brancaster. The characteristic tail was noticed and a partial view of its blue throat was obtained, but nothing was seen of any central spot.

INFLUX OF GREBES AND DIVERS.—In connexion with the notes on the influx of Grebes and Divers (Vol. XXX., pp. 370-373), Mr. A. W. Boyd writes that he saw the Red-necked Grebe (*P. griseigena*) at Marbury, Cheshire (p. 373), as late as May 12th, and that two Slavonian Grebes (*P. auritus*) were at Bellfields, Staffs, (p. 373) on April 25th, one being in full plumage, the other changing from winter plumage. Mr. P. W. E. Currie informs us that the maximum number of Slavonian Grebes at Mitcham, Surrey, was four, not three, on February 20th, and that one was still there on March 15th; while Mr. W. J. Clarke states that a Slavonian Grebe was in Scarborough Harbour on February 4th, 5th and 7th, two Red-necked and three Slavonian Grebes were on Scarborough Mere on the 5th, a Great Crested Grebe, two Red-necked and two Slavonian Grebes were at the same place on the 11th and one Red-necked Grebe was in the Harbour from the 20th to the 23rd.

BLACK-THROATED DIVER IN YORKSHIRE.—Mr. T. N. Roberts reports that he saw a *Colymbus arcticus* in Scarborough Mere on February 11th, 1937.

LITTLE AND GLAUCOUS GULLS IN YORKSHIRE.—Mr. W. J. Clarke informs us that immature examples of *Larus minutus* and *L. hyperboreus* were seen in Scarborough Harbour on

January 2nd, 1937, and that the former stayed for several days.

KITTIWAKES INLAND IN CHESHIRE.—Mr. A. W. Boyd writes that from February 14th to March 13th, 1937, when he found it just dead, a Kittiwake (*Rissa t. tridactyla*) was seen at Marbury, near Northwich; a second was seen there on February 27th, while Mr. R. B. Sibson found one dead near Sandbach on the 22nd and saw a living one at the same place on the 24th.

LETTERS.

THE BIRDS OF STEEP HOLM.

To the Editors of BRITISH BIRDS.

SIRS,—I feel that, in order to bring this up to date, some comments are called for as regards Mr. Stanley Lewis's interesting account of "Birds of Steep Holm" (Vol. XXX., pp. 219-223) in view of the fact that for the past five years (1933-1937) members of the Ornithological Section of the Bristol Naturalists Society have paid an annual visit to this island in April or May, and that these have been supplemented by others, including one or two on which members have stayed for a day or two.

As regards the birds which breed or have bred, Mr. Lewis says that three pairs of Carrion-Crows are resident; but, though on two occasions a pair have been seen on the shore on landing, they have not been noticed later, and no nests have been found. No Skylarks have been seen on any visit, so I do not think it can be called a resident. Nor do I consider that the Spotted Flycatcher breeds there at all regularly; the pair reported seen there in May, 1935, were not on the island the following month (June 20th-22nd) and did not breed. The Song-Thrush cannot now be called a common resident; we have notes of it in 1934 and 1937 and possibly one pair may nest. Mr. Lewis says of the Little Owl: "There seems little doubt that it breeds"; none have been seen on any of our visits so I think that up to the present it has not spread to Steep Holm. I very much doubt if there are still two pairs of Kestrels "resident and breeding" as we have no notes of any being seen. The Great Black-backed Gulls have recently increased and there are probably eight pairs breeding.

To the occasional visitors may be added Goldfinch, Chaffinch (both seen 1937), and Whinchat (seen 1936).

H. TETLEY.

THE INFLUX OF GREBES AND DIVERS.

To the Editors of BRITISH BIRDS.

SIRS,—The reason suggested by Mr. H. G. Alexander for the deferring of the widespread incursion of sea-birds inland at the end of January (*antea*, pp. 31-2) is interesting, if not quite convincing. The weak spot appears to lie in the fact that when the high east wind on the east coast dropped the impelling cause to leave the sea disappeared with the amelioration in local conditions; and from what is known of bird mentality it seems improbable that adverse experiences in the past would operate with the birds in the more favourable circumstances.

It seems more probable that when the lull in the tempestuous weather occurred, some weather-wisdom sense, not understood by us, informed the birds that, *in the immediate present*, weather conditions to the east made departure westward desirable. E. ST. GEORGE BETTS.

BIRDS TAKING RUBBER RINGS.

To the Editors of BRITISH BIRDS.

SIRS,—In view of the note on this subject by Messrs. Ingram and Salmon (Vol. XXX., p. 374), I should like to record the finding of two red rubber stationery bands in the gizzard of a Puffin (*Fratercula arctica*) which I found dead on the shore near Bournemouth in December, 1936. One of these bands had apparently been in the sea for some time, as it was broken in one place and considerably perished; the other was intact, and both retained their original shape. Each was about one and a half inches long. The gizzard contained, besides these, various unidentifiable crustacean remains, including the limb of a crab (*sp?*); there was no suggestion that the bands were the cause of death.

As has already been suggested, it is not unreasonable to suppose that birds mistake these bands for food. But it is equally reasonable to suppose that they pick them up indirectly from their "food-animals", especially in the case of fish-eating species such as the Puffin and Arctic Tern. Birds are apparently not the only animals with a curious and rather baffling taste for rubber rings: I am told that members of the Marine Biological Station at Plymouth have recently been puzzling over the recovery of mackerel with similar rings round their bodies! I am not suggesting, of course, that the Arctic Terns or Puffin swallowed one of these mackerel.

K. B. ROOKE.

SCARCITY OF IMMATURE LESSER BLACK-BACKED GULLS ON SPRING MIGRATION.

To the Editors of BRITISH BIRDS.

SIRS,—I have read with interest Mr. Clifford Oakes's notes on the scarcity of immature Lesser Black-backed Gulls (*Larus f. graellsii*) on spring migration.

Many thousands of this species nest throughout the Shetland Islands and a feature of the nesting colonies and scattered groups over the surrounding ocean is the extreme scarcity of immature birds.

Immature Gannets (*Sula b. bassana*) are also a small percentage of the numbers of this species seen in Shetland waters, though not so scarce comparatively as are the immature Lesser Black-backs.

Between the dates April 14th and 20th, 1936, I chanced to be on that part of the ocean between the Maroccan Coast and the Canary Islands, and I was interested to note that practically all the Lesser Black-backed Gulls and Gannets seen were in immature dress. It seems likely that the immature birds of these two species spend their 'juvenile' years in the southern part of their range.

G. T. KAY.

ENQUIRY AS TO SONG-PERIODS.

To the Editors of BRITISH BIRDS.

SIRS,—The British Trust for Ornithology has asked me to undertake an enquiry into the song-periods of British birds. It seems best to ask observers, in the first place, to concentrate on a few species. We have selected the following six species, namely—Mistle Thrush, Song Thrush, Blackbird, Chaffinch, Yellow Bunting and Skylark.

Observers are asked to record on special schedules the song of these species daily for a year, beginning from 1st August, 1937.

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H. G. ALEXANDER.

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THE RED-THROATED DIVER IN NORTH EAST LAND.

BY
DAVID B. KEITH.

(Plate 2.)

THE following notes are the result of observations I made in North East Land, the second largest island of the Spitsbergen archipelago, between August, 1935, and August, 1936, when I was a member of the Oxford University Arctic Expedition, under the leadership of A. R. Glen. I spent the summer months of 1936 in Murchison Bay and my observations on the Red-throated Diver (*Colymbus stellatus*) were for the most part made in this region.

The shores of Murchison Bay, the Bay of Islands as the Norwegians call it, are composed of dolomite and are of such bareness as defies description. Both here and on the many islands in the bay the vegetation consists for the most part of scattered clumps of Arctic Poppy (*Papaver radicum*) or Purple Saxifrage (*Saxifraga oppositifolia*). Only where there has been manuring in some form or other, such as below bird cliffs, round old Eider nests, or near the old skeletal remains of whales and other animals is there found anything approaching close plant communities. But on most of the islands and scattered round the shore are freshwater tarns, and on nearly every one of these, which was of suitable size, there was eventually a pair of Divers.

I began my stay in Murchison Bay in May when the winter ice still filled the bay and when the only birds were a few Snow-Buntings (*Plectrophenax n. nivalis*), and some Kittiwakes (*Rissa t. tridactyla*), Glaucous Gulls (*Larus hyperboreus*), Mandt's Guillemots (*Uria grylle mandtii*) and Little Auks (*Alle alle*). By the end of this month pools had begun to appear in the ice, and on June 2nd I first heard the roll-growl* of Red-throated Divers coming from a large pool near the mouth of the bay. On June 3rd a pair appeared in the pool in the ice just off the end of the point on which our hut was situated.

I. INTRODUCTION.

The arrival of the first birds was announced by the roll-growl and from this time this call was heard at every hour of the day and night until mid-July when it became gradually of less frequent occurrence (*see* Section 6). It must now be well

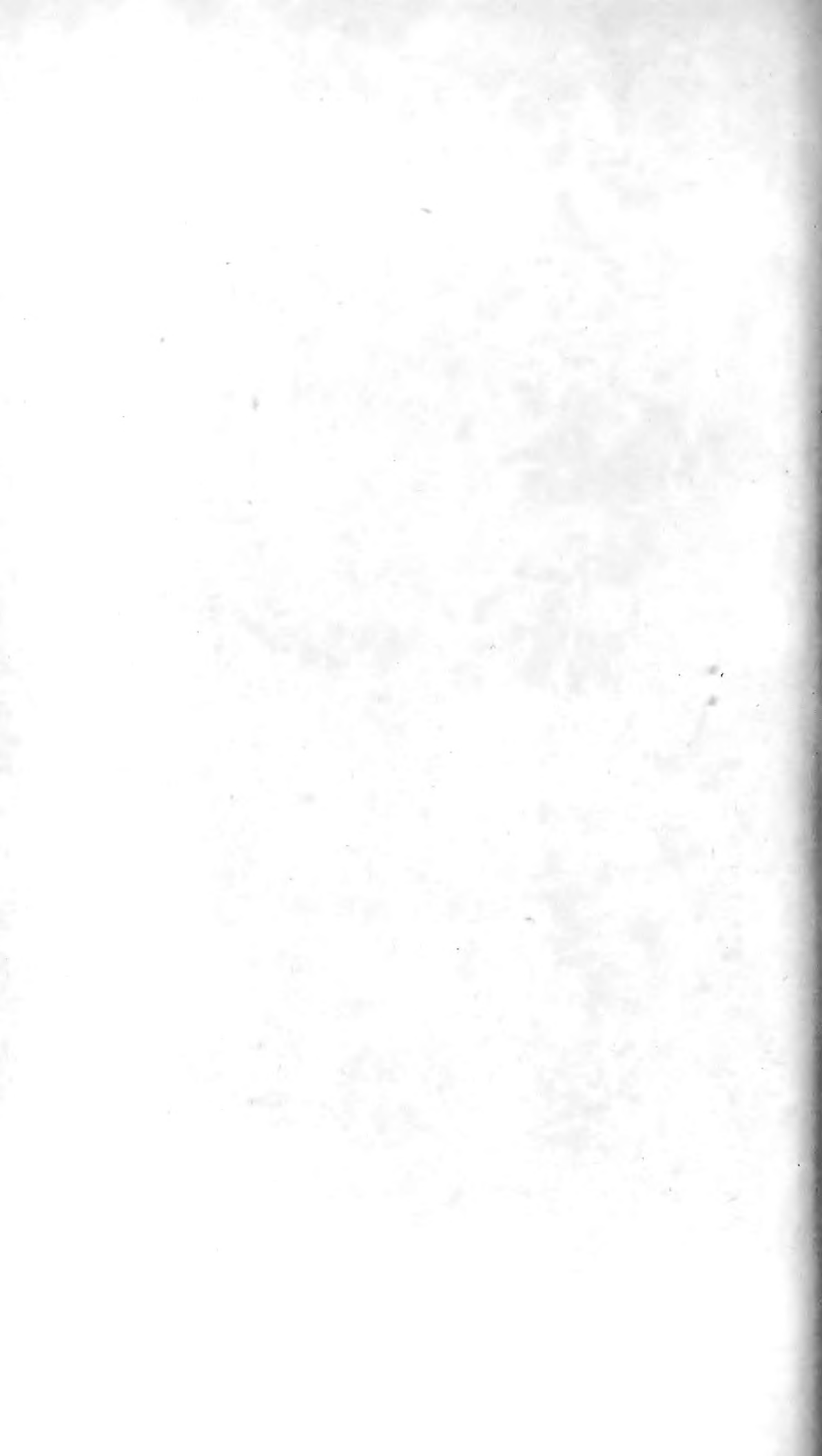
*Throughout this paper I refer continuously to the descriptions of the sexual ceremonies and courtship activities given by Huxley [2].



Upper—Normal brooding position

Lower—Brooding position when alarmed

(Photographed by D. B. Keith)



established that the Divers mate for life and hence arrive at the breeding quarters in pairs, so it is unnecessary to describe my own observations on this point. At first the birds were confined to the many pools which were now appearing in the bay ice, but as soon as sufficient ice had thawed in the inland tarns, they immediately resorted to these and spent there considerable periods each day although it was still too early to begin nesting. I had one large tarn, about 70 yards by 50, under observation and on this two pairs nested. At the beginning, when the pairs first occupied the tarn, it was only small patches at either end that had melted, so that these formed two well-defined and separated territories. Gradually the ice barrier between them thawed and finally the tarn was completely free of ice. The two territories were then adjoining and the pairs mixed amicably without any demonstrations, unless a fifth unmated bird was also present. This was the only tarn I found on which two pairs were breeding. Most of the other tarns were of smaller size, the average was about 40 yards diameter, and contained only one pair. The percentage of suitable tarns which were unoccupied was extremely low. It was a very rare occurrence to find a tarn with the two necessities—size sufficient to allow the bird to alight and take off in all winds, and a mossy ledge at some point on or very near the circumference for the nest—which was untenanted. Also it was rare to find a pair in occupation of such a tarn and not nesting. The Red-throated Diver was one of the very few birds in North East Land which was found in such numbers that either the possible nesting or feeding areas were utilized to the utmost and where there was no large population of birds in occupation of territories but not breeding. This was the more remarkable because 1936 was a "non-breeding year" when large numbers of Ducks and Geese failed to nest; and in other parts of the Arctic it had always before been found that the Divers were also affected by these years and that of them too only a very small proportion were breeding.

Very seldom did I see a pair of birds perform a sexual ceremony at a sea-water pool (i.e., in the feeding area) unless there had been some form of external stimulus. This was usually the presence of another pair, or single bird, and I discuss these occasions in Sections 2 and 3. On the nesting tarn, however, it was quite different. Here it was a normal occurrence for birds mutually to raise the level of sexual excitement till a ceremony followed. I never saw another pair on an occupied nesting territory; and the result of the

presence of an unmated bird was the same whether the environment were the feeding or nesting area. I would say, then, that the Red-throated Diver during the breeding season frequents two types of territory :

(a) An area of sea-water for feeding. During the early part of the season this was a melt pool in the ice, later it might be any area free enough of ice-floes, often close in-shore. In this area there usually has to be some external stimulus before sexual ceremonies can take place.

(b) An inland fresh-water tarn for nesting. Here a pair by mutual behaviour can raise the level of sexual excitement till some ceremony or copulation follows.

I shall now consider the behaviour of birds on the first of these areas when another pair, and when single birds, are in close proximity to them.

2. INFLUENCE OF ONE PAIR ON ANOTHER.

On June 4th I was watching at a large pool in the ice. When I arrived, there were three pairs present, the first at the far end, the second in the middle, and a third pair, which had just alighted, near the second pair but a little towards the near edge. This third pair swam towards the edge, and on the way started to do vigorous " splash dives " and from one of these emerged together and performed the Plesiosaur race ceremony for three or four yards before relapsing to the normal swimming attitude and continuing to the ice edge where they dived and fed for half an hour. During this feeding I once again saw them emerge together from a short " splash dive " and perform the Plesiosaur race for three or four yards. In both of these instances the birds made no sound. Suddenly one of these birds began vigorous " splash kicks " forward (not dives) and both swam farther out into the pool, and I saw one of the other pairs was approaching. As the two pairs neared each other this new pair began the roll-growl, went into the " wing-Plesiosaur attitude " and advanced towards the pair I had been watching, which took flight and left the pool. The aggressive pair continued the " wing-Plesiosaur attitude " for a few yards before relapsing to the normal swimming position. They then began to swim out into the middle of the pool again. Within a minute or so they again performed the wing-Plesiosaur race, silently, for a few yards. They then approached the third pair, and as they neared them one of the birds (of the aggressive pair) did a kick forwards, whereupon the roll-growl and Plesiosaur race ensued and lasted

for four or five yards. At this the third pair rose and flew to the other side of the pool, and as they did so the aggressive pair immediately performed the Plesiosaur race silently again. They then swam over to where the third pair had alighted. As they neared them they again began the roll-growl and went into the "wing-Plesiosaur attitude." One of the third pair flew off at once, but the other fell in in front of the other two, and uttering the roll-growl and in the "wing-Plesiosaur attitude" led the race for three or four yards before taking wing and joining its mate on another, and distant, part of the pool.

On June 9th I was watching a pair swimming quietly when another pair alighted near them, and the first pair immediately performed the Plesiosaur race together silently as the others arrived.

These instances, which are typical of many others, show the behaviour of pairs meeting on pools in the sea ice, i.e., *not* in the breeding territories. There are thus these two alternatives. Either these sea-water pools do come to have some territorial significance, or else some sexual emotion is, at this time of year, stimulated in a pair of birds merely by the proximity of another pair which are not performing any sexual ceremony. And I suggest both these alternatives are true, each applying in certain cases. Such variability in behaviour has been demonstrated in other species [4] and I suggest its occurrence here. Some pairs (notably the aggressive pair observed on June 4th) have enough feeling of territorial proprietorship to be roused to sexual anger by the approach of another pair. But it would be incorrect to say these performances are *always* due to sexual jealousy caused by the trespassing of other birds on an occupied territory, first because the actions of the pair so roused were not always directed against the other pair but were directed merely to each other, they were mutual (*e.g.*, the pair observed on June 9th); and secondly, there was nothing which led me to suppose that these pools in the bay ice did have any territorial significance. Repeatedly pairs would fly from one to another, and there was nothing to suggest that any particular pair always frequented the same pool. Further there were few of these pools compared with the number of pairs of birds, and as the behaviour of any pair on a pool was consistent over the whole area it was impossible to suppose the pools were subdivided to form territories for more than one pair of birds. Thus I think it is true to say that in other cases some form of sexual emotion is stimulated in a pair by the mere presence

of another quite apart from any considerations of territorial ownership.

3. INFLUENCE OF AN UNMATED BIRD ON A PAIR.

In these cases the reaction of the pair concerned seemed far more often to be anger directed against the single bird than a general raising of the level of sexual excitement. It was often impossible to be certain of the sex of the unmated bird, but it appeared that the results described below were caused by unmated birds of either sex. Further, the results seemed to be the same whether a bird approached a pair on a sea-water pool or on the nesting tarn. But I found that in both environments a single bird was tolerated by a pair to a surprising extent, and actions similar to those described below were neither immediate nor invariable.

On June 4th I saw a pair sleeping on a small pool in the bay ice when a single bird flew silently overhead. Immediately the pair awoke, and swam vigorously in the direction in which the other bird was flying till it had passed, and then they again settled down and went to sleep. I was given the impression that the birds were swimming so energetically in that direction to try and prevent the other bird from alighting there.

On June 9th I found three birds together on this same pool. Just after my arrival they performed the Plesiosaur race silently for about ten yards, and after swimming about quietly for a few minutes they again came together and went into the "wing-Plesiosaur attitude," uttering the roll-growl. Then the leading bird—I had by this time formed the opinion that it was the odd bird of the three—keeping the wings up, shot along the surface of the water with vigorous kicks till it was about thirty yards ahead of the others; it then stopped and settled down on the water in the normal swimming attitude. Suddenly one of the other two emerged almost under it, and the first immediately did another "run along the water" for another thirty yards or so. I was able to confirm that the action of the second bird was merely one of hostility directed against an intruder, by observations on July 12th. I was watching a Diver on her nest on the edge of a tarn on which there were also a few Eider. The male Diver was also on the tarn, and when the Eider were passing the nest he swam towards them under water and suddenly emerged at their tails, successfully putting the Eider to flight.

It would seem, therefore, that the meaning of these actions is to be found in a simple demonstration of sexual anger. But

it is difficult to see the precise cause of this anger. The observations just described were made at the sea-water pools, areas to which I hesitate to ascribe any territorial significance ; but if the anger were merely that of a mated bird approached by another of its own sex, why were the demonstrations given by *both* birds of the pair? But I feel confident that the



Fig. 1.—“The female stretched out flat on the nest and began the mewing call”

performances were demonstrations of anger in some form from the fact that they were, in every case, directed against the single bird.

44. INFLUENCE OF THE SOUND OF THE ROLL-GROWL ON A PAIR.

I quote this as it gives an interesting example of sexual activity influencing birds not directly concerned.

On June 21st I was watching a female on her nest. She had at that time only one egg, and while incubating was plucking pieces of moss in her bill and adding them to the nest. Then I heard the roll-growl from a tarn about 200 yards away, out of sight beyond a slight rise, which was much frequented by another pair which, however, never nested there. Immediately the female stretched out flat on the nest and began the mewing call (Fig. 1), which developed into the roll-growl. The male, which had been sleeping out in the middle of the tarn,

awoke and began dipping his beak in the water—an action which Huxley suggests (and which my own observations confirm) has sexual significance. Then the female slipped off the nest, and after the pair had swum about agitatedly in the middle for a short while, they rose and flew off to the pool whence the sound had come. The solitary egg was left unguarded.

I have now to consider the behaviour of birds on the nesting tarns; and to give a clearer idea of the actions of the birds through the nesting period I give a description of a pair which I had under daily observation from the time they first visited the nesting tarn till the young was hatched.

5. THE BEHAVIOUR OF A PAIR THROUGH THE BREEDING SEASON.*

On June 9th I found, on a small inland tarn of about forty yards diameter, a pair of birds swimming quietly† in the five or six inches of water that had formed at one end. This was the first occasion on which I had seen birds on any of the fresh-water tarns with which the island abounded; but it was also the first time I had seen a tarn with sufficient water in it for the birds to be able to swim. It was clear that the breeding tarns were occupied the moment they were sufficiently thawed. The birds on this occasion left the tarn and flew to one of the large pools in the bay ice shortly after my arrival.

I visited the tarn again that evening. The birds—it is safe, I think, to assume it was the same pair—were again there swimming about in the small thawed area. Both were continually dipping the beak into the water. Then they swam towards each other and, as they approached, performed the Plesiosaur race (silently) for two or three yards. They then separated, but soon swam together again and repeated the performance exactly; and after a further interval, repeated it again. After a few minutes they performed the ceremony a fourth time, and shortly afterwards took flight and flew to the feeding area. I watched them here for an hour or so and saw no sexual performance of any kind.

*Passages in inverted commas in this and the following paragraphs are taken verbatim from my diary which was written at the time of observation.

†I have used the expression "swimming quietly" to indicate that the birds were performing no actions of sexual significance at the time concerned.

Gradually each suitably-sized tarn on the island came to be occupied by a pair of Divers. The pair I was watching divided their time between the nesting tarn and the sea-water pools, and when on the former their behaviour was always similar to that described above. But when on the latter, sexual ceremonies were confined to times when the birds were excited by the presence of other pairs or single birds as described above (Sections 2 and 3).

On June 20th a nest had been constructed on a mossy ledge which rose above the surface of the water about a yard from the edge. The next day it contained an egg. I disturbed the female when I arrived at the tarn, but when I had reached my observation post she quickly returned onto the nest and settled down to incubate the egg. The male was dozing out in the centre of the tarn. It was then that I heard the roll-growl from a neighbouring tarn with the result described above (Section 4). After fifteen minutes the pair returned "and swam about very excitedly in the middle, the female pushing herself violently through the water, while her head was down in the 'beak-dipping' attitude, or sometimes it was submerged so that only the top of the head was visible above the surface. Both dived quietly several times; then they swam towards each other and performed the Plesiosaur race ceremony (silently) for two or three yards. Then later one began the mewling cry, and the other joined in, both birds lying out along the water with their beaks up and open giving the cry. This then changed to the roll-growl and they did the snake race for four or five yards. Then the male went out into the middle and slept and the female nervously, often beak-dipping, approached and eventually settled on the nest. The tarn is still half-frozen."

After observing the casual way in which the birds had left the nest and egg unguarded, I was not surprised when I returned the next day to find that the egg had been taken from the nest, undoubtedly by one of the many Arctic Skuas (*Stercorarius parasiticus*) inhabiting the island. I spent several hours at the tarn. The female returned to the nest almost at once, and, while the male swam close in to it, added bits of moss to its construction. Once when the male passed close to her she "pushed herself into the water with a very quiet mewling cry and at once both performed a silent Plesiosaur race for just a yard or so". Ten minutes later she was on the nest again, but very soon left it and both birds swam "to a mossy ledge about forty yards from the nest. The female pushed herself out on to it. The male followed,

copulated, and fell down beside her, on her left side. The female then went back into the water followed by the male and for five minutes they swam about quietly near this ledge and then began to approach the nest. But when in the middle both rose and flew off to the sea."

The next day I did not see the Divers at the tarn. By June 28th they had constructed another nest about ten yards from the first. On July 10th I found two eggs, one of which was broken, in the nest. When I arrived the next day the female was incubating, and two birds were out in the middle of the tarn. As I approached, the female left the nest, and she and the male did the Plesiosaur race silently for five or six yards. The three birds swam about in the middle when I was getting into the hide. When I was in, the odd bird—I could not see which sex it was—flew off and the female came back on to the nest; and almost at once the male flew off. "Quarter of an hour later the roll-growl was heard from a neighbouring tarn. The female 'lay out on the nest' with neck stretched and gave the mewling cry." Soon the male returned and began preening out in the middle, and the female dozed on the nest.

I put in a further spell of observation that evening. When I was in the hide "the female almost at once came back and picked up in her beak the broken egg, which was lying outside the nest, and carried it about twenty yards out into the tarn. Here she was joined by the male, and both broke up the egg into small pieces with their beaks—biting it and shaking it about. Then the female swam to the nest, went on to it, settled down for a few seconds, then left it and started to pluck moss just by it. Then she went to a mossy ledge about ten yards away (not the one where I saw them copulate). The male approached, but after a few seconds, before he was nearer than three or four yards to her, the female turned round, went back into the water and swam out into the middle of the tarn, and the male went on to the nest, using a different way up to it from that used by the female. The female soon flew off. After one and a half hours she arrived back, and the male began a quiet 'oo' call. The female in the middle preening." I believe this is the only time the relief of one bird at the nest by the other has been witnessed.

On July 12th I arrived to find the female on the nest and the male away. The female left the nest and swam out into the middle when I was getting into the hide. "There were a lot of Eider on the tarn and these gradually came near to the nest, and the female went for them stretched out low

along the water. Then two more Divers arrived; one, the male of the pair, left the other and swam towards the female, and both did several 'splash dives'. From one of these they emerged in the Plesiosaur attitude (one in the wing position) and uttering the roll-growl they swam after the third bird, who also went into the Plesiosaur attitude. Then the female came back to the nest and the odd bird flew off."

When I visited the nest on July 28th the female behaved in a curious manner. "She slipped off the nest when I was about thirty yards away, and went about three yards from the nest where there was a ridge about an inch below the surface. She lay out on this while I examined the egg, and till I was about a hundred yards from the nest when she returned to it." The next day I approached quite openly to within five feet of her as she sat on the nest, and on the 31st I photographed her on the nest at four foot range and withdrew without her leaving it. The young hatched on August 5th, by which time the egg had been incubated for twenty-six days. The female then gave up her habit of remaining on the nest and, though she was brooding the young when I came in sight, she would soon slip off the nest and swim with the tiny chick at her side out into the middle of the tarn.

From these observations I was led to the following conclusions:

(a) Performances of the Plesiosaur race due to the mutual raising of the level of sexual excitement take place on the breeding tarns and very seldom on the sea.

(b) The Plesiosaur race is a demonstration of sexual emotion typical of the earlier stages of the breeding cycle.

(c) When there has been merely a mutual raising of the level of sexual excitement of the pair (*i.e.*, when there have been no external stimuli) the Plesiosaur race is *usually* performed *silently*.

6. THE ROLL-GROWL.

Huxley found that the roll-growl "invariably accompanied" the Plesiosaur race ceremony. In North East Land I found it far more common for the birds to perform this ceremony silently, and my observations led me to conclude that the roll-growl is very frequently (though not always) a demonstration of sexual anger. But before describing the observations that led me to this conclusion it is necessary to discuss further the actions associated with this curious note. There is one sexual ceremony which, in my opinion (and here my

observations confirm Huxley's) is invariably accompanied by the roll-growl, and this is the snake ceremony. I did not have very many opportunities of observing this ceremony, but on each occasion when I did see it performed I noticed that the birds did not move along in a straight line as in the Plesiosaur race, but almost seemed to zigzag indiscriminately along the course in a state of wild excitement. The Plesiosaur race is a demonstration of intense but controlled sexual excitement; the snake-race seemed to be the manifestation of ungovernable sexual impulses—usually sexual anger.

On some occasions I found that it was not so much a case of the roll-growl accompanying the ceremony as *vice versa*. Frequently I saw a bird begin to utter the plaintive mewing cry. This would be increased in strength till it developed, with no appreciable break, into the roll-growl, and the bird *then* went into the attitude of the Plesiosaur or snake ceremony. The connexion between these two notes is shown in my observations of June 21st (Section 4) and July 11th (Section 5). This is my reason for devoting so much space to a consideration of this note. I think it is the *primary* demonstration of a certain sexual state, which may be accompanied by either the Plesiosaur or the snake attitude, and that this sexual state is usually anger.

I would now refer back to my observations of June 4th described in Section 2. It should be noticed that here the roll-growl was only heard when the aggressive pair was in the act of driving another pair off the pool. When this latter pair left, the former again performed the Plesiosaur race, but silently—the anger at the proximity of the other pair had subsided at their departure. This happened three times in the space of half an hour. The observation of June 9th, also quoted in Section 2, I take to have the following significance. The roll-growl was not heard; the performance of the pair on the water was mutual, it was not directed against the arriving pair, and hence was not a demonstration of sexual anger, but a raising of the general level of sexual excitement as suggested in that section. In Section 5 I describe my observations on July 12th which gives an instance of the roll-growl as a demonstration of anger against an unmated bird on an occupied nesting territory.

But most interesting of all are the several instances that occurred in which the roll-growl, accompanied by some ceremony, was given by a bird whose anger was directed against *me*. On June 12th I suddenly topped a rise about eighty yards from a small tarn on which there was a pair;

immediately both uttered the roll-growl and performed the snake ceremony.

By the end of July there was a pair nesting on almost every suitably-sized tarn. I found many of these birds sat very tight and allowed me to approach quite near, especially after I had visited them two or three times. On the 27th I visited a pair which I knew had two eggs. "The bird on the nest allowed me to come within two or three yards while she kept absolutely motionless. Then she looked round and gave one or two staccato 'karks'. Then she pushed herself just off the nest, quite slowly, and faced me, swimming just beside the nest. Then she swam out a few yards and, swimming on a curving course of which I was the centre, did the Plesiosaur race (wing position) with the roll-growl, by herself, the other bird out in the tarn not joining in. I was very close and could see the curious enlargement which the throat undergoes when the roll-growl is being produced. As I walked away the two birds swam towards each other and when they met they performed the Plesiosaur race with roll-growl for ten yards together. At first both were in the normal position but half-way through one of them went into the wing position. Then one swam out into the tarn and the other returned to the nest."

However, I would not assert that the roll-growl is invariably a demonstration of sexual anger. I have quoted in Section 5 my observation on June 21st. Here a pair gave the roll-growl and performed the snake ceremony when alone on the nesting tarn. The birds at the time were in a very high state of sexual excitement and it is difficult to say more than that in explanation. And Huxley also quotes one instance of a pair uttering the roll-growl and performing the snake ceremony when alone on the tarn.

It will not be out of place to conclude this section with a short discussion of the three notes uttered by the Diver during the breeding season. In addition to the roll-growl, which I have tried to show has its origin in sexual anger, there is the extremely plaintive mewling cry, and the harsh, sharp 'kark'.

The 'kark', I found, had no sexual significance; it seemed to be an alarm note, and was the only call I heard uttered by a bird in flight. On July 15th I visited a tarn where a pair was nesting and had two eggs. "I saw one of the birds out in the middle, it lay on the water and submerged very quietly. The other was on a nest in front of me. I began to walk slowly towards it, and the bird lay on the nest and

kept absolutely still (Fig. 2). I got to within six yards or so, and then the bird 'came to life'. I sat down and the bird began the mewling call to the other which was now out on the far side of the tarn. This went on for a minute or more—the bird on the nest stretching out flat as she gave each call—and the other also calling and beak-dipping. Suddenly the



Fig. 2.—“The bird lay on the nest and kept absolutely still”

female went into the water with a harsh loud ‘kark’, and when a yard or two out turned round towards me repeating the ‘kark’. I walked away, and the female kept about ten yards from the nest till I was out of sight, when she returned to it.” The next day I again visited that pair. “Just after I had left the nest, a pair of Skuas arrived and flew towards it, at which both Divers rushed along the surface of the water towards it, with loud ‘karks’, and the Skuas went off.”

The origin of the mewling cry is less obvious, and I have been unable to discover if it is ever heard except in the breeding season. Since the Divers mate for life, it is possible that it is, for I found that, whereas the ‘kark’ was barked at an intruder or used as an almost continual cry during flight, the mewling cry was always directed towards the mate.* The cry itself is painfully human in sound, and has been likened by Jourdain [5] to “the short, sharp wail of a hurt child, repeated at intervals”. I found very frequently it was a long drawn-out plaintive cry. On June 9th I was watching

*Huxley records an incident when a female Diver on her nest uttered this call when a Skua alighted near.

a pair which "were feeding at the edge of a pool and got separated by a large berg. One bird (the female?) started the mewling call, softly with head stretched forward, and began to swim back to the other side of the berg. Again they got separated, and again the mewling call, and again no celebration when they met". Another pair on the same day "got separated in diving for food, and when they were about forty or fifty yards apart, both began the mewling cry—it was very loud—till they swam to each other and out into the middle of the pool again".

A variation of this call was a very subdued 'oo' which I often heard when I was watching a bird on the nest. It was usually repeated to the mate when the latter was on the tarn, but on occasions the brooding bird would repeat the note when alone. At the time I described the note as "a very soft, rather drawn-out 'ooo' or 'ur'". On July 12th I was watching a female on her nest, and while the male "was at the tarn he and the female often uttered a quiet 'oo' to each other. I think it is a variation of the mewling call, because once the female continued the 'oo' and formed this call".

7. UNMATED BIRDS.

I have frequently mentioned in the foregoing sections the presence of unmated birds both on the sea-water feeding areas and also on the occupied breeding tarns. Most of the Divers migrate and arrive at the breeding localities in pairs [1] but some proportion, probably first-year birds, arrive singly. I found it impossible to discover whether all of these birds remained unmated throughout the season or whether pairing up did take place after arrival. Certainly there were large numbers of these unmated birds in the locality throughout the season, but the proportion of non-breeding to breeding birds was smaller in the case of this species than in that of any other "land-nesting" species (as opposed to "cliff-nesting" species which I found it impossible to estimate) in North East Land.

The reaction of a pair to an unmated bird (Section 3) was not continuous. The three birds might swim together quite amicably for three or four minutes, and then without, as far as I could discover, any special behaviour on the part of the single bird, the resentment of the pair at its presence would reach such a pitch that a demonstration (usually the wing-Plesiosaur ceremony with roll-growl) would follow. At this either the odd bird would fly off or the three would again relapse to normal behaviour. The presence of these unmated

birds serves to maintain a high level of sexual emotion in the neighbouring pairs in an environment which does little to encourage sexual development.

Although single birds were constantly on the breeding territories of pairs, I saw nothing to suggest that the Diver is ever polygamous or polyandrous.

8. GENERAL CONSIDERATIONS.

The nesting Diver has a reputation for shyness, but various individuals have been found exhibiting great fearlessness when brooding [3]. On the island at which most of my observations were made it was difficult to distinguish between the normal behaviour of the birds observed and the behaviour which developed from my continuous presence on the island. But I found that in each pair that I had under close observation the behaviour of the birds with regard to their timidity or boldness passed through a definite cycle which I think was not caused, but may possibly have been aggravated, by my presence.

When the birds first arrived their time was spent on the sea-water pools and they were comparatively bold, and took little notice of my movements on the shore. When they were able to frequent the inland tarns they at once became more timid and were in general but half-heartedly active in defence of their eggs when these were first laid. An overwhelming majority of the pairs I observed lost their first laying to the depredations of Skuas. In all cases an interval of a fortnight or three weeks then ensued, at the end of which a new nest was constructed, and at once the behaviour of the birds underwent a marked change. They became active in defence of the nest and more and more fearless of me as the season progressed.

Eventually there were two birds that I was able to photograph on the nest from a distance of three feet, and one of these finally allowed three people to walk slowly up to her and touch her before she left the nest. I found that throughout the season the Divers took singularly little notice of my hiding tent.

Finally, I would mention how in the cases I was able to observe, copulation followed a period of sexual inactivity, and was not the culmination of a series of sexual ceremonies. On June 13th I was watching at a tarn where several small pools had formed in the ice. The pair were "swimming about in a pool in the middle. By a series of short dives they arrived at a pool at the edge. Almost at once the female began to

swim to a mossy ledge where she scrambled out and lay down. The male followed, copulated, then walked off her side and back into the water. The female sat for a minute or two on land and then followed. After swimming about quietly for a few minutes they both took flight and flew off to one of



Fig. 3—Female turning eggs. Male swimming

the sea pools. I was watching for about ten minutes before copulation took place and saw no sexual demonstration”.

On June 22nd I was watching another pair and in this case there was an interval of 15 minutes (taken on a watch) between a “silent Plesiosaur race for just a yard or so” and copulation.

The accompanying illustrations are from my photographs.

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THE FUNCTION OF THE GOLDCREST'S CREST.

BY

DAVID LACK.

ON May 23rd, 1936, in a very open patch of woodland near Totnes, Devon, my attention was drawn by a soft twittering to two Goldcrests (*Regulus r. anglorum*), which were perched on a cement block a few feet above the ground. The birds were facing each other, wings slightly lowered, heads thrust rather downwards and forwards, jerking the bodies slightly from the tarsal joint and uttering a soft but vigorous twittering. One had the crest in the normal position, but in the other it was erected and spread out sideways in a gorgeous flame of colour. It looked as though the head was on fire. While I watched, the bird with the crest unspread chased the other, which gave back a yard into a bush, where the performance was continued for another two minutes. The birds then separated in opposite directions: each rose higher up into a tree, and they sang alternately at each other.

In all its features this was a typical territorial boundary dispute between two rival males. It therefore seems clear that the crest of the Goldcrest functions as a "threat colour", being used in fighting according to the general theory discussed by Hingston [3]. I had on previous occasions seen a Goldcrest with crest erected chasing another, but had not before been able satisfactorily to establish the relation of the two birds. The only reference to the performance that I have found is that of Coward [2] who describes it as the display of the male to the female. In view of the above observation, the occurrence of this display in courtship should, I think, be considered doubtful. In the past there has been a tendency to ascribe, uncritically, all display to courtship. The views of Hingston (*loc. cit.*) form a useful antidote to this, though possibly he has gone too far in the opposite direction. It seems clear that in some species the bright colours of the male are used exclusively in courtship. In others they are used exclusively in fighting. For instance, the "display" of the Robin (*Erithacus r. melophilus*) is, as pointed out by Burkitt [1], an aggressive display (used thus by both sexes), and is not used in courtship. There have been later statements to the contrary, but my own observations [5] over the last three years based on colour-ringed birds, fully confirm Burkitt's conclusions. The display of the Red Bishop-bird (*Euplectes h. hordeacea*) is similarly an aggressive display correlated with territorial fighting, and the male's bright colours

do not appear to be used in courtship, Lack [6]. In yet other species, for instance, the Blackcap (*Sylvia a. atricapilla*) as described by Howard [4], or the Great Crested Grebe (*Podiceps c. cristatus*) as described by Venables and Lack [7], the bright colours are utilized both in courtship and fighting.

The present observation on the Goldcrest raises interesting problems. Is the crest also used in courtship? The fact that the crest is present, though rather less bright, in the female suggests that the female may help in the defence of the territory (? only against trespassing females). If so, does the female sing? Also what is the significance of the rather spasmodic autumn singing? The Goldcrest is a common British resident species but, as in so many other cases, hardly anything seems to be known about its habits.

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NOTES

“THE HANDBOOK OF BRITISH BIRDS.”—As many ornithologists are already aware a new edition of *A Practical Handbook of British Birds* has been for some time in preparation. We should be very grateful to any of our readers who would now send us notes of any omissions or errors in the original work, and of any *unpublished* observations which would make the work more accurate and complete. Should secrecy in regard to locality be necessary this will be rigidly respected.

Since the “Handbook” was completed twelve years ago such a vast amount of matter relating to distribution, migration, breeding-habits and food has been published both at home and abroad, that the revision made necessary is a very heavy task involving the re-writing of most of these sections.

Moreover, field characters, habitat, song and “habits” generally, to which very little space was devoted in the original work, will be greatly expanded, and these new sections are being undertaken by Mr. B. W. Tucker (with Mr. Charles Oldham’s kind approbation). Mr. Tucker has for long made a speciality of the subject, and in addition to work in this country, has studied abroad many species rarely seen here.

The new work will be very fully illustrated in colour, the aim being to show all the birds in as far as possible all their plumages. Such a series of illustrations is not now available to British ornithologists and it is hoped that this new feature will greatly enhance the usefulness of the work, especially to observers in the field.

The original “Practical Handbook” will be in fact so much a new work that we consider an alteration of the title to *The Handbook of British Birds* justified.

As it is proposed to publish in five volumes at six-monthly intervals beginning next spring, we shall be glad to have now any notes relating to the Order Passeres. It would be a convenience if observations concerning breeding-habits or food were sent direct to the Rev. F. C. R. Jourdain at Bellevue Road, Southbourne, notes on other habits and field-character, to Mr. B. W. Tucker, 9, Marston Ferry Road, Oxford, and all other notes to me at Gracious Pond Farm, Chobham, Surrey.

H. F. WITHERBY.

ADULT PIED WAGTAILS USING ROOST IN JUNE.

ON June 28th, 1937, whilst walking in the neighbourhood of Llyn Ogwen, Carnarvonshire, at about 10 p.m., I came upon a considerable party of Pied Wagtails (*Motacilla a. yarrellii*) roosting in two adjacent willow bushes. The roost contained fully sixty birds, of which about two-thirds were birds of the year. Such communal roosting at this time of year appears to me very remarkable; especially as during the day there were to be seen in the valley many pairs of Pied Wagtails which appeared to have still either eggs or young. That the first broods of a species in one neighbourhood should flock and roost together whilst the second is still in the nest, is not extraordinary, but it is difficult to explain the presence in the roost of so many adult birds. The majority of them were males, so the possibility presents itself that some were the males of the breeding pairs of the neighbourhood whilst the rest were non-breeding birds.

M. F. M. MEIKLEJOHN.

INCUBATION AND FLEDGING PERIOD OF
GOLDCREST.

IN 1933 I made some observations on the incubation period of a British Goldcrest (*Regulus r. anglorum*) which lasted 18 days. These observations were incorporated in a note on the subject by the Rev. F. C. R. Jourdain, who was doubtful of the possibility of such a long period (*cf. antea*, Vol. XXVII., pp. 106-7). I have been trying to get an absolutely accurate record since then, but during the past few years the pairs followed up were building so high that certain observation was impossible. This year (1937) however, three nests were kept under observation by D. Stubbert and myself in Inverness-shire. In each case the incubation period was 16½-17½ days. The details are as follows:—

Nest No. 1.—The nest which was of the hanging variety in a larch tree was begun on April 12th with a wisp of sheep's wool woven from one twig to another.

On the 19th the cup was fully formed in moss. The cock was not observed to take any part in building but attended the hen closely especially towards the end; up to the 19th she remained higher up in the same or neighbouring trees.

On the 22nd, lining with feathers was begun, and she also used tiny scraps from the larch.

On the 27th the nest appeared finished and the cock sat on the branch for a long time during the whole day singing.

On the 28th there was one egg in the nest by 9 a.m., and an egg was laid each day till May 6th.

On May 6th there were 9 eggs at 9.30 a.m., but the birds were not near the nest. Both birds were on the tree at 10.30 a.m., and the hen was sitting before noon and sat closely all the afternoon except for a short time about 2 p.m.

The young hatched in the afternoon of May 22nd, a period of $16\frac{1}{2}$ days. The cock so far as noted took no part in incubating.

Fledging period lasted till June 10th—20 days (5 p.m.).

Nest No. 2.—In a juniper of the supported-from-below type. This nest was found on April 26th when the lining was just beginning. It was finished on the 31st and the 1st egg was laid on May 1st. An egg was laid every day till the 6th. The 7th was a very wet day and no egg was laid. On the 8th there were 7 eggs and on the 9th, 8 eggs, and incubation began. The young began to hatch at 7.30 p.m. on the 25th and all were hatched on the morning of the 26th— $16\frac{1}{2}$ -17 days.

Nest No. 3.—In a juniper, hanging variety between two branches. This nest was found on May 2nd and just begun with a wisp of wool. On the 5th, moss was being used and it seemed to be building at the same rate as the others so we allowed a fortnight for building and did not visit the nest again till the 16th when it was found to contain 9 eggs, and the bird was sitting. The nest was much more carelessly made than the others and the feather lining was comparatively scanty and cannot have taken more than 7-8 days to build. It is not quite certain therefore that the 16th was the first day of incubation. The eggs were chipping on June 1st about 8 p.m. and were hatched on the 2nd when visited in the morning—17-17 $\frac{1}{2}$ days, supposing the 16th May to have been the first day of incubation.

WINIFRED M. ROSS.

LARGE IMMIGRATION OF WAXWINGS IN SCOTLAND.

A LARGE immigration of Waxwings (*Bombycilla garrulus*) occurred in Scotland at the end of February and in March, 1937, and is well recorded by Miss E. V. Baxter and Miss L. J. Rintoul in the July-August issue of *The Scottish Naturalist* (pp. 93-101). This immigration was chiefly remarkable for the late appearance of the bird in numbers. Instead of October or November which is usual, this did not occur until the last days of February and continued into March. After the first ten days or so of March, appearances in new

localities were probably due to birds moving about in search of food, and by the end of the month many had died and others were evidently leaving, the latest date in the report being April 11th, although in a separate note (p. 114) a flock of eight is recorded for the 18th in Perthshire.

Definite numbers given amounted to over eleven hundred birds, but many reports referred to "flocks", "common", and so on, so that it would appear that the immigration in point of numbers was about on the level of that of 1921-2 and considerably larger than those in 1931-2 and 1932-3.

The records in this Report are treated chronologically, and a separate geographical analysis, which would have been useful, has not been made. So far as England was concerned it was only in Northumberland and Durham that any numbers occurred so far as we know. Lady Grey informed us of seven at Alnwick on February 26th and these had gone on the 29th when six (possibly the same lot) were reported at Hexham. About ten were at Stockton-on-Tees from March 10th to the end of the month (J. Bishop). Apart from these counties a few were seen in Yorkshire (*antea*, p. 56), four were reported by Miss J. M. Ferrier from Norfolk from February 18th to 27th, two by Mr. R. Preston Donaldson at Kew on March 30th, one in the Scilly Isles in spring by Major A. A. Dorrien Smith, and probably others occurred.

The main immigration, however, no doubt, took place in the southern half of Scotland from east to west as far north as Loch Ness. A few reached E. Ross and Sutherland, while six got to Lewis, three or four to Skye, and single birds were reported from Orkney, Shetland and Fair Isle.

Some Waxwings probably occur in Great Britain every winter, but as is well known the appearance of the bird in numbers occurs only at irregular intervals. These immigrations vary considerably both in numbers and in the area they cover. In 1921-2 Waxwings were much more widespread in England and more reached north and north-west Scotland than in the present visitation, and in 1931-2 the birds spread still farther in England as well as reaching Wales and Ireland although apparently less numbers were involved, while in 1932-3 there were still fewer, mainly in east England, but some reached even south-west Ireland.

A good many notes are given in this Report about the food eaten. Berries of different species of *Cotoneaster* were most frequently recorded and secondly those of hawthorn and dog-rose and briar. Berries of *Berberis*, guelder-rose, and juniper are also recorded, while there are three instances of

Pernettya mucronata, two of *Pyracantha*, and one of yellow crocus, food which does not appear to have been previously recorded. A good many observers refer to the birds drinking regularly after feeding. "Insects" were also recorded as being taken in some cases.

The cause of these irregular large immigrations of the Waxwing is no doubt connected with food and weather. The authors of this report remark that before and during the early part of this immigration there was very severe weather and much snow in Scandinavia. The wind was easterly from February 24th to 28th and thereafter north or north-east.

THE YOUNG OF THE LESSER SPOTTED WOODPECKER.

By courtesy of Major A. Buxton, I was able at Horsey, Norfolk, on June 24th, 1937, to see the method of leaving the nest of the young of this species (*Dryobates minor comminutus*). The first one left at noon (S.T.), flying off side by side with the mother bird which had previously called and was stationed close to the hole. Five minutes later, the second young bird which came up to the opening when the first left, flew straight out, without the parent being close. The third young one then came up to the entrance, but had not flown when I left the hide. (I am informed by Mr. G. Crees that it flew at 8.30 the following morning.) In the twenty minutes before the first bird left, the parents had fed the young 7 times, but they did not feed the third remaining bird again till 4.20 p.m., when it was fed at intervals (10 times before I departed at 5.45 p.m.).

The crown and forehead of the two young which left the hole were vermilion, a brighter colour than the crimson of the cock, but the third young one had a grey head with a broadish dark superciliary stripe and no red at all. Mr. Crees also noticed this. The hide was 10 feet from the hole which was in a good light. The *Practical Handbook* states that the young, both male and female, have red heads.

CYRIL E. MARTIN.

[Up to the time of the publication of the *Practical Handbook* all the specimens of juveniles I had been able to examine had some red on the crown and the same applies to a few others I have examined since. Unfortunately in very few of these specimens in collections has the sex been ascertained by dissection, and I have examined only three sexed specimens—one male and two females. If any reader can lend me carefully sexed specimens of juveniles I shall be very grateful.

Mr. Martin refers to the *forehead* as red but I have not found this to be so in any specimen examined. In the case of the third bird he mentions, with apparently no red on the crown, it is probable that the small red tips at the back only of the crown (apparently in females) could not be seen without handling the bird.

Mr. Martin has apparently missed the note about the juvenile in the Appendix of the *Practical Handbook* (Vol. II., p. 897) but I should now describe the juvenile as follows:—Feathers of fore part of crown brownish-white tipped dusky black; those of posterior half tipped crimson in male, but in female only a few feathers on back of crown with small red tips.—

H. F. W.]

SOOTY SHEARWATER IN THE MOUTH OF THE CHANNEL IN JUNE.

ON June 7th, 1937, I saw a Sooty Shearwater (*Puffinus griseus*) some ten miles south of Newlyn; that is in $49^{\circ} 57' N.$, $5^{\circ} 28' W.$ The bird passed close to the drifter, and gave a good view of the dusky brown plumage with a paler area down the middle of the under-surface of the wing. In size it was a little larger than the Manx Shearwaters (*Puffinus p. puffinus*) which were seen in numbers the same day.

Wynne-Edwards ("Birds of the North Atlantic," *Proc. Boston Nat. Hist. Soc.*, XL., 4, 1935) records a Sooty Shearwater on June 7th, 1933, in $50^{\circ} 15' N.$, $31^{\circ} 15' W.$, and Bent (*Life Histories of North American Petrels and Pelicans and their Allies*, U.S. National Museum, Bulletin 121) gives a record from southern Greenland on June 22nd. It would seem, therefore, that the bird was not unusually far north for the season, but since the *Practical Handbook* gives the distribution of the species in the British Isles as August to October, exceptionally November and December, its presence so far to the eastward is remarkable.

P. H. T. HARTLEY.

[Several records for July off the Hebrides have been published recently (*antea*, Vol. XXX., p. 174).—EDS.]

WHITE-WINGED BLACK TERN, GULL-BILLED TERN AND ADULT LITTLE GULL IN NORFOLK.

ON the afternoon of June 22nd, 1937, when standing at the edge of Rush Hills, Hickling Broad, with W. Friedlen, we saw an adult of the White-winged Black Tern (*Chlidonias leucopterus*) hawking for flies over Rush Hills and the Broad. On three occasions the bird flew over our heads within 10 feet of

us. The white carpal joints, pure white tail, and the red feet and bill could be clearly seen. I may note that I have seen the species before. The bird was in the same area again on June 25th and was seen by W. E. Higham and myself.

On June 27th, at Hickling, Mr. W. E. Higham and I saw an adult Little Gull (*Larus minutus*) hawking for flies for some time, both low over the water and high in the air.

Later in the same day we saw also, with a Mr. Turner, an adult Gull-billed Tern (*Gelochelidon nilotica*) hawking low over the water within 25 yards. Its heavy black bill was clearly seen, and the black crown and nape. The bird seemed to be fully adult. This bold Tern I have seen twice previously.

JIM VINCENT.

BLACK-HEADED GULLS NESTING IN DEVONSHIRE.

IN June, 1937, I noticed a small colony of Black-headed Gulls (*Larus r. ridibundus*) nesting in North Devon. I found eight nests, all containing eggs, in this little colony on June 27th.

I know that this species has increased its range of late years, but I am not aware that it has been recorded as breeding in the Devonian Peninsula.

D. MUNRO SMITH.

THE NORTHERN RAZORBILL IN KENT—A NEW FORM FOR THE BRITISH LIST.

WHEN I read the article on the British Razorbill (*Alca torda britannica* Ticehurst) in *British Birds* (*antea*, p. 11), I at once determined to try to find the Razorbills which had been washed up, tarred, about two months before, on the shore around Dungeness, to see if there was among them an example of the typical form, *Alca torda torda* L. I found one with the following measurements:—wing, 213.5 mm.; greatest height of bill, 21.5 mm.

Dr. C. B. Ticehurst saw the head and a wing, and writes:—“I have seen no British ones with the wing as long and only occasional ones with the bill as high.” The above measurements are his.

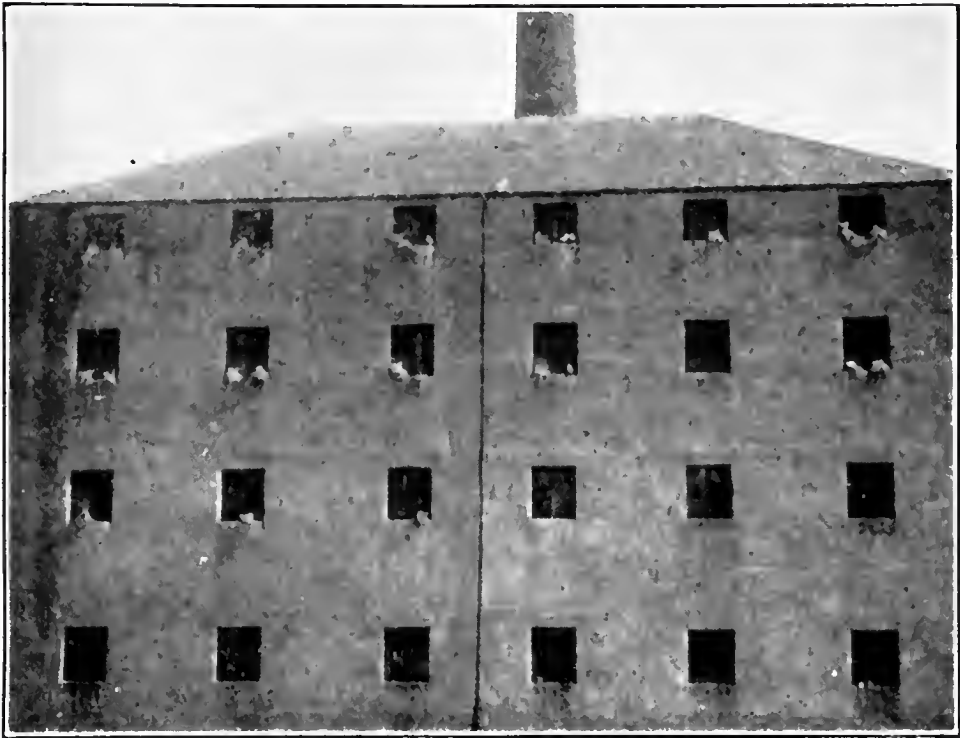
Four other specimens found were of the British form.

NORMAN H. JOY.

[Though the bill is not deeper than a good many British breeding birds I have measured, the wing of the specimen greatly exceeds those of British birds. H.F.W.]

KITTIWAKES NESTING ON A BUILDING IN EAST LOTHIAN.

THE fact that Kittiwakes (*Rissa t. tridactyla*) were nesting on a building overlooking the harbour at Dunbar was recorded by the late A. Thorburn, who found three nests on the



Kittiwakes nesting in warehouse—Dunbar

window ledges of a disused warehouse in 1934 (*Scot. Nat.*, 1934, p. 50, *cf.*, *Brit. Birds*, Vol. XXIX., p. 89).

There are now some twenty nests on the window ledges of this building, and the site seems to me so remarkable that the accompanying photograph of the building taken on June 7th, 1937, may be of interest.

A. H. HIGHFIELD.

[Kittiwakes have also been recently recorded as nesting on buildings in Norway—F.C.R.J.]

COMMON CRANES IN NORTHAMPTONSHIRE.

ON May 27th, 1937, a pair of Common Cranes (*Grus grus*) appeared at Lilford Hall. When first seen they were circling low and calling over an enclosure containing nesting examples of their own species. They were trying to alight, but evidently the trees or high fences prevented them from doing this, so they planed down and settled in a meadow across the river

Nene. Here I had an excellent view of them at a distance of about 30 yards and much admired their perfect plumage and graceful flight. At the time I was under the impression that they were escapes, but after due inquiries think it possible that they may have been genuine wild examples. They stayed for about half an hour, were seen again at noon, but since then they have not been heard of. A. F. MOODY.

CONTINENTAL CHAFFINCH IN RENFREWSHIRE.—Mr. P. A. Clancey informs us that he has identified an adult male Chaffinch taken in eastern Renfrewshire on March 29th, 1937, as belonging to the Continental race (*Fringilla c. cælebs*). Although specimens were not previously differentiated, migration observations make it clear that Chaffinches from the Continent pass along the west side of Great Britain (*cf. Practical Handbook*, Vol. I., p. 95).

GREENLAND FALCON ON LUNDY.—Mr. F. W. Gade informs us that a Greenland Falcon (*Falco r. candicans*) visited Lundy in March, 1937. The bird was a tiercel, and remained for about three weeks. It was badly mobbed by gulls and crows, and seemed in rather poor condition. It suddenly disappeared, and subsequently its skeleton was found amongst boulders on one of the island's slopes.

A pair of Hen-Harriers (*Circus cyaneus*) visited the island in April, and remained for a few days.

REVIEWS.

LOCAL REPORTS.

The London Naturalist for 1936 and the *London Bird Report for 1936*. (London N.H. Soc., Keppel Street, W.C.1) 3s. 6d. and 1s. 6d.

THE ornithological records of the London Natural History Society have steadily increased and are now for the first time published separately as a supplement to *The London Naturalist* under the title *London Bird Report*. This latter contains detailed reports of the birds recorded for the year in the area, which embraces parts of six counties within 20 miles of St. Paul's as shown in a map provided in this issue. Besides this main report there are special reports on the distribution within the area of Grey Wagtail, Lesser Redpoll and Little Owl and short articles on Crossbills, a Pied Wagtail Roost and the Green Sandpiper as a winter visitor, in which Mr. R. McKenzie Smith states that during the past four years one could be reasonably sure of finding a bird of this species along the River Roding, near Chigwell, in any month from August to December and with less certainty until March. The Report ends with lists of arrival and departure dates of migrants and an account of ringing.

In the main Report there are many items of interest, a few of which have already been published in our pages, while attention may be drawn to the following:—Crossbills in Kent and Surrey (and in the article referred to above a definite record of nesting in Surrey), Rock-Pipits at Reservoirs in Essex and Surrey, a Blackcap singing in Surrey on February 28th, Dartford Warblers breeding in two places within the area, a Gadwall breeding at Barn Elms Reservoir was probably due to full-winged birds put down in St. James's Park, a Stone-Curlew in Richmond Park on April 1st, Scandinavian Lesser Black-backed Gulls on the Thames in August, September, November and March, and a number of interesting records from the reservoirs.

In *The London Naturalist* itself we find some good notes on the Dartford Warbler by Mr. Howard Bentham, on the Hobby, with pleasing photographs, by Mr. J. E. Roberts, and an account of some Starling roosts in north-east Surrey by Mr. R. S. R. Fitter.

Committee on Bird Sanctuaries in Royal Parks (England) Report for 1936.
(H.M. Stationery Office) 9d.

THIS gives an interesting account for the year of birds in the Royal Parks in and around London. Mr. Holte Macpherson has already given in our pages accounts of notable birds in Inner London and other records are contained in *The London Naturalist*, but more detail appears here. Bushy and Hampton Court Parks have an excellent list with 52 species breeding and 34 others identified in the year. Richmond Park has as many as 56 species breeding and 43 others seen. Kew Gardens appears in this Report for the first time. The most notable event here was the nesting of a pair of Crossbills. A Wood-Wren recorded as nesting in a holly bush does not sound likely.

Transactions of the Hertfordshire Natural History Society and Field Club, 1937. (Hertford: Austin & Sons, Ltd.) 5s.

THESE Transactions include a very good report on the birds for 1935 by Mr. C. Oldham, who also contributes an interesting paper on migration in the county. In this he has worked out the earliest and latest arrival dates with mean dates of 33 migrants as recorded from 1879 to 1935, and remarks that no useful purpose would be served by the compilation of further lists on the lines of the past, though he hastens to add that a hundred other problems connected with the subject are crying for solution. Among the notes arranged under species, attention may be drawn to the following, all the dates being in 1935: A Snow-Bunting at Wilstone Reservoir on October 13th, a Rock-Pipit near Watford on August 20th, a decrease of Red-backed Shrikes and Little Owls in West Herts, the use of cocks' nests by Wrens, a Great Black-backed Gull at Tring Reservoir on January 6th, the only known occurrence there of this species, and a Kittiwake in September.

Report of the Oxford Ornithological Society on the Birds of Oxfordshire, Berkshire and Buckinghamshire, 1936. (B. W. Tucker, University Museum, Oxford) 3s. 3d.

THIS Report, besides the systematic notes, contains special reports on Crossbills (two cases of breeding in Oxfordshire proved), a Duck investigation, the distribution of the Grey Wagtail, Lesser Redpoll and Little Owl (species recommended by the British Trust for Ornithology), Ringing, and tables compiled by Mr. W. B. Alexander showing the average and earliest or latest dates for migrants. The systematic notes

contain a large number of observations, of which we may mention the following :—three birds frequently visiting a bird table close to a window at Mortimer (Berks) between November 28th and December 18th were identified as Crested Tits ; two occurrences of the Brent Goose in Oxfordshire in April ; Garganey in Berks and Bucks ; Scoter and Velvet-Scoter in April and an Oystercatcher in July in Oxfordshire ; a Kentish Plover on April 5th and an Avocet on May 10th at Reading Sewage Farm, a Temminck's Stint at Slough Sewage Farm on September 18th, Bar-tailed Godwits and Great Black-backed Gull in Oxon and Bucks, and a Quail on June 21st in a locality in Berkshire where found the year before.

The Hastings and East Sussex Naturalist. Vol. V., No. 4. (Hastings and St. Leonard's Nat. Hist. Soc.) 2s.

THIS issue has a large section devoted to the Report on birds for 1936. Among other items we have noted the following :—Breeding records of Cirl Buntings, breeding Grey Wagtails stated to be resident, Bluethroat seen by Dr. N. H. Joy at Dungeness on September 22nd, considered to be an adult male of the white-spotted form, winter records of Common and Green Sandpipers, occurrences of a Spotted Redshank, an Avocet, and Black-tailed Godwits, and a growth in the colonies of Common and Lesser Black-backed Gulls nesting at Dungeness.

Ornithological Report for the County of Hampshire, 1936. (*Proceedings of the Hampshire Field Club and Arch. Soc.*)

THIS Report, now compiled by the Rev. F. C. R. Jourdain, contains a number of good notes. Many nests of Crossbills were found, but by the autumn most of the birds, if not all, had disappeared.

A male "yellow" Wagtail with no eye-stripe, seen at Britford on April 15th was probably correctly identified as a Grey-headed Wagtail (*M. f. thunbergi*). Though some ground has not yet recovered from fires the Dartford Warbler has done very well recently, not only in Hampshire but in other parts and is tending to spread to new localities. One pair of Montagu's Harriers nested and reared young in the New Forest and a pair is recorded as breeding in Dorsetshire. A short list of earliest dates of spring song of residents is included—a subject which might be more taken up by Field Clubs, even if this made it necessary to dispense with tables of the arrival of migrants on which such a mass of data has already been accumulated.

Report of the Marlborough College Natural History Society, 1936.

IN this Report 104 species are recorded by thirty observers. Curlew seen in May this year and previously, suggest the possibility of nesting. Passing Great Black-backed Gulls were noted in March, April and May.

Report on Somerset Birds, 1936. (*Somerset Arch. and Nat. Hist. Soc., Somerset County Museum, Taunton.*)

THIS Report contains a large number of excellent notes among which we may draw attention to the following :—Ravens breeding in the Avon Gorge on the Gloucestershire side, a Nuthatch nesting in the masonry of a railway bridge, Merlins breeding on Exmoor, a winter record of the British Lesser Black-backed Gull and a Spotted Crake calling on August 9th. The Garganey was proved to breed in the central area and some interesting counts of the Ducks and Grebes were made—400 Shovelers on Blagdon Reservoir on April 11th being a

surprisingly large number. Scaup, Scoter, Red-breasted Merganser, Black-necked and Slavonian Grebes were seen at Barrow Gurney Reservoirs.

The Report includes a photograph by Mr. G. K. Yeates of a male Cirl Bunting at the nest.

Transactions of the Norfolk and Norwich Naturalists' Society for the Year 1936. (Major A. Buxton, Horsey Hall) 10s.

THIS issue contains, besides the usual annual report on birds, a very interesting address by the President, Mr. Colin McLean on "The status of Wild Duck in our area, with some observations on their breeding and habits in captivity". Mr. McLean gives figures and a graph of the numbers (chiefly Mallard, Teal and Wigeon) caught at three decoys and shot at three principal shoots during the last fifteen years. These show an alarming drop in numbers in 1934 and 1935 and Mr. McLean discusses possible causes and remedies and advocates systematic ringing on a large scale as a means of learning more about the movements of Ducks—a matter now taken up by the British Section of the "International Committee for Bird Preservation".

The various bird reports contain many interesting items. A pair of Golden Orioles at Horsey in June may have nested but there is no proof, Crossbills bred in numbers, a pair of Cirl Bunting were seen near Hickling on April 13th, a Richard's Pipit on September 18th and two Water-Pipits on the 17th at Hickling, a Red-breasted Flycatcher at Salthouse on September 21st, and a Barred Warbler at Cley on August 27th.

Some five pairs of Short-eared Owls nested and two Marsh-Harriers (one with a clutch of eight eggs hatched only the first and last eggs laid), but no Montagu's, a Purple Heron was identified on June 7th; 150 to 200 Black Terns were seen at Hickling on May 16th, and at Scott Head Island a Roseate Tern mated with a Common and produced a young one, which, when fully feathered, did not appear to differ from a Common Tern of the same age.

There is a decided lack of notes, especially on locally distributed birds, from outside the specially protected areas.

Report of the Cambridge Bird Club, 1936. (Cambridge: Severs) 1s. 6d.

THIS Report contains two rather short lists of birds, the notes from the Sewage Farm being kept separate. In Wicken Fen several pairs of Short-eared Owls and a pair of Montagu's Harriers bred, while two Marsh-Harriers were seen in the autumn, Gadwall are recorded for May and December. A number of Waders are recorded from the Sewage Farm including Turnstones, Wood-Sandpipers, winter records of Green Sandpiper (in recent mild winters they have been reported in a good many counties), spring and autumn records of Spotted Redshank, Greenshank and Black-tailed Godwits, and a Bar-tailed in October.

Mr. H. L. K. Whitehouse contributes an article on Starling roosts in south Cambridgeshire and Mr. S. Marchant an account of "Bat-Fowling and Ringing", a "sport" which, besides its utility for ringing, might well be made to contribute some interesting and much wanted information regarding roosting habits.

Ornithological Record for Derbyshire, 1935-6. (*Derbyshire Arch. and Nat. Hist. Soc. Journal*, 1936.)

THOUGH this Report suffers somewhat by reason of its small number of contributors, it contains a good many useful notes. Twenty pairs

of Grasshopper-Warblers are stated to breed in about 300 acres, "providing just the type of ground they like". It would be of interest to have a detailed survey of this ground. A bird seen near Taddington on September 14th, 1935, was considered to be a White's Thrush. A Hobby, apparently correctly identified, was seen in January and is supposed to have escaped from some falconer. A Gadwall was reported in September, 1936, and a Velvet-Scoter in December, 1935.

Lancashire and Cheshire Fauna Committee. Twenty-second Annual Report . . . for 1935.

THIS includes, besides the annual Report on birds, a tabulated and detailed account of the *status* of the Woodcock in Cheshire, which arose from the National Inquiry instituted by the British Trust for Ornithology. There are also special reports on the Redstart, Great Spotted Woodpecker and Pochard—species selected by the Trust. A census of Great Crested Grebes in Cheshire is also included. Besides these valuable reports the carefully drawn up general notes are of considerable interest. Among uncommon birds inland were Bar-tailed Godwit, Grey Plover, Turnstone and Great Northern Diver.

St. Kilda Papers, 1931.

THIS publication contains, in addition to a foreword, bibliography and large-scale map, reprints of eleven papers previously published in various scientific journals. These papers, which deal with mice, breeding birds, early autumn migration in 1931, St. Kilda Wren, coleoptera, flora and vegetation of St. Kilda, comprise the chief scientific results of an expedition to the island in the summer of 1931, the year following the evacuation of the islanders. There are no copies available for sale; but as the publication is intended as a basis for future scientific work on the island, twenty-five copies have been presented to leading public libraries and those of Scientific Societies for reference purposes. Any further information can be obtained from Mr. Malcolm Stewart, Hawridge Court, near Chesham, Bucks.

LETTER.

INCUBATION OF WATER-RAIL.

To the Editors of BRITISH BIRDS.

SIRS,—In a footnote to my note on "Incubation Period of Water-Rail", (*antea*, p. 62), "F.C.R.J." states: "Incubation does not always begin with the completion of the clutch".

Over 30 years' experience in finding and showing the nest of this species to hundreds of people has given me sufficient evidence to state that the Water-Rail does start incubation on completion of laying.

JIM VINCENT.

[On re-examination of the data on which my statement was made, I find that Mr. Vincent is correct. Actual hatching in a case recorded by Mr. A. Buxton took place within 20 hours and assertions that the hatching period extends for several days are based on observations of the period from first signs of chipping to last emergence from the shell.—F.C.R.J.]



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FIELD NOTES ON THE CORSICAN CITRIL FINCH.

BY

JOHN ARMITAGE.

(Plates 3 and 4.)

DURING the spring of 1937 my wife and I had many opportunities of observing the breeding habits of the Corsican Citril Finch (*Carduelis citrinella corsicana*) in the centre and west of Corsica. Thanks to information kindly given by Lt.-Col. R. F. Meiklejohn and details from Col. W. A. Payn's records, we were in touch with Citrils during the greater part of our stay, and notes obtained tallied precisely with theirs, except in one locality where a few pairs had commenced to nest exceptionally early.

The male of this form differs from that of the typical bird which occurs on the British list by its paler yellow underparts and by the warm brown instead of green of its mantle. The typical bird nests chiefly in large conifers, sometimes at a considerable height; but the Corsican form does not breed in trees, although it prefers to be near them, and is closely associated with the white-flowered tree-heath (*Erica arborea*).

It is evident that the Corsican Citril is a common resident of wide distribution in the mountainous parts of the island, and subject to local movement outside the breeding season. On May 6th, small parties were seen in open places among the low stony hills by the north-west coast, perching on rocks and rough ground, and flying about the maquis-covered slopes. They were readily approached and watched from close range, feeding on seeds of grasses and other low-growing plants, and nipping off tender shoots of plants still in flower. When disturbed, they flew up without travelling far, producing a whinnying and metallic flight-call, and it was these notes—reminiscent of Siskins, but distinctive—that made the prompt location of Citrils a simple matter at all times.

On May 8th, and again on May 14th, Citrils were seen associating with Serins in two widely different districts, and when flushed, the former birds twittered and displayed dull greenish rumps, while the Serins contrasted by remaining silent and exhibiting in flight the characteristic yellowish streaks on their lower backs.

Citrils in small parties and in pairs were noted high in the Tavignano Valley on May 15th, and three days later about 14 miles farther south, many were settled for breeding on a mountain slope a few hundred feet above an extensive forest of beech and pine. Lanky heath predominated on the lower part of the slope, but on higher and more exposed ground, the heath grew in isolated patches, dense and matted. Here



Two typical haunts of the Corsican Citril Finch
(Photographed by John Armitage)



and there were young conifers, and in these and on top of the tufts of heath, cock Citrils were singing happily, their yellow unmarked breasts showing up brightly in the sunshine. The song is sweet and uttered in short phrases, punctuated occasionally with a canary-like "deek".

A pair fussed about a short clump of heath a few feet from where we stood, and the hen carried building material into it without displaying the slightest objection to our presence. Next day, a closer search revealed our first nest with three fresh eggs from which the hen was flushed. It was a little over three feet high in a slender fork of heath, and subsequently it proved to be typical both in position and nature of building materials. The nest was a small neat structure with a strong outer fabric of fine stems, grasses and roots mixed with moss, and the rather deep cup was smoothly lined with feathers, hair, and vegetable down.

May 22nd found us in a picturesque western locality where for a week among the mountains, we studied Citrils daily in a variety of haunts ranging from 2,800 feet to about 3,500 feet, and sixteen tenanted nests were located. Every suitable patch of heath held one or two pairs of birds, and on a small slope dotted with isolated clumps close to the upper fringe of a chestnut forest, three pairs were breeding. Some nests were built in tall cover, from three to six feet high, and others were well concealed in goat-cropped heath, a few inches to two or three feet from the ground. Most nests held four eggs or young, and two, each held three young and one infertile egg. The only clutch of five eggs was four feet high in a fearsome tangle of bramble; the nest was completely screened from view and was shown to us by the owners calling excitedly from the bush top, the hen working through to her nest soon afterwards.

Incomplete nests, fresh eggs and others near to hatching were found on May 23rd, and we fell in with two pairs of greatly agitated Citrils. A brief search disclosed three scattered young, with stumpy tails and wings capable of sustaining them on short flight. Their recently vacated nest was seen and about twenty feet away, another nest held four fledglings ready to leave, one youngster sitting on top of its companions in the overcrowded nest. Both nests had their rims thickly fouled with excreta from the young. Seeing that most Corsican Citrils do not commence to breed until well on in May, this was a surprising discovery, proving that nest-making must have been in progress during the latter half of April. Anxious to watch and portray the big nestlings being fed, I rigged up a hide in the failing light, and enclosed the young and nest in my partner's hair-net to detain them until the morrow.

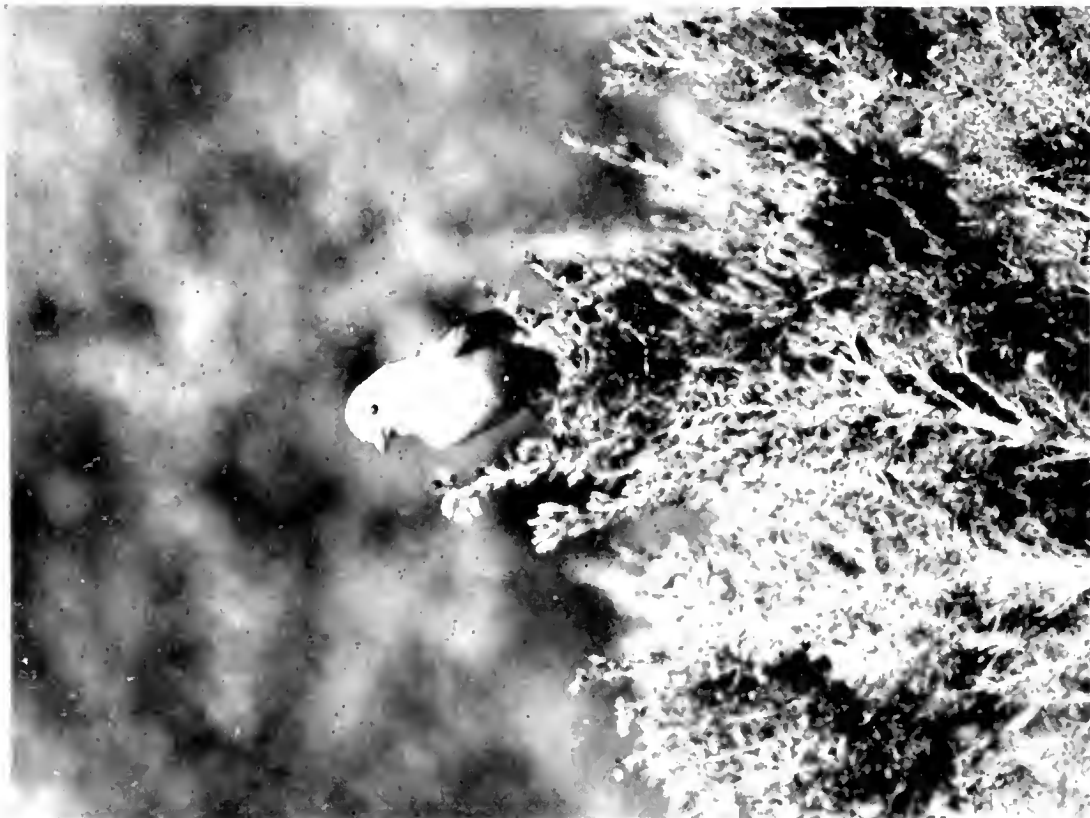
All went well and both parents came to the young, between periods varying from three-quarters of an hour to nearly two hours. They were fed on small tablets of white regurgitated food. The adults then flew out of the district immediately, and by getting their "line" at midday, we saw they were collecting seeds by the roadside almost a mile below their nesting ground. During their absence, the young sat together in a heap quite amiably, looking round for a time and then dozing peacefully. At a nest with four young in pin-feather, the hen fed her offspring with a sticky white substance that squelched from the corners of her mouth, and at a nest with very small young, the visiting hen invariably ate her brood's excreta before leaving. Always, the incoming parents twittered in flight, and were answered with an expectant "tsip" from the fledged young, and by an occasional "deek".

Further finds and periods of watching showed that nests with young are left unguarded for long periods, even when the nestlings are downclad, and it is likely that such nests might be overlooked unless every clump of heath on the mountain slope is peered into. Also, a pair of birds leisurely collecting food by the wayside might give one the impression that they had not begun to build when actually they were rearing a family. Bush-tapping is a dreary though successful method for flushing hens from their nests, and passing Citrils may be picked up through glasses and traced direct to their nests, but one should stay in a likely area for two or three hours to watch down adults feeding nestlings, unless all suitable clumps of heath are parted and examined carefully.

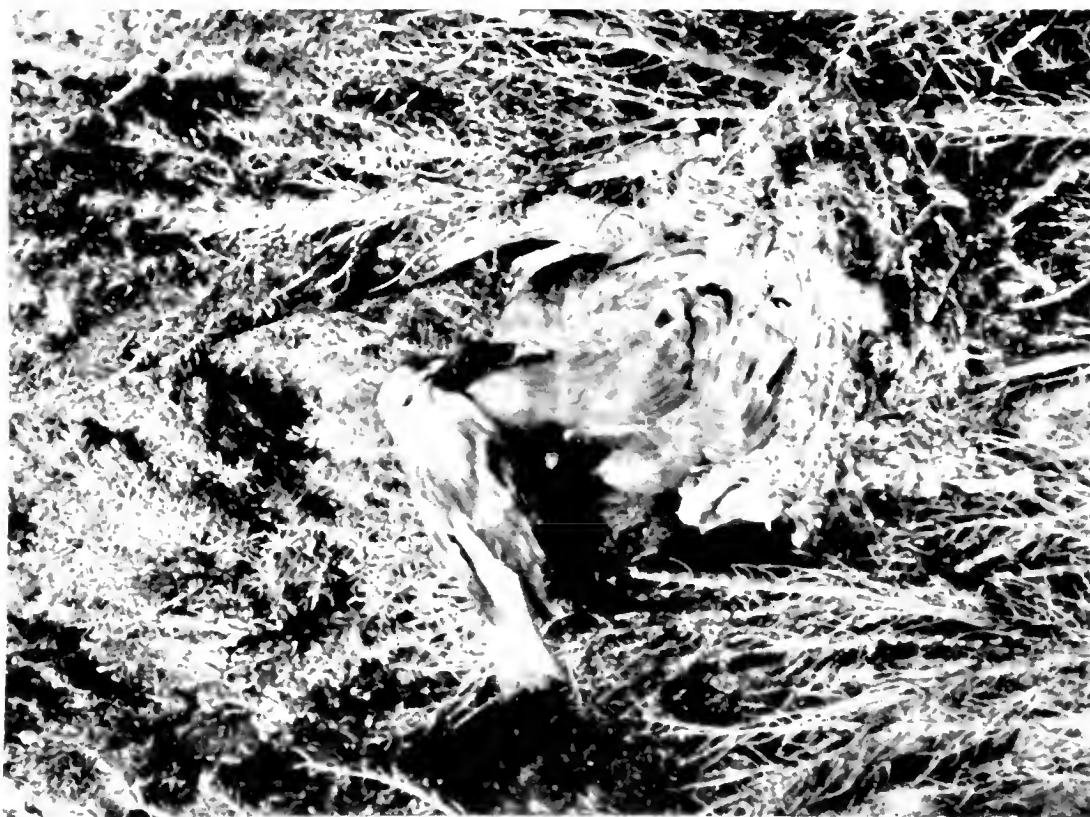
By May 28th we knew of four nests of young in various stages; two other broods were strong on the wing, and there was evidence of one nest being built to accommodate a second brood.

The down on a day-old nestling is dark brownish-grey, long and plentiful; distribution, inner and outer supra-orbital, occipital, humeral, femoral, spinal, ventral, and crural. The bill is purplish-grey, with dark grey tip to upper mandible. The mouth inside is dull red, tongue similar and unmarked; external flanges ivory, with pink spot at extreme corners. A nestling about eight days old—in pin-feather—has plenty of long smoky-grey down still adhering. The inside of mouth and tongue are dull scarlet. Colour of external flanges and of corners as in day-old young. Bill horn colour; legs with purplish cast.

A fledgling ready to leave the nest has creamy buff underparts, and is brown and striated above. Legs are pale brown. The bill is horn, with darker upper mandible, bill of parent seeming distinctly grey when noted together at feeding time.



Cock Cuckoo-finch on tree-beath



Hen Cuckoo-finch with fledged young

Photographed by John Armitage



THE SUPERCILIUM OF THE GREY-HEADED
WAGTAIL.

BY

H. N. SOUTHERN.

THE following few notes and photograph of the Grey-headed Wagtail (*Motacilla flava thunbergi*) were taken this year in the district of Sweden known as Tornea Lappmark, which is the area of birch forest and fells lying around Lake Tornea Träsk at about 68° North latitude.



Female Grey-headed Wagtail, Tornea Lappmark, Sweden
(Photographed by H. N. Southern)

Almost any information about these difficult geographical races of *Motacilla flava* will probably be welcome to ornithologists, and particularly to those who see in the group an instance of comparatively recent and still imperfectly demarcated splitting into sub-species.

Earlier text books (*e.g.*, Wardlaw Ramsay) state that the supercilium in *thunbergi* is absent or vestigial, while the *Practical Handbook* says of the adult female, "usually less developed (than *flava*)". This, apart from the head and ear-coverts, is the chief field character for recognizing the adult females of the two species. In Scandinavia, *thunbergi* ranges from the north down to about 63°, where it meets the type species.

Messrs. Venables and Thompson first drew my attention to the fact that there is considerable variation in this feature in *thunbergi* itself. At Tornea Träsk in 1936 they found that the supercilium was practically non-existent, while only a hundred miles south nearly all the females approached far more nearly to the type species (*i.e.*, they had a complete one).

While studying the birds in the field myself I found that in most cases the eye-stripe of the female was well marked from the region of the eye backwards, but did not extend in front of it. This condition can clearly be seen in the photograph.

By the courtesy of Count Gyldenstolpe of the Royal Natural History Museum at Stockholm I was able to examine a series of skins of *thunbergi* collected in Sweden from various parts of its range, and it was at once obvious that there is a great deal of variation in this character. Both extremes were represented, but the great majority of the skins showed the same condition as in the accompanying photograph. In addition the variation was quite sporadic and no geographical trend was discovered from the border of the two ranges (*i.e.*, of *M.f. thunbergi* and *M.f. flava*).

Thus, although there is no gradation in space between these two forms (which would probably be difficult to maintain in migrants) there is a very clear one in actual plumage.

The general assumption therefore that *thunbergi* has evolved probably by geographical isolation from *flava*, which is implied by their systematic positions, is supported by the following facts :

(1) That the females of *thunbergi*, which have a plumage ancestral to that of the male from an evolutionary point of view, show the supercilium in varying degrees, while the males have almost lost it (see below). If the race had an origin independent of *flava* and the eye-stripe was in process of appearing, then the males should have acquired it first.

(2) That the fledglings of *thunbergi*, whose plumage, if different at all from that of the females, should show an even earlier stage, have an almost complete supercilium.

(3) That the males of *thunbergi* are occasionally known to show traces of a supercilium, but in a much less marked degree than the females. This can be regarded as truly vestigial and shows clearly the direction in which the evolution of the plumage is tending.

Thus we have the three phylogenetic plumage stages in respect of this one character repeated in ontogeny (or approximately so, if we regard the male and female adult plumages as continuous) just as is seen in, *e.g.*, the Blackbird.

The degree of variation shown in the females marks the incompleteness of the separation of the two forms, and confirms the evidence of overlap reported in other races, even to the extent of interbreeding.

SUPPLEMENTARY NOTES ON THE DISTRIBUTION AND STATUS OF THE BRITISH WILLOW-TIT.

BY

H. F. WITHERBY AND E. M. NICHOLSON.

SINCE our summary of the distribution and status of the British Willow-Tit (*Parus atricapillus kleinschmidti*) was published in *British Birds* (Vol. XXX., p. 358) several correspondents have sent in further information which allows us in certain respects to amplify and correct our account. We deal with the various regions in the same order as before.

ENGLAND.

No amendment or addition is called for as a result of further information received for the South-eastern and South-western counties, with the exception of *Cornwall*, where Mr. A. Hazelwood finds by repeated investigation that the Marsh-Tit is well distributed in the Looe district, although he has failed to find there the Willow-Tit, which he knows well. In view, however, of the few Somerset records it also seems worth mentioning the identification of three Willow-Tit skins obtained at Clevedon in June, 1904, August, 1900, and September 1903. These are now in Liverpool Museum.

For EASTERN England the one record mentioned of a nest in *Lincolnshire*, between Lincoln and Grantham, must be supplemented by others between Tattershall and Spilsby (Capt. J. S. Reeve), in the Market Rasen district (Mr. A. Whitaker), and near Gainsborough, in which last locality Mr. A. Hazelwood found Marsh-Tits preponderant.

In SOUTH CENTRAL England additional breeding season records have come to hand for *Hertfordshire*, between Hertford and Barnet (Mr. R. S. R. Fitter). A June record for Ivinghoe Common in *Buckinghamshire* (E.M.N.) takes the distribution within two miles of the border of Bedfordshire, for which records are still wanting. An additional breeding record in Worcestershire is from near Kidderminster in 1937 (G. M. King).

In NORTH CENTRAL England Mr. A. W. Boyd notifies three cases of breeding in the Northwich area, and a map and notes sent in by Mr. R. B. Sibson show that the Willow-Tit is also widely distributed and by no means rare in the southerly part of the *Cheshire* plain and adjoining areas of *Staffordshire*, where it is believed to outnumber the Marsh-Tit. In north *Derbyshire* and *Nottinghamshire*, and in the adjoining parts of *Yorkshire* around Doncaster, Thorne, Pontefract, Barnsley

and Sheffield very full observations of the relative breeding status of the two species have been made by Mr. A. Whitaker and Mr. A. Hazelwood, with the result that the Willow-Tit emerges as the more numerous, and in some localities the only species of black-capped Tit. In the Doncaster-Thorne area, Mr. Hazelwood finds the Willow-Tit the most abundant member of its family in favourable habitats, and he has not met with the Marsh-Tit at all within a ten-mile radius of Doncaster. The figures supplied by Mr. Whitaker are almost equally striking, showing a preponderance of six or seven Willow-Tit nests to one Marsh-Tit around Sheffield, Barnsley and Pontefract. Both Mr. Whitaker and Mr. Hazelwood show that the Willow-Tit is also frequent in the adjoining Bawtry-Worksop area of Nottinghamshire. These interesting notes make it highly desirable to extend intensive observation of the relative status of the two species farther south in Nottinghamshire and Derbyshire, and farther north through Yorkshire, as well as to other adjoining counties.

For the rest of NORTH England there is no fresh information, except as regards the Bolton district of *Lancashire*, where Mr. Hazelwood reports black-capped Tits as very scarce, his only record being a Marsh-Tit, and for Co. Durham where a previously overlooked record is supplied by a specimen in Liverpool Museum from Sherburn, October, 1885.

WALES.

Two gaps in the list of counties have been filled, a record for *Montgomeryshire* (near Caersws, September) having been supplied by Messrs. F. R. Barlow and J. D. Wood, and two records for *Flintshire*, near Mold, July, by Mr. Eric Hardy, and a nesting record for the detached part of the county by Messrs. A. W. Boyd and R. B. Sibson.

SCOTLAND.

No additional information has come to hand.

In conclusion, we have to point out that most of the gaps indicated in our previous paper remain to be filled. The few comparative local studies which have been sent in to us since, prove the very great value and interest of keeping full notes or maps showing the relative numbers and distribution of the Willow- and Marsh-Tits, distinguishing records for the breeding season and other times of the year, and bringing out the exact habitat, altitude and so forth favoured by each species. Only when this has been done on a much larger scale will it be possible to give a satisfactory account of the subject.

OBSERVATIONS ON THE COURTSHIP AND MATING OF THE SMEW.

BY

P. A. D. HOLLON.

NOT much appears to be known about the courtship of the Smew (*Mergus albellus*). Millais describes and illustrates the display of a drake at the London Zoo. This bird was the only one of its species in the Zoo at the time, and it had to content itself with performing before a female Merganser or Goosander. Millais's description is mentioned by Phillips, and the only other reference that I know of is a note by Boyd on three males displaying to each other on a Midland reservoir.

I was therefore very interested to watch the courting of Smew on a number of occasions in the winter and early spring of 1937 on the reservoirs at Molesey (Surrey) and Hampton (Middlesex). These reservoirs form two groups, separated by the Thames, and between 20 and 40 Smew winter on them regularly.

Courting was first seen on December 27th, 1936, but may have begun earlier, as this was the first date when I watched for any length of time. About noon two drakes and two ducks were in a group, obviously excited. The forehead feathers of the drakes were raised to form a crest, and one would approach a duck with his neck drawn in, as if pouting. The drakes also gave some spasmodic little forward jerks of the head and occasionally reared up on the water.

On the morning of January 10th, when I arrived at the water most favoured by the birds, there were 25 Smew on it; others flew in until there were 15 drakes and 19 ducks on this small reservoir of about nine acres. As usual, diving was the chief occupation, but at one time half the birds were courting simultaneously, and they made a wonderful sight in the bright sunshine.

I also watched courting on January 11th (morning), 16th (afternoon), 17th (morning) and February 6th (afternoon). On January 23rd and 24th, days of cloud and rain with moderate to strong S. or S.W. winds, there was practically no display.

In the second week of February most of the Smew deserted Molesey reservoirs where all the observations had hitherto been made, and on the 13th I found the birds at Hampton. There were now only 4 drakes and 12 ducks, which by March 2nd had dwindled to 1 drake and 3 ducks. Actions considered to be connected with courtship

were seen here on February 13th, 15th, 21st and 23rd, but I never saw so much display as at Molesey, possibly because those birds most active in courting were the first to depart ; possibly because the reduced number of birds, and especially of drakes, meant less stimulus to display.

COURTSHIP ACTIONS.

DRAKE ONLY.—Usually the first sign of excitement was the raising of the crest on the forehead of the drakes, with the head carried a little higher and more forward than usual. The head was then drawn in and back until the neck was resting on the back, with the bill pointing downwards,



Fig. 1—Drake “pouting”

giving a “reined-in” appearance. At the same time the breast was puffed out (Fig. 1). After some seconds in this position the head and neck might be jerked forward several times as the bird was swimming with or towards a duck.



Fig. 2—Drake rearing up

If sufficiently excited the drake reared up on the water from time to time. When doing so the head and bill were almost invariably held parallel to the water, and at the

same time the bill was opened and shaken quickly from side to side (Fig. 2). Only on two or three occasions did I see the bill pointed upwards during this display, and no bird achieved the exaggerated posture with head thrown right back, which is illustrated by Millais. Nor did I ever see water thrown up as both Millais and Boyd mention. Often several birds displayed at the same time to a duck, and she, if closely pressed, would occasionally show resentment by turning on them or hurrying forward out of their way. Sometimes the only sign of a drake's excitement was the twitching of the head with neck held stiff and straight.

DRAKE AND DUCK.—The actions so far described were peculiar to the drake. Both sexes, however, had one action in common, a false drinking motion which was comparatively seldom seen. The bill was pointed down to the water without



Fig. 3—Drake completing "false drink" motion

quite touching it and then raised to point upwards (Fig. 3). The performing of this action by one of a pair sometimes, but not always, caused the other bird to respond in like manner. For example, on January 16th the male of a pair swimming towards me did the drinking motion five times and the female did it twice. On February 13th a drake, on coming up from a dive, swam rapidly towards a duck about fifteen yards off and when he got near did a drink motion with his crest slightly raised; he then began preening. Seven minutes later these two birds were still together and now the duck did a slight drink motion, and the drake immediately responded with a pronounced one.

DUCK ONLY.—The duck also had a bobbing action which, I think, generally indicated considerable feeling on her part, and was nearly always done close behind a drake. The bill was pointed vertically downwards, pressing against the breast feathers, and with the head held in this position the bird would bob upwards several times in quick succession

(Fig. 4). Each bob was accompanied by a short surge forward, as if some impetus were necessary to get the upward movement. This display was not often observed, but on two different days I saw it given by a duck following a drake, when a second duck was following up behind them.

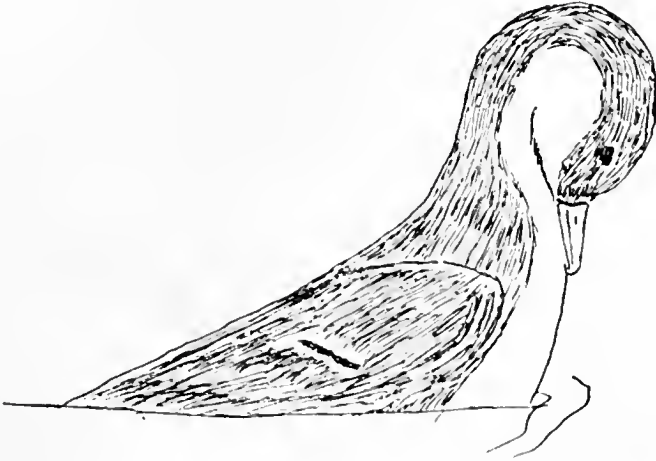


Fig. 4—Duck bobbing

I only once saw a duck bob unprovoked. She had been swimming slowly in my direction for a minute or so when she began to hasten off at right angles towards a drake that was twenty or thirty yards away. When she was just behind him she put bill to breast and bobbed four times in rapid succession. The drake immediately reared up slightly and in the few minutes following, during which they kept together, he occasionally stiffened his neck and twitched his head.

MATING.

In addition to courting, I was lucky enough to see the birds mating on one or two occasions. My notes are perhaps of sufficient interest to be given in detail.

January 10th, 1937. A cloudless sky, warm sun and a light cool S. wind. About 11 a.m. a pair were together, the duck with her tail up at angle of 30° and neck stretched forward at the same angle. She maintained this rigid pose for a minute or two while the drake kept rearing up on the water. The duck faced the drake, the drake faced anywhere. Again at mid-day there was a pair apart from other Smew about one hundred yards away from me. The duck was in the rigid attenuated attitude which became even more rigid as I watched, with neck and head absolutely flat on the water and the tip of her tail about two inches above the surface. The drake then mounted her and she was out of sight. While he was on her he pecked down two or three

times. He came off after about six seconds and the duck immediately came up and bobbed behind him three times.

January 11th. 11.55 a.m. Mild and cloudy; light SW. wind. A group of five drakes and one duck resting in the middle of the reservoir and one duck diving near the edge. A drake left the group and swam purposefully in towards the corner where the duck was diving. When he had nearly reached the place where she had last dived (she was under water at the time) he turned and swam out again, but she came up *in front* of him, having evidently passed below him under water. I thought his crest was very slightly raised, and almost at once she adopted the rigid attenuated attitude



Fig. 5—Duck soliciting

which involves sinking the body in the water (Fig. 5). Once or twice her head was lower than her tail. He did not appear very excited, and his crest was not raised, but he reared up twice. She kept close to him and turned to and fro, and round, as he did, all in a small area. This lasted for half a minute or more, but ceased when another drake approached.

January 16th. 4.14 p.m. Moderate cold W. wind. Sunny intervals. Rather chilly. Water popply. A pair swam out from under the bank just below me. I looked away from them to a group of birds on the far side of the reservoir for a minute or a minute and a half, and then noticed the duck of the near pair in the rigid flat position 30 or 40 yards from me with her body sunk in the water. Her head was lower than her tail when first noticed. Then the head, and then the tail were flattened on to the water. All the time the pair were manœuvring round each other, but the drake showed no sign of excitement such as raising his crest or jerking his head. Finally, after say half a minute, they swung together and he mounted her, or rather she, already nearly awash, slipped beneath him from his right-hand side. He certainly made no jump or scramble to get on to her. They were facing away from me, but so far as I could see, only the tip of her tail and nothing else was above the water. He did no pecking, and was on her for 11 seconds (counted). He bobbed when he came off her, then dipped his head in the water and shook himself. She came up and shook her wings tremulously

while doing a curtsying action, as if bathing, but without scooping up water or putting her head into it. They then swam off together and about five minutes later flew away.

These observations indicate that the initiative in mating is taken by the duck ; that the drake may or may not respond ; and that courtship by the drake is not the immediate prelude to it. It seems remarkable that it should occur in mid-winter, and on one occasion within five minutes of sunset.

Courtship was seen on so many occasions that I feel it surely must be of regular occurrence in the early part of the year, and it is surprising that it has not been recorded more often.

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RECOVERY OF MARKED BIRDS.

COMMUNICATED BY

E. P. LEACH.

Hon. Sec., Bird-Ringing Committee, British Trust for Ornithology.

No.	<i>Ringed.</i>	<i>Recovered.</i>
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Raven (*Corvus c. corax*).

402123	Skokholm (Pem), 9.4.36, young, by Skokholm Bird Obs.	Thornton (Pem), 26.4.37.
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Carrion-Crow (*Corvus c. corone*).

RINGED AS NESTLINGS.

RT.9659	Sedbergh (Yorks), 14.7.36, by Sedbergh Sch.	Where ringed, 22.4.37.
AB.3465	Hafod (Cardigan), 10.6.36, by W. A. Cadman.	Lake Vyrnwy (Mont), 19.5.37.
RS.2561	Seaford (Sussex), 15.6.30, by J. F. Thomas.	Where ringed, —.6.36.

Rook (*Corvus f. frugilegus*).

RINGED AS NESTLINGS.

(a) RECOVERED AWAY FROM WHERE RINGED.

RT.9544	Chertsey (Surrey), 22.4.34, by P. Hollom.	Chobham (Surrey), —.4.37.
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(b) RECOVERED WHERE RINGED.

RT.1574	York, 23.5.33, by Bootham Sch.	15.5.37.
RW.6923	ShIPLEY (Yorks), 2.5.36, by C. Wontner-Smith.	20.4.37.
RR.5293	Chewton Mendip (Som), 1929, by C. R. Stonor.	28.4.37.

RINGED AS FULL-GROWN.

(a) RECOVERED AWAY FROM WHERE RINGED.

AG.571	Gt. Budworth (Ches), 16.1.36, A. W. Boyd.	Ashbourne (Derby), 17.4.37.
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(b) RECOVERED WHERE RINGED.

Gt. Budworth (A. W. Boyd).

No.	<i>Ringed.</i>	<i>Recovered.</i>	No.	<i>Ringed.</i>	<i>Recovered.</i>
AG.410	23.2.33.	—.6.37.	AG.483	10.8.34.	11.5.35.
AG.432	18.7.33.	27.4.36.	AG.522	8.7.35.	24.3.37.
AG.435	18.7.33.	7.4.34.	AG.515	31.5.36.	23.3.37.
AG.460	20.6.34.	19.5.35.			

No.

*Ringed.**Recovered.***Jackdaw** (*Colæus m. spermologus*).

RINGED AS NESTLINGS.

RX.3386	Chillham (Kent), 1.6.36, by St. Edmund's Sch.	East Grinstead (Surrey), 5.3.37.
RW.6235	Ditto	24.5.36. Where ringed, 1.4.37.
RV.9890	Hastings (Sussex), 24.5.36, by Brooker & Cawkell.	Bolney (Sussex), 24.3.37.

RINGED AS FULL-GROWN.

(a) RECOVERED AWAY FROM WHERE RINGED.

RV.7357	Malvern (Worcs), 12.7.36, by P. Morshead.	Eastnor (Hereford), 23.6.37.
RX.6388	Whipsnade (Beds), 12.12.36, by Zool. Soc.	Broxbourne (Herts), 16.4.37.
RX.6391	Ditto	12.12.36. Great Gaddesden (Herts), 11.7.37.

Jackdaw (*continued*).RINGED AS FULL-GROWN (*continued*).

(b) RECOVERED WHERE RINGED.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Douglas, Is. of Man (W. S. Cowin).			Whipsnade (Zool. Soc.).		
RW.6161	15.1.36.	3.6.37.	RW.9468	16.7.36.	23.3.37.
Richmond Park (London N.H.S.).			RX.2487	31.7.36.	21.11.36.
RR.6416	15.5.35.	21.2.37.	RX.5518	6.12.36.	1.4.37.

No. Ringed. Recovered.

Jay (*Garrulus g. rufitergum*).

RW.8338	Bucknell (Salop), 15.3.36, ad., by W. D. Smith.	Llanthony (Mon), 8.6.37.
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Starling (*Sturnus v. vulgaris*).

RINGED AS NESTLINGS.

OS.356	Temple Sowerby (Westmor), —6.36, by H. J. Moon.	Shap (Westmor), 6.4.37.
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YM.456	Shipley (Yorks), 18.5.37, by C. Wontner-Smith.	Haworth Moor (Yorks), 10.7.37.
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RINGED AS FULL-GROWN.

(a) RECOVERED AWAY FROM WHERE RINGED.

OD.241	Is. of May Bird Obs., 29.9.36.	Belfast (Antrim), 23.12.36.
GH.150	York, 19.12.35, by Bootham Sch.	King's Lynn (Norfolk), 12.5.37.
ZL.276	Ditto 18.1.36.	Halesworth (Suffolk), 24.2.37.
ZR.193	Douglas (Is. of M.), 9.2.36, by W. Cowin.	Tenbury (Worcs), —.5.37.
OA.389	Ditto 13.12.36.	Blackpool (Lancs), 29.4.37.
YF.702	Gt. Budworth (Ches), 20.12.33, by A. W. Boyd.	Bolton (Lancs), —.5.37.
ZT.657	Ditto 21.12.35.	Pontrilas (Hereford), 24.4.37.
ZV.424	Ditto 7.12.36.	Aylsham (Norfolk), 3.5.37.
ZT.739	Ditto 23.12.35.	Dundaga, (Kurland), Latvia, 15.4.36.
ZV.120	Ditto 14.1.36.	Labiau, E. Prussia, —.5.37.
GT.461	Ditto 13.12.35.	Borghorst, Westphalia, 14.4.37.
ZV.393	Ditto 23.11.36.	Südtondern, Schleswig, —.6.37.
ZV.397	Ditto 23.11.36.	Stade, Hamburg, 12.7.37.
GT.558	Birmingham (Warwick), 8.11.35, by W. Kendrick.	Leamington (Warwick), 7.2.37.
GT.593	Ditto 2.12.35.	Bromyard (Hereford), 27.4.37.
OA.60	Malvern (Worcs), 25.10.36, by P. Morshead.	Redmarley (Worcs), 8.1.37.
OX.360	Ditto 6.11.36.	Eldersfield (Worcs), 27.1.37.
GX.511	Ditto 15.6.35.	Newnham (Glos), 31.5.37.
OA.100	Ditto 26.10.36.	Hargrave (Northants), —.5.37.
OX.326	Ditto 4.11.36.	Arrington (Cambs), 15.5.37.
ZX.197	Ditto 26.2.36.	Altreetz, Brandenburg, —.8.36.
OX.104	Ditto 29.10.36.	Lüneburg, Hanover, 17.4.37.
ZA.166	Ditto 8.12.35.	Orust Is. (Bohuslän), Sweden, 27.3.37.

No.	Ringed.	Recovered.
Starling (<i>continued</i>).		
RINGED AS FULLGROWN (<i>continued</i>).		
FL.642	Evesham (Worcs), 7.12.33, by A. Harthan.	Kazdanga (Kurland), Latvia, 20.3.35.
OR.541	Moreton - in - Marsh (Glos), 5.2.37, by G. Charteris.	Chipping Campden (Glos), 15.3.37.
ZB.924	Ditto 15.2.36.	Ugerlose, Sjælland, Denmark 11.5.36.
ZW.372	Oxford, 16.3.36, by Oxford Orn. Soc.	Broadway (Worcs), 20.11.36.
YA.296	Ditto 15.1.37.	Cheltenham (Glos), 27.5.37.
YE.43	Ditto 1.3.37.	Meseritz, Posen, Germany, —.6.37.
OT.417	Whipsnade (Beds), 24.8.36, by Zool. Soc.	Chartridge (Bucks), 2.4.37.
OW.765	Ditto 16.10.36.	Banbury (Oxon), 18.6.37.
YB.243	St. Neot's (Hunts), 17.1.37, by C. Tebbutt.	Hoor, Scania, Sweden, 23.5.37.
ZE.86	St. Alban's (Herts), 3.10.36, by Lond. N.H.S.	Beaconsfield (Bucks), 30.1.37.
YB.614	West Lavington (Wilts), 7.12.36, by Dauntsey's Sch.	Cirencester (Glos), 26.2.37.
ZS.172	Branscombe (Devon), 23.12.35, by P. Morshead.	Ysselstein (Utrecht) Holland, —.6.37.

(b) RECOVERED WHERE RINGED.

GS.113	Is. of May Bird Obs., 2.10.35.	22.3.36.
V.9270	Carlisle (Cumb), 20.1.29, by J. N. D. Smith.	7.4.37.
S.8960	Wilmslow (Ches), 30.3.30, by E. Cohen.	1.6.37.

Greenfinch (*Chloris ch. chloris*).

RINGED AS FULL-GROWN.

YA.588	Evesham (Worcs), 19.3.37, by A. Harthan.	Droitwich (Worcs), 14.4.37.
GH.535	Stanway (Glos), 3.12.34, by G. Charteris.	Market Drayton (Salop), 14.12.36.
JH.591	Weymouth (Dorset), 8.1.37, by E. Bray.	Finchley, London, 19.4.37.

Linnet (*Carduelis c. cannabina*).

LR.487	Newport (Salop), 1.6.36, young for Bootham Sch.	Where ringed, 5.6.37.
LG.581	Malvern (Worcs), 25.6.36, young, by P. Morshead.	Biarritz (B.Pyrénées) France, —.11.36.
KP.554	Stanway (Glos), 31.5.36, young, by G. Charteris.	Where ringed, 11.2.37.

Chaffinch (*Fringilla cælebs*).

HB.623	Is. of May Bird Obs., 18.4.37, ad.	At sea, near Stockholm, Sweden, 4.5.37.
JN.952	Evesham (Worcs), 15.2.37, ad., by A. Harthan.	Moreton - in - Marsh (Glos), 6.3.37.

Brambling (*Fringilla montifringilla*).

JP.129	Evesham (Worcs), 5.1.37, ad., by A. Harthan.	Newbold-on-Stour (Worcs), 31.1.37.
JS.492	Moreton - in - Marsh (Glos), 16.1.37, ad., by G. Charteris.	Ditto, 29.1.37.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
	Meadow-Pipit (<i>Anthus pratensis</i>).	
KJ.652	Salthouse (Norfolk), 27.5.36, young, by R. M. Garnett.	Blakeney (Norfolk), 22.4.37.
	Pied Wagtail (<i>Motacilla a. yarrellii</i>).	
KW.614	The Mound (Suth), 10.7.36, young, by E. Cohen.	Chard (Somerset), 11.12.36.
LH.168	Is. of May Bird Obs., 23.4.35, ad.	Where ringed, May, Aug., Sept., 1935, 19.4.36.
LA.766	Inveresk (Midlothian), 23.5.35, young, by Mrs. Greenlees.	Where ringed, 22.4.37.
	Great Tit (<i>Parus m. newtoni</i>).	
GT.610	Birmingham, 23.12.35, ad., by W. Kenrick.	Where ringed, Jan., Feb., March, 1936. Hewell (Worcs), —.3.36.
	Spotted Flycatcher (<i>Muscicapa s. striata</i>).	
JC.193	Holt (Norfolk), 21.6.36, ad., by E. Arnold.	Where ringed, 20.6.37.
	Pied Flycatcher (<i>Muscicapa h. hypoleuca</i>).	
LA.36	Ullswater (Westmor), 21.6.34, young, by H. J. Moon.	Thouars (Deux Sèvres), France, 12.4.37.
	Chiffchaff (<i>Phylloscopus c. collybita</i>).	
KS.704	Bealings (Suffolk), 26.5.36, young, by A. Mayall.	Woolverstone (Suffolk), 2.5.37.
	Whitethroat (<i>Sylvia c. communis</i>).	
KW.232	Skokholm Bird Obs., 12.5.36, ad.	Barrels Lightship, Co. Wex- ford, 10.5.37.
	Song-Thrush (<i>Turdus e. ericetorum</i>).	
	RINGED AS NESTLINGS.	
FD.440	Dundee (Angus), 16.5.35, by Miss Sharp.	Naughton (Fife), 13.6.37.
FD.427	Ditto 14.5.35.	Jordanstown (Antrim), 13.3.37.
FE.568	Penrith (Cumb), —.6.33, by H. J. Moon.	Staveley (Lancs), 28.6.37.
ZL.729	Pooley Bridge (Cumb), —.6.35, by H. J. Moon.	Moycullen (Galway), 29.1.37.
ON.942	Glenridding (Westmor), 5.6.36, by H. J. Moon.	Kilmeena (Mayo), 4.12.36.
ZJ.501	Kirkby Lonsdale (Westmor), —.5.35, by H. J. Moon.	Moate (Westmeath), —.6.37.
OK.481	Preston (Lancs), 30.8.36, by H. Martin.	Grange-over-Sands (Lancs) 13.3.37.
AN.4498	Oundle (Northants), 17.6.31, by J. M. Fisher.	Where ringed, 12.5.37.
OE.142	Bealings (Suffolk), 15.4.36, by A. Mayall.	Tagoat (Wexford), 7.12.36.
	RINGED AS FULL-GROWN.	
GR.959	Is. of May Bird Obs., 16.4.35.	Where ringed, 8.9.35. 22.3.36; 26.9.36.
TF.351	Beckley (Oxon), 25.7.33, by Oxford Orn. Soc.	Haslemere (Surrey), 11.6.34.

- | No. | Ringed. | Recovered. |
|---|--|--|
| Blackbird (<i>Turdus m. merula</i>). | | |
| RINGED AS NESTLINGS. | | |
| GL.402 | Ullswater (Cumb), 17.6.34, by H. J. Moon. | Little Langdale (Cumb), 26.3.37. |
| ON.175 | Oxford, 16.8.36, by Orn. Soc. | Oxford Ascott - under - Wychwood (Oxon), 12.12.36. |
| YK.924 | Playford (Suffolk), 1.5.37, by A. Mayall. | Clacton - on - Sea (Essex), 4.7.37. |
| RINGED AS FULL-GROWN. | | |
| ZV.99 | Gt. Budworth (Ches), 14.2.36, by A. W. Boyd. | Hole, Ringerike, Norway, 26.1.37. |
| Dipper (<i>Cinclus c. gularis</i>). | | |
| AR.3793 | Sedbergh (Yorks), 5.5.36, young, by Sedbergh Sch. | Where ringed, 16.3.37. |
| Swallow (<i>Hirundo r. rustica</i>). | | |
| RINGED AS NESTLINGS. | | |
| KS.915 | Torosay, I. of Mull, 14.8.36, by M. Williams. | Morvern (Argyll), —.6.37. |
| KR.998 | Cheltenham (Glos), 10.6.36, by Cheltenham College. | At sea, off Co. Durham, 9.5.37. |
| JC.77 | Faversham (Kent), 12.7.36, by St. Edmund's Sch. | 4 miles S. of where ringed, —.5.37. |
| Martin (<i>Delichon u. urbica</i>). | | |
| KB.954 | Arundel (Sussex), 8.9.35, young, by A. Mayall. | Where ringed, 20.5.37. |
| Kingfisher (<i>Alcedo a. ispida</i>). | | |
| MV.485 | Levern Bridge (Renfrew), 13.7.34, young, by J. Bartholomew. | Shettlestone, Glasgow, 10.2.37. |
| JE.146 | Shipley (Yorks), 28.6.36, young, by C. Wontner-Smith. | Pendle Forest (Lancs), 13.2.37. |
| Little Owl (<i>Athene n. vidalii</i>). | | |
| S.1500 | Skokholm (Pem), 31.7.34, juv., by R. M. Lockley, removed across sea to Marloes, 4 miles. | Skokholm, 3.6.37. |
| Tawny Owl (<i>Strix a. sylvatica</i>). | | |
| RINGED AS NESTLINGS. | | |
| 402324 | Largo (Fife), 21.6.35, by A. H. Eggeling. | Elie (Fife), —.9.36. |
| AB.3458 | Aberllefenni (Mont), 3.6.36, by W. A. Cadman. | Where ringed, 13.1.37. |
| AB.1181 | Reading (Berks), 4.5.36, by Leighton Pk. Sch. | Shinfield (Berks), 20.2.37. |
| Barn Owl (<i>Tyto a. alba</i>). | | |
| RINGED AS NESTLINGS. | | |
| AB.5901 | Langwathby (Cumb), 30.6.36, by H. J. Moon. | Culgaith (Cumb), 3.7.37. |
| AB.3307 | Andreas (I. of M.), 28.7.35, by W. Cowin. | Onchan (Is. of M.) 1.7.37. |
| AG.443 | Gt. Budworth (Ches), 28.6.33, by A. W. Boyd. | Over Tabley (Ches), 23.2.37. |

No.	<i>Ringed.</i>	<i>Recovered.</i>
Barn Owl (<i>continued</i>).		
RINGED AS FULL-GROWN.		
401127	Shipley (Yorks), 22.3.36, by C. Wontner-Smith.	Where ringed, 26.3.37.
Hobby (<i>Falco s. subbuteo</i>).		
RV.2901	Wiltshire, 9.8.36, young, by London N.H.S.	Hagetmau (Landes), France, 16.10.36.
Buzzard (<i>Buteo b. buteo</i>).		
401508	Tiverton (Devon), 7.6.36, young, by Blundell's Sch.	Burlescombe (Devon), —.4.37.
Marsh-Harrier (<i>Circus æ. æruginosus</i>).		
400977	Horsey (Norfolk), 15.7.35, young, by A. Buxton.	120 km. E. of Casablanca Morocco, 26.4.37.
Sparrow-Hawk (<i>Accipiter n. nisus</i>).		
RX.3349	Nether Welton (Cumb), 27.6.36, young, by R. H. Brown.	Parton (Cumb), 3.12.36.
Common Heron (<i>Ardea c. cinerea</i>).		
RINGED AS NESTLINGS.		
112793	North Uist (Outer Hebrides), 12.6.34, by Midlothian Orn. Club.	Where ringed, 21.6.37.
114524	Crofton (Cumb), 8.5.36, by R. H. Brown.	Bolam (Northumb), 9.4.37.
114544	Beckley (Sussex), 11.5.35, by P. Hollom.	Where ringed, 12.5.37.
113264	Ditto	26.5.34. Rolvenden (Kent), 26.12.36.
112748	Ditto	6.5.34. Ste. Marie - du - Mont (Manche), France, 14.12.36.
114565	Ditto	11.5.35. Montfort l'Amary (Seine-et-Oise), France, 12.7.37.
118986	Dulverton (Som), 24.5.36, by Blundell's Sch.	Sampford Peverell (Devon), —.1.37.
Sheld-Duck (<i>Tadorna tadorna</i>).		
38853	Budle Bay (Northumb), 24.6.35, young, by Mrs. Hodgkin.	Inverkeithing (Fife), 12.4.37.
Mallard (<i>Anas p. platyrhyncha</i>).		
RINGED AS YOUNG.		
AA.8495	Sedbergh (Yorks), 23.6.36, by Sedbergh Sch.	Tebay (Westmor), 11.9.36.
RW.7622	Skokholm Bird Obs., 23.6.36.	Dale (Pem), 12.12.36.
25 birds	Ludham (Norfolk), Aug. and Sept., 1936, by M. Boardman.	Where ringed, 7.9.36 to 2.1.37.
38 birds	Ditto [Hand - reared] 1936.	Where ringed, 6.9.36 to 10.2.37.
RINGED AS FULL-GROWN.		
401641	Leswalt (Wigtown), 26.2.36, by J. Law.	Where ringed, 19.10.36.
AF.237	Hickling (Norfolk), 8.3.30, by J. Vincent.	Kallundborg, Sjælland, Denmark, —.9.33.
AB.4766	Essex, 20.9.36, by G. Fane.	16 miles NW. of where ringed, 28.1.37.
Or.713	Orielton (Pem), 26.12.35, by S. Greenslade.	Where ringed, 29.12.36.

No.

Ringed.

Recovered.

Teal (*Anas c. crecca*).

RINGED AS YOUNG.

RV.7877 Wolsingham (Durham), 2.8.36, St. Nazaire (Loire Inf.),
by R. Martinson. France, 10.12.36.

RINGED AS FULL-GROWN.

RW.8726 Leswalt (Wigtown), 1.3.37, by Marmaverken, Helsingland,
J. Law. Sweden, 3.7.37.
73158 Longtown (Cumb), 1.3.33, by Lake Slocene (Kurland),
W. Bell. Latvia, 25.8.34.

RINGS OF THE ORIELTON DECOY, PEMBROKE.

9 birds Winter, 1936-7. Wales, Jan., Feb., 1937.
365 Orierton, 25.11.35. Margam (Glam), 23.4.37.
1830 Ditto 22.12.36. Market Drayton (Salop),
1.2.37.
700 Ditto 25.12.35. Christchurch (Hants),
11.2.37.
2104 Ditto 3.2.37. Boarstall (Bucks), 18.2.37.
1784 Ditto 18.12.36. Ely (Cambs), 16.2.37.
2023 Ditto 13.1.37. Norwich, 9.2.37.
1767 Ditto 16.12.36. Peterborough (Northants),
—.2.37.
1965 Ditto 5.1.37. Nottingham, 20.2.37.
1385 Ditto 22.11.36. The Wash (Lincs), 18.1.37.
1681 Ditto 11.12.36. Louth (Lincs), 24.2.37.
1181 Ditto 23.10.36. Scunthorpe (Lincs), 26.2.37.
1390 Ditto 22.11.36. Coleraine (Londonderry),
20.2.37.
1281 Ditto 7.11.36. Dungannon (Tyrone)
25.2.37.
805 Ditto 3.1.36. Killylea (Armagh), 15.1.37.
289 Ditto 17.11.35. R. Barrow, Carlow, 1.1.37.
1192 Ditto 24.10.36. New Ross (Wexford),
19.12.36.
1370 Ditto 21.11.36. Cappoquin (Waterford),
16.12.36.
608 Ditto 20.12.35. Galway, 1.2.37.
1412 Ditto 22.11.36. Askeaton (Limerick), 9.2.37.
1935 Ditto 1.1.37. Limerick, 28.2.37.
1127 Ditto 14.10.36. Croom (Limerick), 8.2.37.
686 Ditto 25.12.35. Kuhmajärvi, SE. Finland,
14.5.37.
235 Ditto 8.11.35. Sokolka, Poland, 18.8.36.
890 Ditto 23.1.36. Aurich, E. Friesland,
—.12.36.
867 Ditto 18.1.36. Lake Hornavan (Norrbotten)
Sweden, —.6.36.
1016 Ditto 24.9.36. Gargnäs (Västerbotten),
Sweden, 3.5.37.
945 Ditto 12.2.36. Tvärabäck (Västerbotten),
—.5.36.
255 Ditto 12.11.35. Padua, Italy, 8.3.37.

Teal (*continued*).

RECOVERED WHERE RINGED.

Orielson (Pem).

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
190	28.10.35.	6.1.37.	880	22.1.36.	24.12.36.
274	14.11.35.	10.1.37.	891	23.1.36.	24.9.36.
No.		Ringed.			Recovered.

Wigeon (*Anas penelope*).

RW.8713 Leswalt (Wigtown), 25.2.36 Corsewall (Wigtown), 19.2.37
ad., by J. Law.

Eider (*Somateria m. mollissima*).

109600 Slains (Aberdeen), 9.5.34, ad., Firth of Tay, 14.2.37.
by M. Portal.

Goosander (*Mergus m. merganser*).

RINGED AS FULL-GROWN IN WINTER.

400307 Molesey (Surrey), 24.12.34, by Surbiton (Surrey), Winter,
P. Hollom. 1936-7.

AB.4981 Ditto 28.11.36. Fangö (Östergötland),
Sweden, 15.4.37.

Cormorant (*Phalacrocorax c. carbo*).

RINGED AS NESTLINGS.

113923 Mochrum (Wigtown), 30.6.35. Bargany (Ayr), 15.2.37.
by Lord Dumfries.

113970 Ditto 30.6.35. Easdale (Argyll), —.10.36.

113960 Ditto 30.6.35. Annan (Dumfries), 6.5.37.

114113 Ditto 30.6.35. Errol (Perths), 8.4.37.

114042 Ditto 3.7.35. Lunan Bay (Angus), 12.2.37.

120355 Ditto, 15.7.36, by Lord D. Aberlady (E. Lothian),
Stuart. 16.3.37.

120342 Ditto 15.7.36. Belfast (Antrim), 8.3.37.

120343 Ditto 15.7.36. Ditto 2.2.37.

119192 Farne Is. (Northumb), 28.6.36, Chathill (Northumb), 23.2.37.
by Bootham Sch.

118847 Ditto 21.6.36. Blyth (Northumb), 10.3.37.

118859 Ditto 21.6.36. Berwick-on-Tweed, 14.3.37.

119186 Ditto 28.6.36. Ditto 28.12.36.

119196 Ditto 28.6.36. Dumbarton, 16.3.37.

119212 Ditto 28.6.36. R. Tyne (E. Lothian),
22.1.37.

118842 Ditto 21.6.36. L. Leven (Kinross), 28.3.37.

119193 Ditto 28.6.36. Elcho (Perths), 6.2.37.

119191 Ditto 28.6.36. Glencarse (Perths), 3.2.37.

112077 Ditto 7.7.35. Montrose (Angus), 6.3.37.

119188 Ditto 28.6.36. Ditto 1.2.37.

118864 Ditto 21.6.36. Cruden Bay (Aberdeen),
5.5.37.

119164 Roundstone (Galway), 28.6.36, Kilkerrin Bay (Galway),
by S. Marchant. —.6.37.

Shag (*Phalacrocorax a. aristotelis*).

RINGED AS NESTLINGS.

119225 Bass Rock, 4.7.36, by Mid- Seahouses (Northumb),
lothian Orn. Club. 29.3.37.

112797 Ditto 4.7.36. Earlsferry (Fife), 6.3.37.

112795 Ditto 4.7.36. Aberdeen, 5.2.37.

(To be continued)

NOTES

A "FIVE" CLUTCH OF THE PINE-GROSBEAK.

A WELL-AUTHENTICATED clutch of eggs of the Pine-Grosbeak (*Pinicola e. enucleator*), exceeding four, is so rare that it may be worth recording that a nest containing five fresh eggs of this species was found near Noatun, east Finmark, on June 11th, 1937, by Herr Torolv Schaanning, the well-known east Finmark ornithologist, with whom I am personally acquainted. He informs me (*in litt.*) that he had never previously seen or heard of a clutch exceeding four eggs, during many years of ornithological work, in Finmark. The set is now in my possession and shows no sign of having been produced by more than one hen bird. I see that the *Practical Handbook* states "5 once recorded". W. M. CONGREVE.

[This is a matter on which opinions differ: Lilliesterna states that clutches of 5 "never" occur; Hortling on the other hand says of the eggs "3-4, undantags vis [exceptionally] 5"; Dan Meinertzhagen's collection included a set of 5 (probably taken by a native); Mr. E. C. Stuart Baker took c/5 on June 10th, 1933, which he says was "evidently a second laying as young were already flying"; and I have seen several sets in other collections, but with scanty data; J. A. Sandman told Dresser that he had once found a nest with five eggs.—F.C.R.J.]

GREAT REED-WARBLER IN KENT.

ON August 2nd, 1937, near Appledore, Kent, I was walking along a dyke which had much lush vegetation—rushes, giant dock, water plantain, etc.—along its edges when I saw flitting from stem to stem by the water's edge a bird which was undoubtedly a Great Reed-Warbler and presumably *Acrocephalus a. arundinaceus*. The dyke at that early hour (7 a.m.) was full of Reed- and Sedge-Warblers busily feeding and the large size of this bird, compared with its companions, the coloration and its typical mode of settling on stems and its flight left no doubt on my mind as to its identity, as it is a bird I am very familiar with in many countries. It was not possible, of course, to be certain that the stranger was not *Acrocephalus stentoreus*, a bird not yet on the British list; the colour, however, was too fulvous for *Arundinax aëdon*. I saw the bird on three occasions, flitting in front of me as

I walked along the dyke and finally lost it in a tangle of high vegetation. A visit during the same afternoon found the dyke deserted of bird-life. Dr. N. H. Joy informs me that there was a large movement of migrants at Dungeness Light the previous night.

CLAUD B. TICEHURST.

SEDGE-WARBLER BREEDING IN OUTER HEBRIDES.

ON May 31st, 1937, I found a nest of a Sedge-Warbler (*Acrocephalus schænobænus*) with four eggs, near the Goulaby burn, North Uist. Subsequently Mr. A. R. Thompson and



I erected a hide from which we photographed and filmed the birds at the nest. There appears to be no previous record of the breeding of this species in the Outer Hebrides.

There was also a Sedge-Warbler, in song, near Balranald House, North Uist, on June 13th, 1937. JAMES W. CAMPBELL.

SUBALPINE WARBLER AT MAIDENS LIGHTHOUSE, CO. ANTRIM.

ON June 15th, 1937, I received a bird from Mr. J. J. O'Boyle, an assistant keeper of the Maidens Lighthouse, situated in the North Channel, some eight miles from the Co. Antrim seaport of Larne.

The bird was found dead on the lighthouse balcony at 4.30 a.m. on Sunday, June 13th, at a time when the weather was foggy, with a very light wind, scarcely blowing one in strength.

On examination I could only conclude that the bird was a male Subalpine Warbler (*Sylvia cantillans cantillans*), but realizing it was not right for me to depend entirely on my own determination of species, which was worked out with the aid of the *Practical Handbook* and not by comparison, I sent the bird to London, where Mr. H. F. Witherby was kind enough to examine it and to confirm the naming. This is the second Irish example of the Subalpine Warbler, the first being so recent as September 17th, 1933, from Hook Tower light, Co. Wrexford.

Mr. Witherby informs me that previous records for Britain are all Scottish, numbering four—St. Kilda, June 14th, 1894; Fair Isle, May 6th, 1908; Isle of May, May 30th, 1924; and Tarbatness Lighthouse, Ross-shire, May 3rd, 1935.

The specimen will be included in the Belfast Municipal Museum collection.

J. A. SIDNEY STENDALL.

MONTAGU'S HARRIER BREEDING IN YORKSHIRE.

It may be of interest to record that a pair of Montagu's Harrier (*Circus pygargus*) nested and reared five young, which are now on the wing, in the North Riding of Yorkshire, this year, 1937.

W. S. MEDLICOTT.

BIRDS TAKING MOTHS.

In a previous note of mine (*antea*, Vol. XXX., p. 172) reference was made to Gulls taking map-winged swift moths (*Hepialus fusconebulosa*) in North Uist. In the evening of June 29th, 1937, at Newton, North Uist, large numbers of this moth were on the wing and many Black-headed Gulls (*Larus r. ridibundus*) and Common Gulls (*Larus c. canus*) were "hawking" for them. A Corn-Bunting (*Emberiza c. calandra*) and a Sky-Lark (*Alauda a. arvensis*) were also seen to capture these moths and to feed their nestlings with them. On July 4th, 1937, at Newton, an immature Wheatear (*Ænanthe æ. ænanthe*) made an unsuccessful attack on a passing moth, which on being "netted" proved to be a map-winged swift.

At Layer Marney, Essex, on July 12th, 1937, a Spotted Flycatcher (*Muscicapa s. striata*) was seen in pursuit of an oak-eggjar (*Lasiocampa quercus*).

JAMES W. CAMPBELL.

FLIGHT SPEED OF GUILLEMOTS, RAZORBILLS AND
PUFFINS.

DURING speed trials of a ship in the neighbourhood of Ailsa Craig in May, 1937, I observed that Puffins, Razorbills and Guillemots (*Fratercula arctica*, *Alca torda* and *Uria aalge*) with beam or following winds were all easily able to pass the ship steaming at approximately 37 land miles per hour. Upon one occasion with the ship steaming at that speed into a direct head wind of 10 land miles per hour a flight of Guillemots came up from astern and were able to pass the ship, though slowly; overtaking speed, calculated on time taken to pass the total length of the ship, estimated at 3 land miles per hour, giving them a total speed of 50 land miles per hour through the air.

H. R. H. VAUGHAN.

BIRDS AT THE ISLE OF MAY.—The Report by the Midlothian Ornithological Club of migration observations in the autumn of 1936 on the Isle of May (*Scot. Nat.*, 1937, pp. 51-5) contains a number of interesting items. The members of the Club were assisted by some fourteen other observers. The most notable bird was an immature example of the Yellow-breasted Bunting (*Emberiza aureola*) which was trapped on September 4th, conveyed to Edinburgh and carefully examined and then released. There are only three previous records of this species—all from Norfolk. Another rarity was a Siberian Lesser Whitethroat which was present on the island from September 17th to October 5th. This was also trapped and carefully examined. Other scarce birds recorded are: Ortolan Buntings in September, single Barred Warblers on September 10th, 11th and 14th and two on the 18th, single Red-breasted Flycatchers on September 17th, 28th, October 5th and two on the 4th, a Yellow-browed Warbler on September 19th, 21st and 22nd and two on the 20th, and a Little Bunting on September 28th.

SCARCE BIRDS IN SHETLAND.—Mr. George Waterston contributes to the *Scottish Naturalist* (1937, pp. 25-31) an important paper on the status of a number of scarce birds (chiefly migrants) in Shetland. The information he has obtained from Mr. Tom Bruce, jun., and from an examination of Mr. Samuel Bruce's collection, though sometimes rather lacking in detail, shows that certain rare migrants, hitherto unrecorded from Shetland, but known to occur at Fair Isle, do visit Shetland, while others of which very few have been recorded for Shetland occur almost annually. Of those not

previously recorded are the following : Scarlet Grosbeak, several, September, 1936, and one, October ; a Short-toed Lark obtained on Whalsay some years ago proves to be of the eastern form ; two Wood-Larks in October, 1921, and one in March, 1936 ; two Shore-Larks, October, 1933 ; a Richard's Pipit, September, 1928 ; a Lesser Grey Shrike, September, 1929 ; a Siberian Lesser Whitethroat, October 3rd, 1936 ; a Temminck's Stint, September, 1921, and a Great Bustard, May, 1936. Of birds previously considered only occasional visitors to Shetland, the following are now considered to be regular passage migrants : Ortolan Bunting, Reed-Bunting, Tree-Pipit, Spotted and Pied Flycatchers. The Barred Warbler is considered regular in autumn but has occurred only once in spring, the Whinchat is regular in spring, but rare in autumn, and the Black Redstart the reverse. Other interesting records are given in this paper, which adds considerably to our knowledge of birds occurring in Shetland.

SCARCE BIRDS AT FAIR ISLE.—Mr. George Waterston gives an account of a number of interesting birds observed at Fair Isle in 1936 (*Scot. Nat.*, 1937, pp. 73-76). The more important of these are as follows :—Petchora Pipit, one seen by G. Stout on November 19th ; a Nuthatch seen by the same observer on May 29th and 30th, this being the first occurrence on the island, but the sub-species could not be ascertained, while the same may be said for a Coal-Tit seen by Mr. L. S. V. Venables on September 21st, and a Willow-Tit with " pure white on the sides of the neck and cheeks " seen by Mr. Stout on November 3rd ; a Lesser Grey Shrike is recorded on May 25th ; a male Rock-Thrush on October 16th ; a King Eider on March 31st ; an adult drake Surf-Scoter on December 1st ; Great Shearwaters on September 14th, 21st and October 8th ; Arctic Ringed Plovers (*Ch. h. tundrae*) in September, and Dusky Redshanks in August and September.

ADULT PIED WAGTAILS USING ROOST IN JUNE.—With reference to Mr. M. F. M. Meiklejohn's note (*antea*, p. 85) on the roosting of Pied Wagtails in June, Mr. Graham Hopkins informs us that he spent the summer of 1933 at Chorley Wood, Herts, and on May 16th, while walking on the common, found a roost of (approx.) 50 Pied Wagtails (*Motacilla a. yarrellii*) in some thick gorse bushes. All those he could see were adult birds and he saw them frequently during the next four weeks in the same place. On May 30th their number was increased by several birds of the year. Mr. Hopkins last saw the roost " in being " on June 16th,

and was unable to revisit the site until June 24th, when all the birds had gone, although a few individuals were scattered about the common. Unfortunately these gorse bushes were burnt during the following August.

PIED WAGTAIL AND HOUSE-SPARROW BREEDING IN SOUTH UIST.—We are informed by Lt.-Col. W. A. Payn that he saw a pair of Pied Wagtails (*Motacilla a. yarrellii*) with two nearly full-grown young at Lochboisdale, South Uist, on June 27th, 1923. So far as we are aware there is only one previous record of breeding in the Outer Hebrides. Lt.-Col. Payn also noted several House-Sparrows (*Passer d. domesticus*) breeding at the same place in June, 1923. Although known to breed in Barra, Harris, Lewis and North Uist it does not appear to have been recorded from South Uist.

AMERICAN BLACK-AND-WHITE WARBLER IN SHETLAND.—An example of this small Warbler (*Mniotilta varia* (L.)) was picked up near Scalloway, Shetland, about the middle of October, 1936, and forwarded to the Scottish Museum (A. C. Stephen, *Scot. Nat.*, 1937, p. 46). The species is a native of the eastern half of N. America and winters as far south as northern S. America. We do not consider that so small a land bird could cross the Atlantic unaided.

REED-WARBLER NESTING IN CO. DOWN.—Mr. J. A. Sidney Stendall announces (*Irish Nat. Journal*, 1937, p. 252) that in May, 1935, Mr. E. McWilliams found a nest among reeds in the north of Co. Down. The nest contained five eggs, of which one was taken. The nest was exceptionally deep and built round four or five stems of reeds. The Sedge-Warbler is common in the area and apart from the egg and description of the nest, which have been submitted to the Rev. F. C. R. Jourdain, Mr. McWilliams states that the birds lacked light stripes on the head and appeared of a uniform colour. There seems little doubt therefore that these birds were Reed-Warblers (*Acrocephalus s. scirpaceus*) a species which has not previously been known to breed in Ireland and indeed has only rarely occurred there.

AMERICAN YELLOW-BILLED CUCKOO IN ORKNEY.—Mr. A. C. Stephen records (*Scot. Nat.*, 1937, p. 46) that an American Yellow-billed Cuckoo (*Coccyzus a. americanus*) flew into a farmhouse at Birsay after a period of very severe weather. No date is given, but we are informed that this was on October 22nd, 1936. The bird has only once before been recorded for Scotland.

LITTLE OWL TAKING SPIDER.—Dr. James W. Campbell informs us that a spider found in the "stomach" of a Little Owl (*Athene n. vidalii*) killed at Layer Marney, Essex, on March 31st, 1937, has been identified by Mr. W. S. Bristowe as *Trochosa terricola*.

RED-CRESTED POCHARD BREEDING IN LINCOLNSHIRE.—Mr. E. L. Roberts informed us that on May 19th, 1937, he discovered a nest of a Red-crested Pochard (*Netta rufina*) on the East Lincolnshire marshes whence he had already reported birds of this species (*antea*, p. 27). The nest contained four eggs, and was placed about six feet from the edge of a small marsh pool. It was under bushes and well concealed and was constructed of dry grasses, dead leaves and a few small twigs and had no down. The bird at this and another visit, when the nest contained six eggs, was closely viewed and Mr. Roberts's description tallies well with this species. Subsequently the eggs were destroyed by rats and portions of the shells and a little down found on the rim of the nest were submitted to Rev. F. C. R. Jourdain, who pronounced them as certainly fitting those of the Red-crested Pochard. There can be no doubt that this bird was derived from captive stock and it probably originated from Woburn, where the species has been regularly reared and allowed to go free as previously stated (*antea*, p. 27).

REVIEW.

British Trust for Ornithology. Third Report, Summer, 1937.

This Report shows a marked advance not only in the work done and being done by the Trust, but in the support it has received both from field-workers and sympathizers. The important Little Owl Inquiry has now come to an end, and we may soon expect the full report upon it by Miss Hibbert-Ware, whose investigations with the help of many observers have been of a most exhaustive and painstaking nature. The work in the last year has taken the form of an intensive search among Little Owls living in the neighbourhood of game and poultry chicks. Other completed Inquiries summarized in this Report are those of the Swallow, Great Crested Grebe and Heron, already dealt with in our pages, and the Woodcock Inquiry, a report on which is expected to be finished at the end of the year. The main Inquiries proceeding in 1937 are those regarding the Lapwing's habitat and the song-periods of certain selected birds. As our readers well know, the Trust has now taken over the Ringing Scheme under the direction of a special committee and the arrangements for this new responsibility are set forth in this Report. We are glad to see that the membership of the Trust has increased considerably, while the Viscount Grey Memorial Appeal will provide some £3,000, and there have been other generous gifts. The financial position has thus made a notable advance, but many more members are required and still more gifts are necessary before the Trust can be in a position to establish on a firm foundation the permanent institute, which is so essential to its carrying out the growing programme of work in the future.

THE FUNCTION OF THE GOLDCREST'S CREST.

To the Editors of BRITISH BIRDS.

SIRS,—I think Mr. David Lack is clearly right in concluding from the scene he describes (*antea*, p. 82) that the crest of the Goldcrest (*Regulus r. anglorum*) is an instance of ornamentation functioning as a "threat-colour", and used for that purpose in fight between rival males.

In fact, I had myself brought forward this species (in my article on the "Spring rivalry of birds", *Irish Naturalist*, 1903) as one of the chief illustrations in support of my contention that bright nuptial or showy male plumage serves mainly as "war-paint". This view has always appeared to me a necessary supplement to the belief that battles between male birds are chiefly fought for the possession of bits of land. It is only an application to sex-rivalry of Wallace's theory of "warning coloration", though that naturalist, curiously, never applied it so.

Mr. Lack makes a suggestion which is new to me when he puts forward the possibility of the lemon-coloured crest of the female Goldcrest being also of some use as "war-paint", if only to frighten off rival females. It might, no doubt, be turned to that effect, but I have no recollection of seeing pugnacity of any sort displayed by a hen Goldcrest—unless when, in a fit of maternal solicitude, a bird of that species attacked and pursued for some distance an astonished Mistle-Thrush that had ventured too near her nest. On that occasion I was unable to see whether the crest was flashed or not.

The Goldcrest is, I think, almost unique among British birds in having the obviously self-advertizing ornament of the cock-bird more or less developed also in the hen, but so much less vividly that it must raise doubt as to its playing any part in the same game. In species in which both male and female are equally brilliant (as is the way with so many that nest in holes) there is generally ground for attributing fighting capacity to the female in alliance with her mate. In the Woodpecker she is known to be often the better fighter of the two.

A remarkable case of nuptial ornament confined to the nesting season and functioning in both sexes is the richly coloured "false nose" or "mask" that gives to the Puffin a beak of such increased showiness when the bird has most need to advertize the effectiveness of this weapon against trespassers on its burrow. This beak is said to be sometimes displayed in courtship, but if so, it certainly has two purposes.

That a crest of mild yellow tint like that of the female Goldcrest may serve for a purpose which is neither courtship nor menace is at least possible. It may be of use in distinguishing the mother-bird from recently fledged young members of her family when these are learning to hunt, but still dependent on her for much of their success.

C. B. MOFFAT.

To the Editors of BRITISH BIRDS.

SIRS,—Mr. David Lack in his note on the above subject (*antea*, p. 83) questions the use of the crest by the male Goldcrest in courtship. That it is so used is shown by the following note from my diary, dated February 18th, 1932:

"Saw two Goldcrests courting in a holly bush. Both fluttered wings and bowed, and the male evidently showed off his brilliant crest to the female as he put his head down, for it caught the light of the slanting afternoon sun (4 p.m.) and glowed red and gold."

E. W. HENDY.

THE "MEWING" OF DIVERS IN WINTER.

To the Editors of BRITISH BIRDS.

SIRS,—Mr. Keith in his fascinating article on the Red-throated Diver says (*antea*, p. 78) that he has been unable to discover if the "mewing" cry is ever heard except in the breeding season. When sailing up to both Red-throated and Black-throated Divers in mid-winter, when in small flocks, it is quite a common thing to hear them give this call on the water, especially the Black-throated species. They swim about in great alarm and give the call with heads up and necks stretched to the fullest extent, before taking wing. I never heard either species give the barking note under similar circumstances. I have never heard Great Northern Divers utter any sound when so approached in winter, and these birds never get on the wing but simply sink, usually never being seen again.

H. W. ROBINSON.

WILDFOWL AND HERON IN OUTER HEBRIDES.

To the Editors of BRITISH BIRDS.

SIRS,—I am engaged at present on a work dealing with various aspects of the birdlife of the Outer Hebrides and I am particularly anxious to obtain information (other than that already published) on the following: GEESE, DUCKS AND WADERS—changes in status, habits, and habitat; numbers, relative proportions of the sexes and of adults and young; food and damage to crops. HERON—Position and details of heronries and any observations on this species in the Outer Hebrides. I shall be very grateful if any of your readers who can help will communicate with me to Layer Marney Hall, Kelvedon, Essex.

JAMES W. CAMPBELL.

1937

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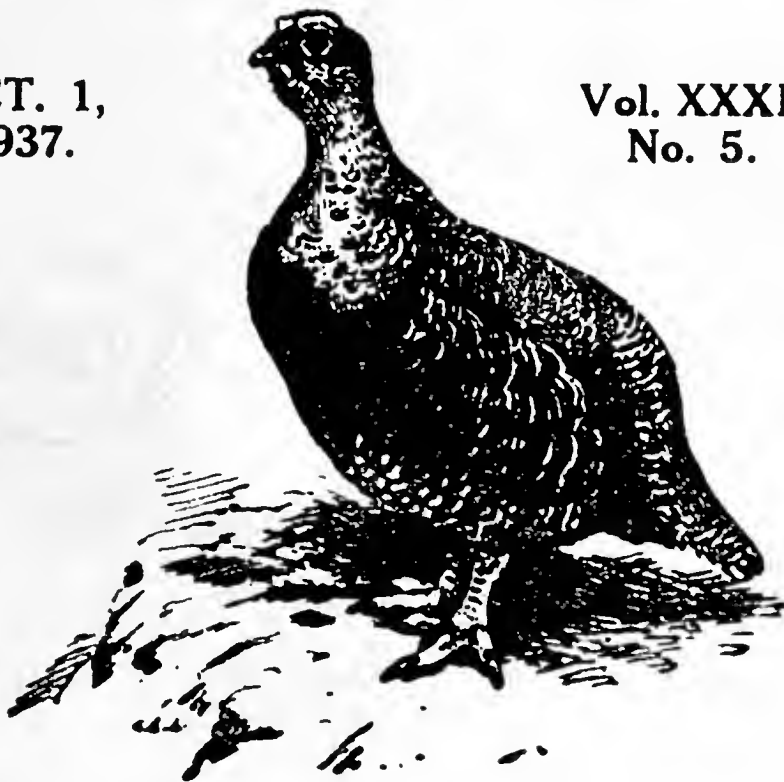
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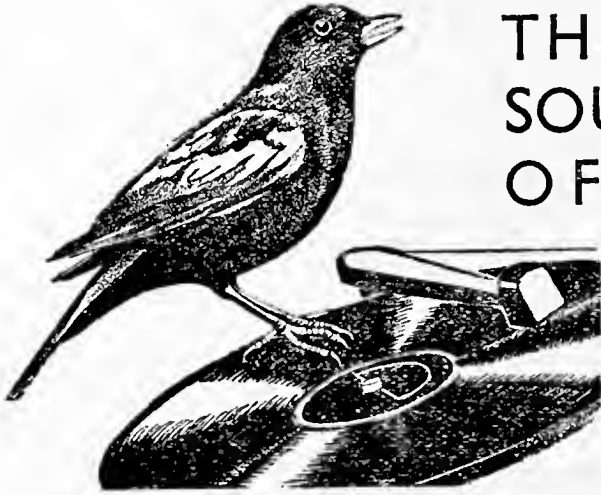
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PURCHASED



THE PSYCHOLOGICAL FACTOR IN BIRD DISTRIBUTION.

BY

DAVID LACK.

INTRODUCTION.

THIS short paper is mainly a summary of two earlier ones [10, 11], and is written partly because the conclusions then put forward seem to have been somewhat misunderstood.*

The limits of a bird's distribution are probably often determined by such factors as climate, food, nesting sites and natural enemies, though the summary by Moreau [14] shows how little work has as yet been done on these lines. But in addition to these admittedly important "direct" factors, there are others of a different nature, here termed *psychological factors*, which involve the bird's mental reaction to its environment. A bird's behaviour is usually described as primarily instinctive, based on inherited patterns of behaviour which, though capable of some modification, are on the whole rigid. It is this rigidity which makes psychological factors of such importance in distribution. Examples will now be considered.

NESTING SITES.

The Blue Tit (*Parus c. obscurus*) does not breed in woods in which there are no suitable nesting holes. Hence it is absent from many copses and young plantations where it occurs commonly outside the breeding season and where it will breed readily if nesting boxes are put up. This shows that the nesting holes are the sole missing feature. The factor concerned is not the absence of nesting sites but of a particular kind of nesting site. The Blue Tit could successfully colonize young plantations if its mental equipment (a psychological factor) enabled it to build a nest like a Long-tailed Tit (*Aegithalos c. roseus*) or a Lesser Redpoll (*Carduelis f. cabaret*). Of numerous similar examples, one more may be given. The Common Guillemot (*Uria aalge*) nests on flat ledges and the Puffin (*Fratercula arctica*) in holes, not the other way round, as a result of which each species is restricted to certain types of coast.

FEEDING HABITS.

In Iceland the Harlequin Duck (*Histrionicus histrionicus*) is confined to rocky swift-flowing streams, where it feeds on Ephemerid and Phrygænid larvæ by turning over stones in the streams. The Harlequin is absent from the lakes, in which many other species of duck are common. This is correlated

*See for instance Nicholson [16], Ticehurst [18].

not with its specific diet but with its specialized feeding habits. Hugh Wormald informed me that they are the hardest of all ducks to rear in captivity, as the ducklings "swim about poking their heads under every inequality in the ground under water and are extremely difficult to get to eat anything". Once this peculiarity was realized, they were successfully reared on ant pupæ, freshwater shrimps and insects, a by no means specialized diet. But this habit would clearly prevent successful breeding in the lakes; a psychological restriction.

SONG PERCH.

In south-eastern England the Tree-Pipit (*Anthus trivialis*) often occurs in a habitat identical with that of the Meadow-Pipit (*A. pratensis*) provided at least one fairly tall tree is present. The tree is used neither for feeding nor for nesting. The Tree-Pipit occurs away from trees outside the breeding season, and in a tree-less locality I have found one using a telegraph pole. The tree is used solely in song, but nevertheless is an essential element in the bird's habitat. It is interesting that the Meadow-Pipit has a very similar song but normally dispenses with a tree, though occasionally using one when present. Lack and Venables [12] relate a similar example for the Stonechat (*Saxicola torquata*). Others could be given, and probably in most species which sing from a high perch, a song post is an essential of the breeding habitat, even when trees or bushes are used for no other purpose.

HABITAT SELECTION.

Habitat selection illustrates a more general, and probably the most important, influence of the psychological factor on bird distribution. In many land plants and marine animals, dispersal is effected by chance scattering. Those seeds or embryos which happen to encounter a favourable habitat flourish, and the rest die. But in birds, the procedure is different. When the summer visitors arrive in England in the spring, they do not settle in all types of habitat and attempt to breed, but each species proceeds to its own specific habitat, in much the same way that each species will later select a nesting site of the specific type. Clearly, in birds, each species (instinctively) selects its habitat, in contradistinction to plants, in which the habitat selects the species.

Habitat selection is of value since it means that the bird will settle in a habitat similar to the ancestral one, usually, therefore, a favourable one. One might expect recognition of the specific habitat to depend on the visually prominent, and

not necessarily the essential, features of the habitat. An otherwise favourable habitat which lacked these recognition features would not be colonized, and the chief evidence for a psychological factor in habitat selection is the absence of species from habitats apparently well suited in essentials but not in superficial appearance. For instance, what prevents the Reed-Bunting (*Emberiza schoeniclus*) from breeding in the typical habitat of the Yellow-Bunting (*E. citrinella*) and *vice versa*? What normally restricts the Rock-Pipit (*Anthus spinoletta petrosus*) to the rocky foreshore, while the Meadow-Pipit breeds on moorland? What restricts the Wood-Warbler (*Phylloscopus sibilatrix*) to woodland areas almost devoid of undergrowth? In the last case, food, nesting sites and song perch seem clearly ruled out. Howard [5] describes how Wood-Warblers returned to a locality a second year but soon departed, a procedure which could be correlated with an increase of the undergrowth and nothing else. For further examples, see [10, 11], and more could be given. Brock [1] seems the first to have realized the importance of "environmental bias" in bird distribution, and soon after the present writer's first publication [10], Moreau [14, 15] independently put forward similar views on the importance of "subjective factors" (to my mind an unsatisfactory term) from a study of distributions in Tanganyika. Finally, Howard [6], from a quite different approach, that of territory, concludes that a bird knows its natural home, such knowing being inherited, very few mistakes being made.

Apart from habitat selection, three explanations have been put forward for the often marked differences in distribution between closely related species: food, differential adaptation and inter-specific competition.

FOOD.

It is often assumed that a species is limited to a particular habitat because its food is so restricted, but the reverse explanation may be the true one, i.e., the bird is limited to particular foods because its habitat is restricted. For example, Jourdain [8] notes that the sole difference between the food of Reed- and Yellow-Bunting is that the former eats mainly *marsh* plants and insects, the latter those of drier situations. Since both species have such a varied diet, one cannot suppose that this slight difference in food could cause the marked difference in distribution; it is clearly the other way round. Similar considerations apply to many other cases of distribution. The evidence of Collinge [2], Jourdain [8], McAtee [13] and others, shows that most birds have an extremely

varied diet. But food preferences undoubtedly exist, and at times limit distribution. Thus Formosof [3] has shown the dependence of the Siberian Nutcracker (*Nucrifraga caryocatactes macrorhynchus*) on the cedar nut*, and Howell [7] that of the Everglade Kite (*Rostrhammus sociabilis plumbeus*) on a particular snail. But such instances are uncommon, and leave the cases particularly under discussion completely unaccounted for.

DIFFERENTIAL ADAPTATION.

Structural differences not infrequently occur between closely related species. For instance, the hind claw of the Tree-Pipit is shorter and more curved than that of the Meadow-Pipit. In this and other cases the structural difference may well be adapted to the habitat, but it does not follow that the adaptation is itself the cause of the difference in distribution. *A priori* it seems more probable that, in most cases at least, the difference in distribution preceded the adaptive difference. And there are many closely related species in which such adaptive differences have not been described and may well not exist. Adaptation will obviously account for many limits to distribution, for instance, the restriction of aquatic birds to water, but seems quite inadequate to account for many distributions, particularly those of closely related species under discussion.†

INTER-SPECIFIC COMPETITION.

Possibly in some cases, closely related species are differentially adapted to their respective habitats to an extent sufficient to mean that, if their distributions were left to competition, each would be more successful in its present habitat, though there is no definite evidence for this, and it seems unlikely to apply to most cases. But there is no evidence that inter-specific competition of the type required by this view occurs. Further, this is quite inadequate to explain why the species do not normally *attempt* to breed outside their own habitat, an objection which also applies to the other two alternatives.

*Cone of *Pinus cembra sibirica* Mayer.

†In a valuable paper on habitat distributions, Palmgren [17], attributes the restriction of the Goldcrest (*Regulus r. regulus*) to conifers to the absence of a leg muscle present in the Willow-Tit (*Parus a. borealis*) which occurred in both coniferous and broad-leaved trees. This seems more likely to be a family or generic difference, and before his conclusion can be accepted the Firecrest (*Regulus ignicapillus*), which is typical of broad-leaved trees, and the British Goldcrest (*R. r. anglorum*), which regularly feeds in broad-leaved trees, should be examined.

DIFFICULTIES OF HABITAT SELECTION.

It therefore seems probable that each species selects its own habitat, guided by recognition features which are not necessarily in themselves essential to its existence. But habitat selection of this type is an extremely difficult factor to investigate. First, once the principle has been accepted, there may be a tendency to invoke it for any case of distribution for which there is no ready explanation, and its existence is almost impossible to test directly. Secondly, though it may be the factor preventing a species from attempting to breed in a particular habitat and may in some cases (e.g., the Wood-Warbler cited) be the sole factor involved, in other cases there may also be other factors which would effectively prevent successful colonization if the bird did attempt to do so. Habitat selection being admitted, the presence of these other factors might be overlooked. Thirdly, it is not a factor capable of much analysis. Probably the bird recognizes the habitat "as a whole" or by a combination of features, not by any one taken singly. In the Wood-Warbler a habitat exists similar to that occupied by the bird save in one particular, namely, increased height of undergrowth, hence one of the features essential to the bird's recognition can be determined. But such cases are rare.

The problem of why closely related species so often select different habitats is of great interest, but any answer must, in the present state of our knowledge, be extremely speculative. I have attempted [10] an explanation for certain Passerine species, but this need scarcely be repeated here. In brief, it is suggested that the conditions of habitat selection may, themselves, have led to the segregation of species in some cases.

VARIATIONS FROM THE NORMAL.

Just as individual birds occasionally build a nest that is atypical for the species, so they occasionally break away from the specific nesting site, feeding habit or habitat. This sometimes enables them to breed in areas which would otherwise be uncolonized. For example, Ticehurst [19] notes that on the shingle area of Dungeness, where its usual nesting sites are absent, the Wheatear (*Ænanthe æ. ænanthe*) nests under tins, and even under the roots of a gorse bush or in a depression in the open. Other cases could be mentioned, and as an instance of breeding outside the typical habitat, Harrisson and Lack [4] found that the Rock-Pipit bred on rocky moorland away from the shore on St. Kilda. That such local or abnormal occurrences are often successful is

further evidence that the restricting factor was psychological and not a direct environmental factor. One must probably expect such occasional modifications where a behaviour factor is involved, and they add one more difficulty to the investigation of psychological factors.

OTHER ASPECTS OF THE PSYCHOLOGICAL FACTOR.

The writer has been specially interested in habitat distributions. But the psychological element also comes into other fields of bird distribution. As is well known, many species tend to return to breed in the locality where they were reared. Probably this *habit* alone has been sufficient in many cases to promote segregation, leading to the formation of geographical sub-species. Physical barriers undoubtedly assist such segregation, but in many cases are, in themselves, insufficient, and could readily be surmounted by such mobile animals as birds. Indeed, one sub-species may even pass regularly through the breeding grounds of another on migration, as in the case of the White Wagtail (*Motacilla a. alba*) and Iceland or Greenland Wheatear (*Ænanthe æ. leucorrhœa*) in Britain. In these last cases the factor primarily limiting distribution is clearly psychological.

In quite another field, the habit of aggressive territorial behaviour at times sets a limit to the density of breeding pairs below that which essential requirements would have permitted, as shown, for example, by Venables and Lack [20] for the Great Crested Grebe (*Podiceps c. cristatus*), in which one pair claimed a much larger territory than any others.

Finally, the psychological factor influences those factors which are apparently most definite. The limits of temperature fatal or deleterious to a bird can be measured experimentally, but, as Kendeigh [9] has pointed out, birds tend to move elsewhere before these temperatures become operative. The same applies to the quantity of food needed by a bird. Discomfort is often the important factor in the field, and this cannot readily be measured.

SUMMARY.

Various environmental factors directly limit bird distribution, e.g., food, nesting sites, natural enemies, climate. But psychological factors are also important. Birds react to discomfort, which modifies the direct effects of starvation and adverse climatic conditions. Aggressive behaviour may limit the population below that which food and nesting sites could support. The habit of returning to breed where reared causes desertion of other suitable areas frequented on migration. Birds keep to specific nesting sites, feeding habits

and song perches, and will rarely modify them. Most important, each species instinctively selects its habitat, in which it is probably influenced by the visually prominent, not necessarily the essential, features.

Psychological factors are extremely difficult to investigate experimentally, and to analyze, and their existence cannot be established in the convincing way that the effects of direct environmental factors can be demonstrated. But though extreme caution must be taken in postulating them, their importance in modifying bird distribution is undoubted, and they severely complicate all investigations of the factors limiting bird distribution.

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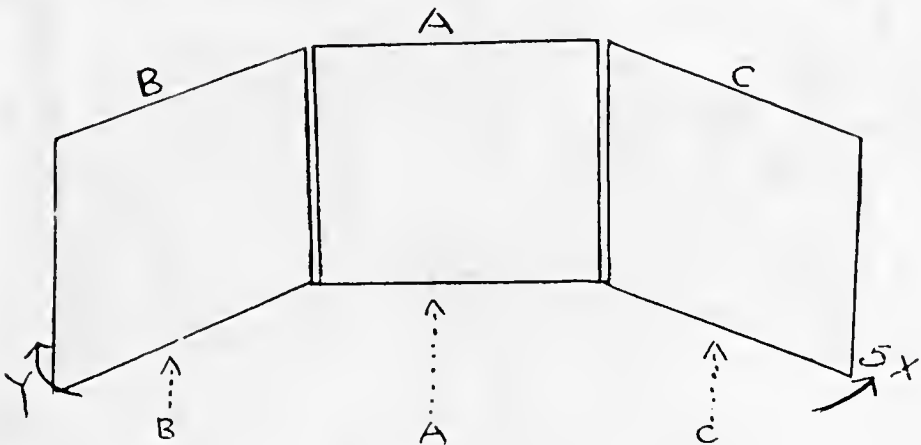
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AGGRESSIVE DISPLAY OF BIRDS BEFORE A LOOKING-GLASS.

BY
GEORGE BROWN.

EARLY in April of this year I placed a triple looking-glass on the lawn in front of my study window in Berkshire to find out, which birds, among the common birds of a garden, would be likely to display, or to attack their own reflection in the glass.

The mirror was a three-sided one, so that a bird approaching the centre glass A would also see itself reflected at B and C.



The glass had hardly been down half an hour or so, before a male Pied Wagtail (*Motacilla a. yarrellii*) proceeded to display in front of the mirror, and to fight its own reflection for two or three hours on end, and it monopolized the whole field of reflection, attacking first one side, and then the other side whilst the female, most of the time, walked around looking on and generally seemed to be feeding quite unconcernedly. Whilst especially displaying its black chin and throat, the Pied Wagtail pecked and struck continuously at its own reflection, and whilst doing so at B or C, it often ran round the corner of either X or Y expecting to find its rival there, and its apparent attitude of blank astonishment at finding no rival there, was very interesting to watch. The bird almost at once returned to B or C again, and started displaying afresh. Often whilst attacking itself full on at A, it would fly on to the top of A, and look over the other side, only to find no rival, and so back it would go, and at itself again. At the end of about 3 hours or so, I folded up the glass as I thought the bird had had about enough of it, and

it might hurt itself—whereupon not seeing its rival any more, it at once joined its mate, which was then sitting and waiting patiently on the roof of the house.

The next time I put the glass out it was immediately attacked by a male Blackbird (*Turdus m. merula*). This bird fought itself with beak and claw, but it used its beak more so than did the Wagtail, and frequently crouched something like a Ruff (*Philomachus pugnax*) crouches in display, before making a determined strike at its shadow. Like the Wagtail, it was very interesting to see this bird run round the other side of B and C, to attack its enemy at X and Y, only to find nothing there to attack. This male Blackbird attacked itself for hours continuously, till it became so tired I could almost pick it up, so I folded up the glass, to stop it doing itself harm; yet I never saw the female even bother to look at the glass though she was quite close by most of the time. Again I expected a Robin (*Erithacus r. melophilus*) which was nesting quite close at hand, to go to the glass and display, but it never did. This Robin appeared to take quite an interest in the Blackbird's efforts, and would hop around watching, for some minutes at a stretch, and although it hopped quite close to the glass, I never saw it at all put out or to show the least sign of display. This was to me unexpected, for I had banked on a Robin displaying before any other species. When I moved the glass to another part of the garden, the same display took place by another male Blackbird almost at once, though the female only hopped about near at hand and never once approached the glass.

The only other bird I saw attack the glass and attack it again and again continuously was a male Great Titmouse (*Parus m. newtoni*). In many ways the Great Tit was the most persistent in its attack of all three kinds of birds, continually displaying its black chest, and fighting itself especially with its beak for hours on end, so that eventually, to save the bird from itself, I had to remove the glass.

This experiment was carried out for a day or two at the beginning of April this year. By the end of April the urge to the Blackbird to attack itself had waned considerably, and during May, when I had the looking-glass out in the garden continuously, I never saw any bird take any notice of it at all. The interesting point to my mind is that all the three types of bird that attacked themselves were birds with a good deal of black about them. The Wagtail and Great Tit continuously displayed their black chests, whilst the Blackbird crouched and displayed both its body and bill.

RECOVERY OF MARKED BIRDS.

COMMUNICATED BY

E. P. LEACH.

Hon. Sec., Bird-Ringing Committee, British Trust for Ornithology.

No.	Ringed.	Recovered.
Gannet (<i>Sula bassana</i>).		
RINGED AS NESTLINGS.		
114352	Ailsa Craig, 1.8.34, by Lord Dumfries.	Luce Bay (Wigtown), 5.6.37.
118425	Ditto	29.7.35. Casablanca, Morocco, —.2.37.
120314	Bass Rock, 4.7.36, by Midlothian Orn. Club.	Amrum, N. Frisian Is., Winter, 1936.
119005	Ditto, —.7.36, by Robinson.	H. W. At sea, 59° 15' N., 4° 20' W., 20.3.37.
119063	Ditto	—.7.36. Cap Cantin, Morocco, 20.12.36.
115573	Grassholm, 17.7.34, by Wontner-Smith.	C. Newquay (Cornwall), 25.2.37.
115165	Ditto	17.7.34. Boulogne, France, 27.1.37.
116954	Ditto	17.7.34. Arcachon (Gironde), France, 6.2.37.
115008	Ditto	17.7.34. Oran, Algeria, 9.2.37.
115697	Ditto	17.7.34. W. Coast Morocco, —.4.36.
115163	Ditto	17.7.34. Where ringed, 2.6.37.

RINGED AS FULL-GROWN.

113000	Grassholm, 12.6.34, by Lockley.	R. M. Where ringed, 2.6.37.
113040	Ditto	17.7.34. Aveiro, Portugal, 27.12.36.
114674	Ditto, 28.6.36, by Bird Obs.	Skokholm Lorient (Morbihan), France, —.2.37.
116109	Ditto, 17.7.34, by Smith.	C. Wontner-Smith. At sea, 51° 12' N., 7° 00' W., 26.5.37.

Manx Shearwater (*Puffinus p. puffinus*).

RX.3656	Skokholm (Pem), 27.9.36, young, by S. Marchant.	Skomer (Pem), 16.5.37.
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Stock-Dove (*Columba ænas*).

RINGED AS NESTLINGS.

RECOVERED WHERE RINGED.

RX.4384	Shipley (Yorks), 26.7.36, by C. Wontner-Smith.	—.2.37.
RX.4386	Ditto, 24.8.36.	—.2.37.

RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

Shipley (C. Wontner-Smith).			Gt. Budworth (A. W. Boyd).		
No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
IRT.7040	29.4.34.	1935, 1936. 21.3.37.	RS.2008	3.5.34.	13.7.36.
RV.8922	13.4.36.	22.3.37.	RS.2091	13.6.35.	1936, 1937.
	(Mates in both years.)		RS.2093	15.6.35.	14.3.37.
RV.7209	19.4.35.	13.2.37.	RV.9031	31.7.35.	15.3.37.

Turtle-Dove (*Streptopelia t. turtur*).

RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

Gt. Budworth (A. W. Boyd).

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
RR.4548	24.7.31.	24.5.32, 6.7.35.	RS.2021	23.7.32.	30.7.36.
RR.4569	8.6.32.	26.6.34.	RS.2095	28.6.35.	4.8.36.
RR.4582	27.6.32.	9.7.34.	RV.9028	24.7.35.	2.8.36.
			RV.9032	6.8.35.	31.7.36.

No.	Ringed.	Recovered.
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Oyster-Catcher (*Hæmatopus o. occidentalis*).

RW.6432	Newton Arlosh (Cumb), 20.7.35, young, by R. H. Brown.	Morecambe (Lancs), 28.2.37.
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Ringed Plover (*Charadrius h. hiaticula*).

ON.55	Loch Fleet (Suth), 6.7.36, young, by E. Cohen.	Dunrobin (Suth), 3.2.37.
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Lapwing (*Vanellus vanellus*).

RINGED AS NESTLINGS.

RECOVERED AWAY FROM WHERE RINGED.

AS.2777	Cock Bridge (Aberdeen), 9.6.35, by H. J. Moon.	Kilmacolm (Renfrew), 21.2.37.
AS.2716	Glenorchard (Stirling), 29.5.35, by J. Bartholomew.	L. Gara (Sligo), 29.12.36.
205967	Barnard Castle (Durham), 28.5.36, by H. J. Moon.	Southport (Lancs), 16.1.37.
AN.9223	Ullswater (Cumb), —.5.32, by H. J. Moon.	Newmarket (Clare), 27.1.37.
AS.2102	Penrith (Cumb), 7.5.35, by H. J. Moon.	Ainstable (Cumb), 25.4.37.
AS.9758	Shap (Westmor), 10.5.36, by H. J. Moon.	Mullinahone (Tipperary), 20.1.37.
AS.4563	Sedbergh (Yorks), —.6.35, by H. J. Moon.	Preston (Lancs), 23.1.37.
AS.9904	Ingleton (Yorks), 15.5.36, by H. J. Moon.	Boston Spa (Yorks), —.2.37.
AP.1710	Ditto, 25.6.32, by Mrs. Morley.	Bolton - le - Sands (Lancs), —.1.37.
AR.9901	Laugharne (Carms), 28.4.36, by J. F. Thomas.	Kilteely (Limerick), 9.2.37.
203590	Ditto	3.5.36. Ushant, France, 14.3.37.

RECOVERED WHERE RINGED.

AP.1641	Glenorchard (Stirling), 31.5.33, by J. Bartholomew.	11.4.37.
AR.6452	Wilmslow (Ches), 30.5.34, by E. Cohen.	29.3.37.
AS.5588	Ditto, 1.5.36.	24.1.37.
AS.9030	Newbury (Berks), 6.6.36, by G. Brown.	—.4.37.
AN.3764	Ditto, 19.5.32.	—.5.37.
203761	Marlborough (Wilts), 2.5.36, by British Empire N.A.	15.11.36.

Redshank (*Tringa t. britannica*).

GM.780	Weybridge (Surrey), 16.7.34, young, by P. Hollom.	Eton (Bucks), —.2.37.
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No.	<i>Ringed.</i>	<i>Recovered.</i>
Curlew (<i>Numenius a. arquata</i>).		
RINGED AS NESTLINGS.		
RS.1917	Almondbank (Perths), 12.6.34, by Lord Mansfield.	Crinan (Argyll), 1.5.37.
25842	Penrith (Cumb), —.6.29, by H. J. Moon.	Hollymount (Mayo), 2.2.37.
400957	Pooley Bridge (Cumb), 28.5.35, by H. J. Moon.	Rhyl (Flint), 12.1.37.
RV.3096	Langwathby (Cumb), 7.6.36, by H. J. Moon.	Where ringed, 3.3.37.
AB.5929	Shap (Westmor), 26.6.36, by H. J. Moon.	Ravenglass (Cumb), 6.2.37.

Snipe (*Capella g. gallinago*).

S.8228	Rusland (Lancs), 15.5.30, young, by the late C. F. Archibald.	Where ringed, 17.4.37.
OB.401	Enniskillen, Ireland, 15.5.36, by A. Bracken.	Ditto, 28.10.36.

Woodcock (*Scolopax r. rusticola*).

RINGED AS NESTLINGS.

RECOVERED AWAY FROM WHERE RINGED.

R.4516	Ellary (Argyll), 20.7.31, by M. Portal.	Carse (Argyll), 1.1.37.
200519	Ben Rhydding (Yorks), 25.5.36, for British Trust Orn.	Harewood (Yorks), 13.1.37.

RECOVERED WHERE RINGED.

202346	Forglen (Banff), 10.7.36, for British Trust Orn.	29.1.37.
203309	Aberlady (E. Lothian) 28.4.36, by G. Charteris.	28.3.37.
203331	Ditto, 2.5.36.	23.1.37.
203315	Ditto, 7.5.36.	9.4.37.
AP.6052	Holker (Lancs), 27.4.34, by Col. Porritt.	14.1.37.

Sandwich Tern (*Sterna s. sandvicensis*).

RINGED AS NESTLINGS.

AS.7473	Firth of Forth, 6.8.36, by Mid- lothian Orn. Club.	Temma, Gold Coast, 6.2.37.
AS.5772	Farne Is. (Northumb), 2.7.36, by Mrs. Hodgkin.	Trapani, Sicily, 31.1.37.
AS.9388	Ravenglass (Cumb), —.6.36, by H. W. Robinson.	Benguella, Angola, —.11.36.
AR.7239	Ditto —.6.34.	Durban, Natal, 12.3.37.
W.2438	Walney I. (Lancs), 15.6.27, by H. W. Robinson.	Ada, Gold Coast, —.5.36.
P.9775	Ditto 28.5.33.	Ditto, —.5.36.
AS.9642	Ditto 21.6.36.	Madingou, Middle Congo, 11.11.36.
AS.9674	Ditto 10.6.36.	Benguella, Angola, —.11.36.
AR.2111	Salthouse (Norfolk), 19.6.33, by Oxford Orn. Soc.	Yarmouth (Norfolk), 15.7.37.
AP.8253	Ditto, 15.6.34, by R. M. Garnett.	Keta, Gold Coast, —.12.36.
AS.4314	Ditto 25.6.35.	Ditto, —.12.36.

No.	<i>Ringed.</i>	<i>Recovered.</i>
	Sandwich Tern (<i>continued</i>).	
AS.4372	Ditto	8.6.36. Swakopmund, S.W. Africa, —5.37.
207488	Ditto	14.6.36, by E. Cohen. Keta, Gold Coast, 4.12.36.
207793	Ditto	14.6.36. Temma, Gold Coast, 6.2.37.

Common Tern (*Sterna h. hirundo*).

ZN.336	Blakeney (Norfolk), 19.7.35, young, by J. M. Ferrier.	Ada, Gold Coast, —.11.36.
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Black-headed Gull (*Larus r. ridibundus*).

RINGED AS FULL GROWN.

RV.8245	Littleton (Middlesex), 25.11.35, by P. Hollom.	Uxbridge (Middlesex), 11.4.37.
RT.4668	Ditto	29.1.35. Epping (Essex), 21.1.37.
RW.8643	Ditto	16.3.36. Where ringed, 27.1.37.

Herring-Gull (*Larus a. argentatus*).

RINGED AS NESTLINGS.

AB.2667	Berriedale (Caithness), 10.7.35, by E. Cohen.	County Durham, —.9.35.
404275	Badbea (Caithness), 2.7.36, by E. Cohen.	Workington (Cumb), 24.2.37.
AB.5180	I. of May Bird Obs., 28.6.36.	Grimsby (Lincs), 1.1.37.
AB.7084	Puffin I., Anglesey, 24.6.36, by M. Mitchell.	Hoylelake (Ches), 9.1.37.
AB.6822	Skokholm Bird Obs., 11.7.36.	Penarth (Glam), 13.3.37.
AB.3515	St. Govan's (Pem), 20.6.36, by W. A. Cadman.	Broad Haven (Pem), 2.7.37.
AB.6562	Dungeness (Kent), 14.6.36, by R. G. Williams.	Quiberon (Morbihan), France, —.12.36.
AB.3138	Ballintoy (Antrim), 29.6.35, by T. Kerr.	Troon (Ayr), 1.1.37.

RINGED AS FULL-GROWN.

AB.4838	Littleton (Middlesex), 11.2.36, by P. Hollom.	Saltburn (Yorks), 9.1.37.
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Lesser Black-backed Gull (*Larus f. graellsii*).

RINGED AS NESTLINGS.

AB.4119	Hoy, Orkney, 24.7.35, by Serle & Bryson.	Orkney Mainland, —.3.37.
AE.551	Foulshaw (Westmor), 27.7.29, by H. W. Robinson.	Bowes Moor (Yorks), 11.5.37.
402396	Ditto	27.7.34. Lorient (Morbihan), France, 20.4.37.
AB.5511	Walney I. (Lancs), 14.6.36, by H. W. Robinson.	Off Mauritania, —.2.37.

Great Black-backed Gull (*Larus marinus*).

404035	Hoy, Orkney, 22.7.35, young, by Serle & Bryson.	Brechin (Angus), 3.3.37.
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Kittiwake (*Rissa t. tridactyla*).

RT.8108	Farne Is. (Northumb), 25.6.34, by Mrs. Hodgkin.	Portobello (Midlothian), 23.3.37.
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<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
Razorbill (<i>Alca t. britannica</i>).		
RINGED AS NESTLINGS.		
AB.4725	Skokholm Bird Obs., 2.7.36.	Solva (Pem), 31.3.37.
AB.6668	Ditto 8.7.36.	Biscarrosse (Landes), France, 10.11.36.
AB.6733	Ditto 10.7.36.	Pasajes (Guipuzcoa) Spain, —2.37.
AB.6651	Ditto 8.7.36.	Genoa, Italy, 30.11.36.
Northern Guillemot (<i>Uria a. aalge</i>).		
RINGED AS NESTLINGS.		
AB.7252	Badbea (Caithness), 2.7.36, by E. Cohen.	Kristiansand, S. Norway, 5.2.37.
RW.9151	I. of May Bird Obs., 27.6.36.	Sandefjord, S. Norway, 23.12.36.
23787	Farne Is. (Northumb), 22.6.35, by Mrs. Hodgkin.	Den Helder, North Holland, 18.5.37.
Black Guillemot (<i>Uria g. grylle</i>).		
RV.8866	Eynhallow, Orkney, 9.8.35, young, by C. Wontner-Smith.	Rendall, Orkney, —.4.37.
Puffin (<i>Fratercula a. grabæ</i>).		
RINGED AS FULL-GROWN.		
8 Birds	Orkney, —.6.36, by H. W. Robinson.	Where ringed, —.5.37.
Moor-Hen (<i>Gallinula ch. chloropus</i>).		
AB.8459	Winchelsea (Sussex), 1.11.36, ad., by Brooker and Cawkell.	Henfield (Sussex), 24.2.37.
Coot (<i>Fulica a. atra</i>).		
Or.1782	Orielton (Pembroke), 17.12.36, by S. Greenslade, released 30 miles N.	Market Drayton (Salop), —2.37.

“ MR. ALEXANDER MONIEPENNIE : *Birds of Angus and the Mearns* : 1834 ” AND “ MR. J. PENRUDDOCK'S *Tantivy Times* (ACKERMAN, 1841) ”.

LATE in 1935 there was published *Birds Ashore and A-Fore-shore* by Patrick R. Chalmers and it was duly reviewed in *The Field* (December 7th, 1935, p. 1,356) and in other periodicals.

Mr. Chalmers pays tribute (p. 14) to the information he has culled from “ Mr. Alexander Moniepennie's *Birds of Angus and the Mearns*, printed by Messrs. Black, of Brechin, in 1834,” and to “ Mr. J. Penruddock's *Tantivy Times* (Ackerman, 1841) ”.

I found that there are at least fifteen references to “ Mr Moniepennie's ” work one of which (p. 162) quotes him as recording two Bitterns “ shot on Rescobie Loch, near Forfar, in September, 1842 ”, a disconcerting record in itself as his book was stated to have been published in “ 1834 ”.

My keenness as an ornithological bibliographer caused me to make exhaustive enquiries as to “ Mr. Alexander Moniepennie's ” publication and I consulted not only local libraries but also the authorities at the British Museum, the Scottish National and other Libraries but all without result.

I then wrote to Mr. Chalmers, asking if he could lend me a copy of this book, and he replied :

Did I possess Moniepennie there is no one to whom I'd lend him as soon as to yourself. But I do not and, at the moment, it would be difficult for me to get hold of him for you. I won't forget your wish when the opportunity occurs.

This reply goaded me to fresh efforts but to no avail.

Baffled at all points I counted myself more than fortunate, when Mr. Chalmers paid a visit to my ornithological library, to be able to discuss the matter with him. It came as a surprise to hear from him shortly afterwards, in a letter dated April 7th, 1937, as follows :

I have a confession to make. When you wrote to me, as a stranger, about *Birds Ashore* I did not think it necessary to reply as to Mr. Moniepennie more fully than I did. But since I had the pleasure of meeting you the other day and of enjoying your real kindness and a glimpse of your unique aviary of printed birds, my conscience has been greatly smiting me. And now I am back in the South again and here I sit down to tell you that the book, *Birds of Angus and the Mearns*, and its talented author, are both of them mythical. When I began to write my own book I wanted to find some new material for it and so I evolved Alexander and his excellent work *ad hoc*. No one but yourself (and I've had a certain quantity of correspondence as to *Birds Ashore*) has been interested in *Birds of Angus*

and I hoped that I had got away with it. However, you see that I haven't!

I can't help hoping that you will be glad to have your hunt for the unattainable terminated and that you may therefore be a little inclined to accept my apologies and to forgive and forget.

Your very much obliged,

(Sgd.) PATRICK CHALMERS.

Some months later, when I was in the British Museum Library, I searched for "J. Penruddock's *Tantivy Times*" without success, so I once more wrote to Mr. Chalmers who replied (September 10th, 1936):

My many apologies for having left your note so long unanswered. No such book exists, of course! Sorry again!

Sincerely,

(Sgd.) PATRICK CHALMERS.

Poets (and who will deny that Mr. Chalmers is the favourite sporting poet of to-day) are allowed a certain amount of licence, but to create authors, attribute fictitious works to them and then to quote items from these fictions as facts seems to be asking too much of the licensing authorities.

I regard *Birds Ashore and A-Foreshore* as one of the most readable books of its kind and it is in no sense of either jealousy or spite that I have felt myself called upon to publish my correspondence with Mr. Chalmers. What has been written cannot be unwritten and I can only hope that the publication of this note may save some student of the literature of Scottish Ornithology the protracted and fruitless search I had for the non-existent "Messrs. Moniepennie and Penruddock".

Birds Ashore and A-Foreshore now becomes desirable as a *supercherie ornithologique* comparable with *A list of the Birds that have been observed to breed in the island of Arran, Scotland, since the Year 1835*, by Dr. Martin Barry, M.D., F.R.S., and not only on account of its delightful pictures by Miss Winifred Austin and its author's literary charm.

HUGH S. GLADSTONE.

OBITUARY.

LORD ROTHSCHILD, F.R.S.

(1868—1937.)

LORD ROTHSCHILD, who died at Tring on August 27th, 1937, at the age of 69, may with justice be called one of the last zoologists, a scientist whose interests embraced all classes of animals and extended into botany, who perceived an animal as an entity created by nature and who was an enthusiastic collector and devoted student of mammals, birds, reptiles and lepidoptera. Those who met him in later life would hardly have recognized him in the early photographs of the delicate boy and the slender youth. His appearance had changed with the years, but his great love for nature remained the same all his life.

There is a strong trend towards natural sciences in the family, indeed, national finance, the invention of the house of Rothschild, is part of the life of a nation and therefore part of human biology. Like so many boys, Walter Rothschild, as he was then, had a collection of beetles and butterflies and moths; and being educated at home, near London, and the first son of a millionaire, had ample opportunities and means to go far beyond the few boxes of specimens of the schoolboy. His collections had already become too cumbersome for the houses of his parents when he went to Bonn and later to Cambridge; and in 1888 he acquired in addition Sir Walter Buller's second collection of New Zealand birds, which became the nucleus of a world-famous bird collection. Mounted mammals followed and specimens of other classes of animals were acquired, and in 1889, after he came of age, he built a cottage for his insects and soon after a public museum for the mounted specimens and some additional rooms for the skins. The collections grew rapidly, and as Walter Rothschild had entered the banking firm of Messrs. N. M. Rothschild and Sons in order to study finance, his time for supervision was limited, and the collections became somewhat chaotic. When in 1892 he had bought the Felder collection of insects, containing thousands of types of lepidoptera, Dr. Albert Günther, of the British Museum, strongly advised him to put a reliable scientist in charge, and recommended Mr. Ernst Hartert, who accepted the appointment and came to Tring in October, 1892. Six months later, the present writer agreed to be responsible for the invertebrates. A policy was gradually evolved to the effect that the research collections of birds and lepidoptera should be made as complete as

possible and the public galleries extended. In 1894, Volume I of *Novitates Zoologicae* was issued, a periodical essentially devoted to the publication of papers based on specimens contained in the Tring collections; Volume XL now awaits completion. Contracts were made with many explorers and collectors: Everett, Doherty, Meek, Hose, Klages and a multitude of others, and the collections grew very rapidly.

Walter Rothschild's acquaintance with Sir Walter Buller, and his knowledge of the Ornis of New Zealand, brought to his notice the danger of extermination to which animals and plants are exposed in many lands, and he sent a bird collector to the Sandwich Islands, an expedition to the Galapagos Islands, and warmly supported the creation of Nature Reserves. The *Avifauna of Laysan* and *Extinct Birds* are a result of these activities. His publications on various zoological subjects, frequently in collaboration with the curators of his Museum, or other specialists, became very numerous, particularly on birds and lepidoptera, and many foreign societies elected him as an honorary member. In 1898, the University of Giessen conferred on him the honorary degree of Dr. phil., and in 1899 he was elected a Trustee of the British Museum. He had to attend to many civic duties and sat in Parliament from 1899 to 1910 as Member for Mid-Bucks. In 1908 he gave up finance, for which he had neither liking nor ability, and now found time for longer collecting expeditions in Europe and North Africa, but as he was very nervous at sea, he never went to the Tropics. In 1911 he received the distinction of F.R.S. for his services to the Natural Sciences, and on the death of his father, in 1915, succeeded to the title.

Meanwhile, the collections and library had steadily increased, and fortunately the accommodation also. The last addition to the buildings was a gift from his brother, a large wing for the lepidoptera and the entomological library. Lord Rothschild was very fond of live animals, but though he kept a few at various times, he never attempted to build up a Zoo.

Although as ardent a collector as there ever was, straining his resources to the utmost in order to get what he wanted, and frequently carried away by his enthusiasm, he differed from the average private collector of 40 years ago in placing his collections in the most liberal way at the service of scientific workers of all countries, and these found at Tring much material to study, an extensive library, ample elbow-room and always a cordial welcome from the smiling owner of

all these treasures. Whereas many curators of Museums and private collectors frowned upon the opening of boxes of lepidoptera for study of structural detail, at Tring, morphological research was not only permitted but encouraged, and material freely lent to specialists, a fact which has had a salutary influence on other Museums: systematic zoology has much benefited by this liberality.

Lord Rothschild was reticent by nature, a trait which had been aggravated by his upbringing and which made him disinclined to ask for advice before making decisions. Exposed as he was to exploitation, he suffered some disagreeable experiences as the result of following his own counsel. Another was in store for him, which this time affected his Museum. In 1931 arrangements had been made for sending an expedition to New Guinea to collect birds and lepidoptera, when negotiations had to be broken off because a large debt, unconnected with the Museum and for which he had forgotten to make provision, fell due and he could not see any other way out of the difficulty than by selling the collection of bird-skins. It was a great blow to him, from which he never really recovered; even a short time before his death, when his eyes had already become dimmed and his voice was nearly gone, his mind dwelt on the loss and he once whispered: "I wish I could buy them back".

The Tring Museum now has an aggregate floor-space of nearly an acre and a half, inclusive of the basements for storage. The Research Department contains, besides smaller collections (including 1,400 mammals, nearly 5,000 birds, among them some extinct species not in the British Museum), a large egg-collection and over two million lepidoptera unrivalled for the study of geographical variation and very important for systematics on account of the large number of types (of Geometridae alone, there are over 6,000). In the public galleries are exhibited 2,000 mammals, 2,400 birds, etc., some of the series being better than those of any other museum, notably the 40 anthropoid apes, 62 cassowaries, and more than 140 giant tortoises. All these collections, the library, comprising some 30,000 volumes, and the whole of the freehold property, are left to the Nation.

KARL JORDAN.

NOTES

ROSE-COLOURED STARLINGS IN THE BRITISH ISLES.

THE following reports of occurrences of the Rose-coloured Starling (*Pastor roseus*) have reached us (all the dates are in 1937), and we shall be glad to hear of any other birds having been seen.

YORKSHIRE.—Mr. Ralph Chislett records (*Nat.*, 1937, p. 223) that he and Mrs. Chislett watched one on Spurn Point on August 17th. The pink on the bird and the black crest were clear, showing it to be an adult. It was perched on some rails and flew down to the ground and back again with insects upon which it fed.

NORFOLK.—Mr. Ronald M. Garnett informs us of one (an adult) near Kelling on July 7th (gone on 8th). This bird was feeding on insects in a field of clover which was being cut. A few Starlings were present but it did not mix with them.

CARNARVONSHIRE.—Mr. G. H. Caton Haigh writes of an adult, which was in a garden near Portmadoc from about July 17th. Mr. Haigh saw this bird in a bush of *Berberis thunbergi*, upon the berries of which it appeared to be feeding. The bird was found dead in an emaciated condition on August 17th.

PEMBROKESHIRE.—Mr. A. B. McArthur writes that he saw one on the coast opposite Gateholm on June 19th.

DUBLIN AND LIMERICK.—Mr. C. B. Moffat writes that he has information of a single bird in the outskirts of Dublin and of one about ten miles south of Limerick early in July. Both birds appear to have been adults.

GALWAY.—One, evidently an adult from a sketch sent, was with a flock of Starlings at Kilronan, Aran Islands, on August 10th (Miss Kathleen M. Donnelly).

RED-BREASTED FLYCATCHER SEEN IN WILTSHIRE.

I HAVE recently heard from the Rev. D. Percy Harrison writing from Lydiard Millicent Rectory, Swindon, stating: On August 20th, 1937, about 12 noon, on a small Atlantic pine on the lawn opposite his study window about 10 yards off only, he saw a small bird, which behaved like a Spotted Flycatcher flying down, taking an insect and flying back to its perch, but it had a splash of red on its throat and breast.

“The bird appeared smaller, much slimmer, and of a paler brown on the upper parts than the Spotted Flycatcher. The tail seemed to have the outermost feather on each side white or whitish.” He immediately recognized it as the Red-breasted Flycatcher (*Muscicapa parva*). This is the second specimen (wild) Mr. Harrison has seen. Years ago he saw one in Cornwall. He also examined one in the flesh killed at Tresco, Scilly Islands. F. W. FROHAWK.

[The date is very early for the Red-breasted Flycatcher, and there seems to be no previous record for August.—EDS.]

AQUATIC WARBLER SEEN IN KENT.

ON August 22nd, 1937, Messrs. B. T. Brooker, R. G. Williams, H. A. R. Cawkell and myself were watching waders at Old Cheyne Court, Walland Marsh, Kent, when we noticed a small bird moving about at the base of the reed-edge not many yards from us. At first it appeared to be a rather yellow Sedge-Warbler, but as soon as it came into the open we remarked on the very pronounced pale eyestripes above a dark line through the eyes. As the bird turned and bent its head we noticed a well-marked buff stripe down the centre of the crown. Subsequent observation showed the bird to have distinct striations (more so than the Sedge-Warbler) on the back. The bird was undoubtedly an Aquatic Warbler (*Acrocephalus paludicola*). E. M. CAWKELL.

DIPPER NESTING IN WARWICKSHIRE.

ON April 25th, 1937, whilst walking up a stream near Wootten Wawen, I surprised a pair of Dippers (*Cinclus c. gularis*). From then till July 27th many miles of stream in the district were searched but only one other bird was seen and then not far from the original spot. On July 27th whilst continuing my searches I came across two nests together underneath an old cattle bridge some six miles due north of Stratford-on-Avon; one was undoubtedly an old one; the other had apparently been vacated only recently. The nest was of the usual pattern, moss forming a large part whilst grass and dead leaves made up the lining, the characteristic overhanging entrance was intact in both nests. Considerable search along the same stream failed to reveal any birds either old or young. This is, so far as I have been able to ascertain, the furthest east that this bird has yet nested in the Midlands.

The records of the Dipper for Warwickshire are few and far between. In the *Victoria County History*, R. F. Tomes mentions one being taken on the Leam near Leamington

somewhere about 1875. Birds were rarely taken on the Alne at Alcester before 1904 when the *Victoria History* was published. Tomes refers to immature birds being taken about that time and concludes that they must have been reared there, but the evidence seems hardly conclusive. There are two other definite records, one at Handsworth on January 12th, 1882, and the other at Hay Mill in the Birmingham district in the winter of 1894-5. Since these records I have no further evidence of the Dipper in this county at all.

C. A. NORRIS.

WHOOOPER SWANS IN CO. DONEGAL IN AUGUST.

ON August 18th, 1937, a single Whooper Swan (*Cygnus cygnus*) was seen amongst reeds by a small freshwater loch, not far from Sheephaven Bay. On August 19th it was gone, but a man who had noticed it the previous day told us that it had been found in a distressed condition, apparently unable to fly on the 18th, but had recovered and had flown away on the 19th to a larger freshwater loch a mile or so away. There on August 20th amongst a number of Mute Swans, no less than four Whoopers were observed. They seemed in good condition and no more nervous than the Mutes. Relations were not, however, very friendly between the two species, and there were several disagreements, which may explain the injury which had driven one of the four away to the smaller loch.

The four Whoopers were seen again on August 25th.

All the birds were adults and I was able to approach near enough to see the distinctive bill coloration of the Whooper and the size of the birds compared with the Mute Swans ruled out Bewick's Swan, which is the commoner species in Ireland. The date would seem to be very early for the appearance of the bird.

SIBYL CROPPER.

NOTES ON THE COURTSHIP AND MATING OF SMEW AND GOOSANDER.

MR. P. A. D. HOLLON'S interesting article (*antea*, pp. 106-111) has tempted me to record a few notes made on the above a few years ago.

On February 25th, 1928, at Barn Elms Reservoirs, near Hammersmith, there were 3 adult drake Smews (*Mergus albellus*) and 16 "red-heads" present. The display seen was by a duck only. On one sheet of water there were three "red-heads" with an adult drake. The drake swam away from the others and was followed by a duck. She started "bobbing" as described by Mr. Hollon rising on her tail

with bill touching her breast and dropping back on to the water. This was soon discontinued, for the drake took no apparent notice, and the duck turned aside. (Time 3.30 p.m.—Sunny, clear sky, warm light N.E. wind, slight smoke pall drifting over.)

At Molesey Reservoirs on March 9th, 1929, a duck Smew was seen, followed by a drake. The duck "bobbed" her head with quick jerks, to which the drake replied by dropping his head on to his back with bill pointing skywards. This would compare with the "false drink" of the Goosander, but my impression was that the bill was raised to almost a right angle to the body, higher than in Mr. Hollom's Fig. 3 (p. 108). (Time, 3-5 p.m., bright sun, cold S.E. wind, some ice about; one sheet of water frozen over.)

On January 26th, 1929, at Barn Elms Reservoirs in company with Mr. C. Weeks, I watched part of the courtship display of the Goosander (*Mergus m. merganser*) in a group formed of three drakes and about three or four ducks. The drakes rose on their tails with bills touching their breasts and dropped back on to the water into normal position at varied intervals. The head appeared to be pushed forward slightly before being dropped on to the breast. In between these "bobs", sudden rushes were made and drake lunged at drake, and duck at drake. Once a "red-head" "bobbed" in a similar manner as the adult drakes. (Time between 3 and 4 p.m., sunny, clear sky, cold N.E. wind.)

On February 3rd, 1929, at Staines Reservoirs, courtship display was seen in a group of five drakes and two duck Goosanders. The "bobbing" and "lunging" were indulged in and these were occasionally accompanied by the "fountain" display, in which a drake swimming close to a duck would kick upwards, throwing a spray of water into the air at its rear. The "fountain" display was also given by the drake when either drake or duck were chasing each other. Later two ducks were seen resting on the concrete slope of the reservoir alongside Mallard, Teal and Wigeon. A group of four drakes approached and displayed by "bobbing" and "lunging" before them.

Elsewhere on the same sheet of water a drake and a duck Goosander were swimming near to several Goldeneye and Mallard. The drake circled round the duck and very soon the duck laid her head low on the water with outstretched neck and then raised her tail, pointing it at right angles to her body. She obviously invited copulation, but the nearness of the Goldeneye and Mallard seemed to disturb the drake,

and he swam off ahead, followed by the duck. (Time about 11 a.m., bright sun, cold easterly wind.)

On March 9th, 1929, this time at Molesey Reservoirs in company with the Rev. C. L. Dunkerley, a duck Goosander was seen to stretch herself on the water, with head and neck partly submerged. The drake in attendance dipped his beak to the water and then raised it skywards and dropped it back to normal position. This was repeated but the birds were then disturbed and the display ceased.

In another case a duck was seen to lay her head and neck outstretched on the water and the drake in attendance imitated her. After a short while the drake started to shake his tail vigorously, repeating this at short intervals. The duck then gradually approached and when fairly near raised her tail skywards. The drake circled twice and then clambered on the duck and copulated.

There are many points of resemblance between the displays of the two species, which indeed also resemble those of Goldeneye, etc. Perhaps further watching will show that the Smew also has a "fountain" display. Probably in both species the duck usually takes the initiative in mating.

L. PARMENTER.

DIVING OF THE SHAG.

ON September 5th, 1937, about noon, we watched an adult Shag (*Phalacrocorax a. aristotelis*) diving off the north-east corner of Skokholm Island. The bird was in the lee of the island where the sea was moderate, and was diving in several fathoms of water. We observed the bird leave the rocks and watched every dive until it returned.

In all it dived 54 times, and we measured the duration of each dive, and in 35 instances the length of time spent on the surface. The average duration of a dive was about 53 seconds and between each dive the bird spent 21 seconds on the surface (average). Three dives lasted 10 seconds or under, thirteen lasted over 1 minute. Of these by far the most remarkable was one of 170 seconds. The next longest were of 85 seconds and 70 seconds. It appears that the length of time spent on the surface bears little relation to the length of the dive, for after the dive of 85 seconds the bird spent only 15 seconds on the surface, whereas after a dive of 48 seconds it spent 33 seconds on the surface. It should be remarked, that the longest time spent on the surface (37 seconds) was after the exceptionally long dive already noted.

On about three occasions the bird was seen to rise to the

surface with a fish in its beak, which it swallowed. Once it had an eel with which it struggled for some time, but which escaped. On this occasion the bird was on the surface for 35 seconds.

Of the 54 dives, 45 were made with "the graceful curving leap out of the water" remarked by Coward. The other 9 were made in the manner of a Cormorant—the bird slid quietly under the water.

After the fifty-fourth dive the bird washed, ducking head, neck and back under the water, and splashing with the wings. Several times before it had washed its beak, and once was seen to drink.

It is possible that during the long dive of 170 seconds the bird put its head up unobserved to breathe, but certainly the bird did not rise fully to the surface as after every other dive. There was no boat, nor any other human being within sight to alarm it. Coward timed the dives of the Great Northern Diver at 2 and 3 minutes, and on one occasion a bird "timed for a quarter of an hour was out of sight for 14½ minutes, only remaining on the surface for a second or two at a time". It seems therefore by no means impossible that the dive of 170 seconds recorded by us was made without any rise to the surface.

E. J. M. BUXTON,
R. S. HARKNESS.

NESTING OF FULMAR PETREL ON THE BASS ROCK AND INCUBATION PERIOD.

ALTHOUGH several Fulmar Petrels (*Fulmarus g. glacialis*) have frequented the Bass Rock for three or four springs, it was not until last year (1936) that an egg was laid. It disappeared and was probably destroyed by Herring-Gulls. This year (1937) two pairs laid, but in one case the egg disappeared. In the other the egg was laid on May 26th and hatched on July 9th, making an incubation period of 44 days, as compared with 40 to 41 days in the case of an Orkney bird recorded by me in these pages (Vol. XXX, p. 194). Unfortunately the nestling period of the Bass Rock bird could not be taken for comparison, as the chick perished by falling out of the nest on to a ledge about 18 feet below.

H. W. ROBINSON.

[There are considerable discrepancies in the observed incubation periods of the species. Recent observations by R. Richter give a period of 57 days in one case and between 55 and 57 days in another.—F.C.R.J.]

KENTISH PLOVER IN NORFOLK.

ON September 7th, 1937, on Scolt Head Island, I got within twenty yards of a Kentish Plover (*Charadrius alexandrinus*) and had a good view of it with my field glasses. It was feeding in company with Ringed Plover.

JUDITH M. FERRIER.

ARCTIC, GREAT AND LONG-TAILED SKUAS IN NORFOLK.

WHILE watching on the east end of Scolt Head Island during a strong north to north-west wind on September 10th to 11th, 1937, I saw a large number of Skuas. On the 10th, during a four and half hours watch, I counted forty-two and on the 11th in two hours I saw fifty-one. They were passing chiefly from east to west along the coast and over the sandhills.

There were both dark and light types of Arctic Skua (*Stercorarius parasiticus*), and among them were eight Great Skuas (*S. s. skua*) on the 10th and two on the 11th, while on the 10th I had a good view with my binoculars of one Long-tailed Skua (*S. longicaudus*).

I also saw thirty-five Gannets (*Sula bassana*), and seven Storm-Petrels (*Hydrobates pelagicus*) in the two days.

JUDITH M. FERRIER.

WATER-RAIL BREEDING IN INVERNESS-SHIRE.

IN the *Practical Handbook* it is stated of the Water-Rail (*Rallus a. aquaticus*) that there were few records of nesting in Scotland and all south of the Grampians. It may therefore be of interest to give the following details of recent observations of the bird in Strathspey.

On June 25th, 1936, a female containing eggs was picked up dead in Strathspey. On August 29th, 1936, a young one about three weeks old was picked up dead near the same place.

On August 23rd, 1937, an adult and two young ones were seen in the same district. The young were probably a week or ten days old.

WINIFRED M. ROSS.

[Although records of actual breeding are still apparently scarce and therefore welcome, Miss E. V. Baxter and Miss L. J. Rintoul in their *Geographical Distribution and Status of Birds in Scotland* (1928) give the Water-Rail as resident in Aberdeen, Morayshire (it should have been noted in the *Practical Handbook* that it had been recorded many years ago as breeding several times in Loch Spynie, Elgin) and E. Ross-shire. A few are also resident in the Outer Hebrides.—EDS.]

BIRDS TAKING MOTHS.

DR. J. W. CAMPBELL gives several examples (*antea*, p. 122) of certain species of birds feeding upon moths and the

following additional examples may be given. The yellow underwing moth (*Triphæna pronuba*) is commonly found amongst new-made hay and when the hay is unloaded in a dutch barn the moth is frequently disturbed and on such occasions both the Robin (*Erithacus r. melophilus*) and the Chaffinch (*Fringilla c. cælebs*) have been seen to take it. The Yellow Bunting (*Emberiza c. citrinella*) has been seen to feed its nestlings with the common wainscot moth (*Leucania pallens*) whilst the Wren (*Troglodytes t. troglodytes*) has been seen to feed both this moth and the silver y moth (*Plusia gamma*) to its nestlings.

R. H. BROWN.

SOME BIRDS IN RELATION TO RIFLE-FIRE.

THE following facts are worthy of record in view of the fact that some difference of opinion exists concerning the relationship between birds and rifle-fire.

On a rifle range situated near to the mouth of the Thames a Mallard (*Anas p. platyrhyncha*) has recently (July) been sitting on a clutch of eggs. All the eggs hatched and the nine young together with their mother have since gone to a ditch one hundred and fifty yards away. The nest was built in long grass, at a distance of twenty-five yards from the firing point in the direct line of fire of four rifles, firing several hundred rounds per day. The total length of the range is six hundred yards and firing is carried on throughout the day from Monday to Friday and on Saturday until midday. The rifles are fired either singly or in pairs at intervals of fifteen seconds. In the case of one rifle at least the shots passed directly over the nest. This particular case is by no means the first locally but it is the first time that actual measurements have been taken.

In addition to the Mallard, two pairs of Partridges (*Perdix p. perdix*) have nested at points approximately twenty yards on either side of the Mallard and in a straight line. One nest contained fourteen eggs and the other twelve. Both families were reared successfully and have since been seen running about on the range while shots were passing over their heads. Perhaps it should be added that the Partridges' nests were just a little distance from a low fence running along either side of the range.

Until 1936 two pairs of Lapwings (*Vanellus v. vanellus*) nested on the same range, and in 1935 a Wood-Pigeon (*Columba p. palumbus*) nested in a tree ten yards away from the same firing point.

C. & G. B. THOMPSON.

NINTH INTERNATIONAL ORNITHOLOGICAL CONGRESS.—A provisional programme has now been issued for this Congress which is to open at Rouen on May 9th, 1938, under the Presidency of Professor A. Ghigi. Besides the meetings and receptions at Rouen, there will be short excursions, one of which is to M. Delacour's famous aviaries at Clères, while a long excursion will be made on Thursday, May 12th, in the valley of the Seine. The banquet will be held on May 12th and the Congress will close at Rouen on May 13th. Saturday and Sunday, May 14th and 15th, will be spent in Paris where there will be a reception at the Museum and visits to establishments associated with the Museum. Monday to Thursday, May 16th to 19th, will be devoted to a long excursion to the Camargue. Those who desire to join the Congress should apply for further particulars to Monsieur Jean Delacour, Chateau de Clères, Clères, Seine Inférieure, France.

WAXWINGS IN CUMBERLAND.—As an addition to the notes already given (*antea*, pp. 86-88) regarding the 1937 immigration of Waxwings (*Bombycilla garrulus*) Mr. R. H. Brown sends us details of some in Cumberland. Eight were seen in the neighbourhood of Cumdivock on March 9th, 1937, six on the 13th about a mile away and four on the 24th. Mr. Brown notes that the first flock seen at dusk were sitting motionless with crests depressed, but presently first one bird then another erected the crest and trilled a series of high-pitched, rapidly uttered whistling notes, whereupon the party flew off in a compact group with heavy direct flight like Starlings.

RED-SPOTTED BLUETHROAT IN YORKSHIRE IN MAY.—As the Red-spotted Bluethroat (*Luscinia s. svecica*) is infrequently recorded in spring it should be noted that one was caught in a greenhouse at Whitby on May 13th, 1937 (F. Snowdon, *Nat.*, 1937, p. 195).

REVIEWS.

Bird Behaviour: A contribution based chiefly on a study of the Black-headed Gull. By F. B. Kirkman, B.A., Oxon, pp. 232. 30 plates (Nelson, 7s. 6d. net).

The scope of Mr. Kirkman's work is clearly defined in the sub-title, but the title, which alone appears on the cover, is a little misleading without this essential qualification, since it prepares the reader for something more comprehensive than, in fact, he will find. The book is in fact, a record of intensive study of the Black-headed Gull, extending over many years, and as such is excellent, but the whole 218 pages include no more than about 50 references to other birds, and many of these are mere allusions. It is probably true that the best way to arrive at some understanding of the behaviour of birds is to

concentrate primarily on the intensive study of one or a few forms, but the fact remains that this *is* a study of one species, and the author himself stresses in the introduction that it is not offered as a comprehensive account of bird behaviour.

If we have ventured to criticize the title, however, this must not be understood as in the least degree disparaging the contents of the book; on the contrary it is a most valuable contribution to a fascinating, though difficult, subject. The general picture which emerges, of a creature singularly limited in its capacity to cope with unfamiliar situations, with little elasticity in its inherited behaviour pattern, and yet withal not quite so wholly automatic as the "stupidity" of some of its actions might seem to imply, is very much that with which those who have made a close study of bird behaviour in recent years have become familiar. But the way in which the picture, so to speak, gradually shapes itself before the eyes of the reader from the wealth of careful and critical observational data is extremely instructive, and no one who wishes to take up the study of the behaviour of birds can do better than take Mr. Kirkman as his guide. His observations and experiments have that essential background of sound training in the principles and methods of animal psychology which more dilettante students do not always possess and which provide a very necessary safeguard against the major pitfalls into which the latter are liable to fall.

A list of some of the chapters will give some idea of the scope, and the thoroughness, of the treatment; "settling down in the gullery", "social life in the breeding-season", "nest-making", "feeding the hen and chicks", "fear reactions", "anger reactions", "sex reactions" and others, are descriptive of the normal life of the bird. Others deal with experiments with egg substitutes and with the "egg-rolling" reaction when eggs are displaced out of the nest, as means of getting some insight into the mental equipment of the birds.

We could have wished that the single chapter devoted to a comprehensive discussion of the "Mentality of Gulls" in the light of the author's observations could have been expanded, even at the expense of some curtailment of the mass of what may be called the raw material of observation. Indeed, we feel that in places some judicious abridgement of the raw facts might have been an advantage, and that a corresponding expansion of the parts in which they are vicariously digested for the reader's benefit would have increased the appeal of the book to ornithologists who are not specialists in behaviour.

The author rightly stresses throughout the importance of the famous "Lloyd Morgan principle", according to which no action is to be explained in terms of higher mental processes when a lower one will suffice. We observe in this connexion (pp. 128-133) that Eliot Howard's postulate of a mental "recall", under appropriate stimulation, of things and places outside the bird's sensory field at the moment is considered unnecessary to account, for example, for the bird's return to its territory from more or less distant feeding-grounds. It is argued that in the example mentioned, "It is not strictly necessary to assume anything more than (1) readiness to go elsewhere due to satisfaction of appetite, (2) recognition from the start of the highly significant outer back". There is undoubtedly great force in this argument, though we wonder a little why, when the bird is presumably quite familiar with the ground in all, or at least in a number of, directions round the feeding-ground, one alone should *be* significant unless some vague "recall" of the territory makes it so. A discussion of this intriguing,

but difficult, question would, however, carry us outside the province of a review. We cannot even, as it is, allude to a tithe of the valuable observations and conclusions which the author places before the reader, and we cordially commend his book to all field observers. All bird-watchers, whether deliberately or not, are students of "behaviour" though often rather superficial. Mr. Kirkman's book will help them to make better use of their opportunities. B.W.T.

A Bird Lover's Britain. By G. K. Yeates. Illustrated. (Philip Allan.) 15s. net.

In this book Mr. Yeates takes us into varied types of country in many parts of Great Britain and tells us something of the birds he sees. We thus have chapters on lanes, commons, downs, woods, marshes, streams, lakes, sea cliffs and coast and peat bogs. Mr. Yeates writes in an attractive style and his observations are sound. As he goes along from one bird to another he describes what he sees, and first-hand observation is always of value even if it is somewhat superficial. The book is certainly one to awaken interest as it gives an idea of the birds to be found in very varied types of country and tells the reader something of their habits. Added to this is a fine series of photographs well reproduced. These represent sixty-one different species from a Hedge-Sparrow to a Great Skua. They are all good and some are very good indeed.

A List of Irish Birds, showing the species contained in the National Collection. By G. R. Humphreys. 5th Edition, 1937. Dublin: Stationery Office. 6d.

This "List" which gives the names and distribution and *status* of the birds found in Ireland, is a very careful and excellent piece of work, and must not be lost sight of because of its very modest appearance and price. Comparing it with the last edition produced by Mr. A. R. Nichols in 1924 we find that Mr. Humphreys has not only brought the information up to date with critical thoroughness, but has taken great pains to revise previous doubtful statements.

Since the 1924 List four "vagrants"—Subalpine Warbler, Black-winged Pratincole, Killdeer Plover and Madeiran Fork-tailed Petrel—have been added; three—Holböll's Redpoll, Parrot-Crossbill and Red-throated Pipit—have been removed as the specimens were found to have been wrongly identified; three birds—Short-eared Owl, Gadwall and Black-throated Diver—have been added as Irish breeding species and the breeding of Wigeon, Pintail and Pochard have been placed beyond doubt. Besides these there are a number of minor changes and additions in sub-species which have been determined as occurring. Records of ringed birds are also included. Most of the revisions have been culled from literature, which has been critically examined, but we find also a number of new and apparently previously unpublished items here and there. Among these we note records of Buzzard and Pink-footed Goose, some interesting points on the extension of breeding range and nesting sites of ducks, Woodcock breeding on marine islands, new breeding localities for Gulls, including a Black-headed colony on the coast of Donegal, and one of the Fulmar on the Wexford coast. The history of the Roseate Tern is interesting and there are now six or eight colonies on the east coast and in two of them as many as five hundred pairs have bred in each, in different years.

Mr. Humphreys is to be congratulated on a good piece of work for which ornithologists will be grateful.

LETTER.

THE FUNCTION OF THE GOLDCREST'S CREST.

To the Editors of BRITISH BIRDS.

SIRS,—In concluding his interesting comments under the above title, Mr. David Lack puts several questions (*antea*, p. 83), and a recent opportunity I have had of watching at close quarters the pairing of Goldcrests, enables me to give a reply to one at least of these queries: "Is the crest also used in courtship?"

My observation was made near my home, in the Charente district of south-western France and I am simply translating my notes as they were made at the time:

"1937, April 16th, 7 p.m.—One of the pair of Goldcrests—which proved later to be the hen bird—is in a clump of acacias, under the tall pine trees near the house. The male, which I could hear singing somewhere in the vicinity, flies into the acacia bush. He flies excitedly from shoot to shoot almost in a fury, jumping about like a little demon, and an incredibly large crest, a flame of a beautiful orange-red colour, is raised at short intervals over his head with a vibrating movement when it reaches its full expansion. The female seems unconcerned at first, but soon takes the inviting position and pairing is effected at once, twice in immediate succession, whilst the crest continues to be fully displayed during coition.

The male now flies away, the female remaining in the bushes, but a few seconds later, he comes back again and pairing is effected a third time, with the same full display of the dazzling crest."

"What is the significance of the rather spasmodic autumn singing?" is another question put by Mr. D. Lack. It is rather difficult to answer, and here again I may perhaps record one or two observations. Last year, between September 20th and 24th, after a period of cold north winds, and heavy rain falling on September 19th, I heard the spring notes of the Great Tit and the Chiff-Chaff, the song of the Willow-Warbler and of the Black Redstart. The Blackcap also bursts into song spasmodically at that time of the year and in October.

It is true that the autumn song of both Goldcrest and Firecrest is much more regular and frequent than that of any of the species just mentioned. I have often heard it on a mild and damp morning when the wind is light. A sensation of well-being after a period of drought or cold winds is the only explanation I can suggest for the autumn song of many species of birds.

JACQUES DELAMAIN.



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**REPORT OF THE LITTLE OWL FOOD INQUIRY.
1936-37.****(ORGANISED BY THE BRITISH TRUST FOR
ORNITHOLOGY.)****BY**

ALICE HIBBERT-WARE, M.B.O.U. (Analyst).

REPORT OF THE SPECIAL COMMITTEE.

LATE in 1935 it was suggested to the British Trust for Ornithology that the differences of opinion which had developed regarding the normal food of the Little Owl (*Athene noctua vidalii*) would make it very hard for those responsible to take sound decisions on the question how much, if at all, to protect this species by law. It was represented that a full and impartial inquiry was necessary, and the Scientific Advisory Committee agreed to promote such an inquiry, with the help of Miss A. Hibbert-Ware, M.B.O.U., who volunteered to undertake the heavy work of analysis. As it was clear that an investigation could only be of value if it was carried on according to unquestionably scientific methods, we were asked to serve as a Special Committee to decide upon the most suitable technique and to deal with any difficulties arising on scientific points.

As the course of the investigation and the methods used are fully described in the following pages, we can confine our report within very brief limits. After considering various alternative methods of analysing the material and presenting the results, we agreed upon that which Miss Hibbert-Ware has followed, and are fully satisfied with the scientific accuracy of the facts recorded, and with the validity of the inferences drawn.

In view of the wide currency which has been given to statements that the Little Owl is a wholesale destroyer of game-chicks, poultry-chicks, and song-birds, every effort was made through members of the Trust and personal contacts, through the Press, and through the British Broadcasting Corporation to obtain all possible evidence of harm of this nature traceable to the species. Not all those who had been persistent in repeating vague statements of this nature proved ready to try to substantiate them, and a separate investigation had to be carried out during 1937 in order to give increased scope for the collection of material from game estates and similar areas likely to yield evidence of damage. The outcome of these efforts has been to yield proof of only

negligible destruction of game, poultry or wild birds of all ages, and to show that except in abnormal circumstances Little Owls feed almost wholly upon such insects, other invertebrates and small mammals as can be readily picked up on the ground during the hours of feeding—largely from dusk in the evening to early morning.

To this conclusion one qualification is necessary, and arises from the fact that the investigation was confined to the years 1936 and 1937, when the Little Owl population was definitely below its highest level. During the period of rapid multiplication of the species, which seems to have come to an end some years ago, there may well have been local tendencies to depart from the normal diet owing to the greater competition for food or a relative lack of the kinds usually preferred; this latter condition was, in fact, found to cause deviations in food habits of Little Owls that had colonized open islands or shingle, where the normal diet was unobtainable.

At the present time, however, it is evident that sweeping statements about the damage done by the Little Owl have little justification in fact. Such a conclusion can safely be reached on the evidence of the present investigation, and it may be expected to hold good so long as there is no great alteration in the status or habits of the species. It may be well to add that this verdict must not be interpreted as an expression of opinion in favour of the original introduction of the Little Owl or of foreign birds in general, matters not within our terms of reference.

No one can read Miss Hibbert-Ware's Report without appreciating the enormous amount of careful, arduous and often unpleasant work which has fallen upon her in the course of this investigation, and without being impressed by the number of persons scattered all over the country who have gone to very considerable trouble in order to help in setting this difficult question at rest. It would be out of place here to attempt elaborate compliments to those who have taken part, but they will have the satisfaction of knowing that they have had some share in bringing the methods of science to bear at a point where they were particularly needed and conspicuously absent at the time when this work was done.

W. E. COLLINGE,

J. C. F. FRYER,

F. C. R. JOURDAIN,

N. B. KINNEAR.

(Miss HIBBERT-WARE'S REPORT.)

GEOGRAPHICAL DISTRIBUTION OF THE LITTLE OWL.

LOCAL races of the Little Owl are widely distributed over central and south Europe, N.W. Africa and Egypt to W. Egypt and S.W. Asia. In Britain the bird was introduced from Holland. It belongs to the sub-species *Athene noctua vidalii*. Previously the species had been recorded only as a rare visitor.

HISTORY OF INTRODUCTION AND COLONIZATION OF THE LITTLE OWL IN GREAT BRITAIN.

Charles Waterton (about 1843) attempted to introduce the Little Owl into Walton Park (Yorks) from Rome, having been impressed by the fact that "it is much prized by the gardeners in Italy for its uncommon ability in destroying insects, snails, slugs, reptiles and mice" (Essay on "Civetta"). Apparently this effort was unsuccessful.

Later, other attempts were made in East Yorkshire, Hampshire, Hertfordshire, Northamptonshire and Kent, but only two of the latter were successful. These two introductions were as follows:—

1. In 1889, after several importations Lord Lilford discovered a pair breeding at Lilford, near Oundle (Northants). From that year it multiplied and spread outwards in all directions from county to county.

2. Between 1874 and 1900 Mr. E. G. B. Meade-Waldo also made several importations of the Little Owl at Stonewall Park, Edenbridge (Kent). In 1879 he recorded one breeding pair. By 1900 the bird had become abundant in Kent and had spread into the surrounding counties.*

It appears therefore, that it is from these two centres that the Little Owl eventually spread over the greater part of England and Wales. It rapidly became a bird of evil repute and widespread charges were made against it of serious depredations on song birds and game and poultry chicks. At the same time, food remains in pellets and gizzards showed clearly that a considerable part of its food consisted of rodents and insects, *etc.*, that are detrimental to the agriculturist.

*See "The Spread of the Little Owl from the Chief Centres of its Introduction", by H. F. Witherby and N. F. Ticehurst: *Brit. Birds*, Vol. 1, April, 1908.

ORGANIZATION OF THE INQUIRY.

Accordingly, in 1935, the British Trust for Ornithology decided to undertake a thorough investigation of the economic status of the Little Owl. It was arranged that the food remains of the bird derived from every possible source and every type of country should be examined and analysed* on a very large scale. The investigation was to be numerical, *i.e.*, the animals represented among the food remains were to be counted and collected for future reference. The Report will show that this was very fully done. The one weak point was that, in spite of special appeals being made to them, people interested in game took part in the Inquiry to a very small extent. Accordingly a second investigation was arranged by which the analyst's attention should be completely concentrated on material sent from sites where game and poultry were either preserved or were abundant. This was done during the nesting season of 1937. The following Report embodies the results of these investigations, which were begun in February, 1936, and completed in July, 1937.

It is only by means of careful field work combined with laboratory work that a just estimate can be obtained as to whether an animal is deserving of protection or condemnation. This is especially true of any species of wild life that has been introduced into a country, to live possibly under different conditions from those prevailing in its natural habitat. This Inquiry has been worked with a view to obtaining *facts* about the Little Owl, facts in the field and facts in the laboratory. For this reason it has been necessary to eliminate from the resulting report all pre-conceived notions based on evidence now impossible to verify as certain. The Inquiry has accordingly been restricted to field work, carried on in close touch with laboratory work, covering a period of one and a half years and including two nesting seasons. Evidence about the nature of the food drawn from general correspondence has likewise been confined to this period, though, by a concession, reports for 1935 sent by people interested in game-rearing have been included.

Another reason for this restriction is that the Little Owl appears to be considerably less numerous in some districts than it was a few years ago. It is obvious that the consequent enlargement of the food territory of individual pairs might

*The writer already had a considerable experience in work of this nature, for which see the paper in the *Essex Naturalist*, 1923, Vol. XX, pp. 142-50, on "An Examination of the Gizzard Contents of Certain Birds".

have a marked influence on the nature of their prevalent food. No game preservers, for instance, have recorded more than "possibly six pairs; it is very common" for 1937 whereas it is said that "on one estate in Norfolk 151 were killed in 1926 and 77 in 1928". In order to discover the bird's present economic status, it has been necessary to restrict evidence to what has been proved about it during the period of the investigation.

SCOPE OF THE INQUIRY.

The Inquiry has consisted of two parts: (1) A general investigation for a full year, from February, 1936 to 1937. (2) A special game-chick and poultry investigation from March, 1937, to July 10th.

The General Investigation. 73 helpers sent material to be analysed from 34 counties and 81 localities (Table 1). This material consisted of pellets, nest and larder remains and gizzards. All but a very few of the helpers obtained the material from haunts of the Little Owl known to them and they notified this fact on their labels.

These helpers included a group of 20 regular workers who operated in 15 counties and made a great feature of field work. They studied the habits of the Little Owl with special reference to the problems connected with its food. They sent their records to the writer. Whenever a difficult case involving circumstantial evidence only occurred, they followed it up. They gathered material from nests and holes, clearing them to the base, and collected pellets from known roosting and feeding haunts.

The result of the combined effort of the field workers is that 2,460 pellets have been analysed, the material from 76 nests and holes has been examined and the gizzard contents of 28 Little Owls have been identified. The combined results furnish the numerical data of the investigation.

A large number of correspondents sent records of their experiences of the Little Owl, but no material. These were valuable and have been included in the Report, provided that they belong to the period February, 1936 to 1937. The numerical results of the investigation are, however, exclusively confined to material that has been examined by the writer.

TABLE I.

COUNTIES AND LOCALITIES FROM WHICH FOOD MATERIAL WAS SENT.

PART I.

<i>County.</i>	<i>Locality.</i>	<i>County.</i>	<i>Locality.</i>
1. Bedfordshire	Bedford	18. Leicestershire	Market Harborough
2. Berkshire	Newbury		Lough- borough
3. Buckinghamshire	Olney	19. Middlesex	Hillingdon
4. Cambridgeshire	Abington	20. Monmouthshire	Abergavenny
	Girton		Bassaleg
	Hildersham	21. Norfolk	Old Hunstanton
	Histon		Woodbast- wick
	Knapwell	22. Northampton- shire	Addington
	Milton	23. Nottinghamshire	Bingham
	Longstanton	24. Northumberland	Gunnerton
	Over	25. Radnorshire	Llanbister
	Sawston	26. Shropshire	Ludlow Wellington
	Swaffham	27. Somersetshire	Bruton
5. Carmarthenshire	Landbeach	28. Staffordshire	Trentham
6. Cheshire	Abercorran	29. Suffolk	Barton Mills Brandon Ipswich Lavenham Mildenhall Saxmundham
	Gawsworth		Fetcham
	Warrington	30. Surrey	Godalming Goodwood Limpsfield Wimbledon Common Wimbledon Golf Links Wisley
	Stockport		Woking Burwash Fittleworth Seaford Rye
7. Cornwall	W. Looe		Aldboune
8. Denbighshire	Corwen	31. Sussex	Bredon Hill Malvern Dudley Barnsley Bolton Percy Filey Wakefield
9. Derbyshire	Derby		
10. Devon	Plymouth		
	Roburgh		
11. Dorset	Beaminster		
12. Essex	Chelmsford		
	Harold Wood		
	Hedingham		
	Castle		
	Little		
	Burstead		
	Quendon		
	Waltham		
	Abbey		
13. Hampshire	Shanklin		
(Isle of Wight)			
14. Hertfordshire	Bricket Wood		
	Bushey		
	Heath		
	St. Albans		
15. Huntingdon- shire	Brington	32. Wiltshire	
	Winwick	33. Worcestershire	
16. Kent	Ashford		
	Stockbury		
	Tenterden		
17. Lancashire	Castleton	34. Yorkshire	

NUMERICAL STATUS OF THE LITTLE OWL.

Four sources have been tapped for estimates of the numerical status of the Little Owl from 1935 to 1937.

(1) Eleven of the regular observers have made a census for a half or three-quarter mile radius, from one of the haunts they have had under observation. In several cases this has been very exact, accompanied by a survey map of that part of the district. Hence these results provide a very certain record. Moreover they come from widely separated points of England. (2) Records drawn from correspondents' letters. These have their value in that they are first-hand impressions, not intended for publication, of people interested in the Little Owl. They refer, of course, to localities very limited in extent. (3) Records drawn from the forms sent by Mr. Middleton to be filled in by observers in many parts of the British Isles. It should be understood that some of these forms were collected from the outside edge of the bird's area, more with the intention to discover whether it is spreading northwards and westwards than to find the present numerical status in areas already populated by it. This list is valuable in that it shows that the species is still almost unknown in Scotland, Northumberland, Cumberland and in parts of Yorkshire and Wales. (4) A few Reports are given from Local Natural History Transactions for 1936. In this year, on the suggestion of the British Trust for Ornithology, a number of regional and local societies chose the species for special study.

CENSUS MADE WITHIN (APPROXIMATELY) A HALF-MILE RADIUS.

Milton (Cambs.) : " 2 nests in a $\frac{1}{2}$ -mile radius."

Girton (Cambs.) : " 2 nests in a $\frac{1}{2}$ -mile radius."

Shaugh (Devon) : " Two families within $\frac{1}{2}$ -mile west of Guest House."

Castleton (Lancs.) : " No others within $\frac{1}{2}$ -mile. Mine was an isolated pair."

Osgathorpe (Leics.) : " 3 pairs on this farm of 105 acres, 1 mile square with a ring fence. Little Owl common in Charnwood Forest."

Wellington (Shrops.) : " 4 pairs on this estate. Taking the castle as a centre, all are well within a $\frac{1}{2}$ -mile radius. Little Owl common here."

Ludlow (Shrops.) : One pair per $\frac{1}{2}$ -mile approximately.

Mildenhall (Suffolk) : 2 nests within $\frac{1}{2}$ -mile. No increase during the past 3 seasons in this district.

Limpsfield (Surrey) : 3 nests within a $\frac{3}{4}$ -mile radius. 2 of them were 400 yards apart, the third rather over a mile away. A circle of $1\frac{1}{4}$ -miles radius includes 4 nests.

Seaford (Sussex) : 3 pairs in a radius of $\frac{3}{4}$ -mile.

Wakefield (Yorks.) : " The area surveyed was $1\frac{7}{8}$ square miles. The Little Owl population (breeding pairs) was 3. During the taking of the Census in 1937 an area of $\frac{1}{2}$ -mile radius from each breeding tree was explored to discover additional pairs if possible. None were found."

SUMMARY OF STATEMENTS FROM CORRESPONDENTS' LETTERS.

1. *Little Owl common or increasing.*

- Bucks. (High Wycombe) : Many Little Owls in this district.
 Berks. (Newbury) : Common here.
 Carmarthen (Abercorran) : Increasing among the sandhills.
 Dorset (Evershot) : Numerous.
 Kent (Tenterden) : Common. 2-3 pairs per $\frac{1}{2}$ -mile radius.
 Somerset (Banwell) : The bird is quite common round here.
 Staffs. (Burton-on-Trent) : Fairly common.
 Sussex (Burwash) : Common.
 „ (East Grinstead) : Plenty here.
 Yorks (Bolton Percy, West Riding) : Not uncommon.
 „ (Copmanthorpe, West Riding) : Increased during last 5 years.

2. *Little Owl scarce or decreasing.*

- Berks. (Abingdon) : Have seen none round here.
 Cambs. (Wilburton) : Much less common than formerly.
 Devon (Roburgh) : Have decreased almost to point of extinction.
 Hants. (Ventnor, I.W.) : The last 5 or 6 years has decreased and now I never hear it.
 „ (Shanklin, I.W.) : Not nearly as many as a few years back.
 „ (Swanmore, Southampton) : Scarcer. Here only one pair.
 Kent (Maidstone) : Not many and those almost always in orchards.
 Lincs. (Gainsborough) : Not many.
 Merioneth (Aberdovey) : Decreased during last three years.
 Northants. (Northampton) : Rather scarce in this locality.
 Oxon (Goring) : Fairly scarce. When found, shot.
 Yorks. (Filey, North Riding) : Not in numbers to constitute a menace.
 „ (Leeds, West Riding) : None near Harewood, the district I "work" for birds.

REPORTS ON FORMS COLLECTED BY MR. MIDDLETON IN 1936.

- Anglesey : Still a rare bird.
 Carmarthen (Llangadock) : Only one seen during year.
 Cumberland (Windermere) : None seen in this district.
 Denbigh (Wrexham) : None.
 Devon (Barnstaple) : No Little Owls.
 Hants. (West Wickham) : Little Owls are decreasing in numbers.
 Kent (Charing) : Number seems to be on the decrease.
 Lancashire (Preston) : Never heard of one in the district.
 Montgomery (Welshpool) : None to record.
 Northumberland (Belford) : None.
 Notts. (S. Notts. generally) : Have observed very few.
 Oxon (Woodstock) : None near Wootton.
 Shropshire (Oswestry) : Rarely seen here.
 Somerset (Frome) : Not present in this district.
 Surrey (Camberley) : None in district.
 Sussex (Five Ashes) : Very few to be seen now.
 „ (Crawley) : Numbers now negligible.
 Yorks. (Whitby, North Riding) : Becoming rare.
 „ (Goathland, North Riding) : A great rarity.
 „ (Settle, West Riding) : Never seen or heard in this district.
 „ (Skelmanthorpe, West Riding) : Have only known of two Little Owls in this district during 60 years.
 „ (Skipton, West Riding) : None.
 „ (Kirkby Underdale, East Riding) : Not many.

LOCAL COUNTY REPORTS RECENTLY PUBLISHED.

Berks. : Certainly not increasing (Oxon Report, 1936).

Bucks. : Common and stable in parts. Decreasing in a few (Oxon Report, 1936).

Herts. : Has become comparatively scarce in many districts of W. Herts. (Trans. Herts. N.H. Soc. Report on Birds for 1935).

Oxon : During last seven years numbers seem more or less stable (Oxon Report, 1936).

Somerset : Common. Increasing in Exmoor district.

Though it cannot be inferred from the above lists that the Little Owl is decreasing as a species throughout the British Isles, nevertheless it is clear that it is not nearly so common in some localities as it once was. For the district round Girton the writer can speak with authority, for she has known every nest in a half-mile radius for the past six years. In 1932 there were six ; in 1937 two. Nor in this case is the decrease probably due either to the gun or to building operations, for the gun is seldom used in the district and the previous nest sites were not on land now occupied by houses. Mr. Howard Lancum mentions that at Roburgh (Devon), " Little Owl now appears to be nearly extinct". From the Isle of Wight where the bird was once very frequent, the reports are the same and a study of the lists shows a similar decrease in other localities as in Kent and Surrey. When watching from the train or car, it is a far less common sight than it was a few years ago to see Little Owls perched on posts, tree stumps and telegraph wires.

There is some evidence to show that the Little Owl itself may be largely responsible for this apparent diminution. The helpers had not been asked to give details of the numbers of eggs, or young in the nests they observed, but fortunately several of them did so. Of 17 records received, six nests contained two eggs or young, six nests had three, and five nests had four. As the numbers were usually greater a few years ago,* these figures point to the probable conclusion that the Little Owl is not increasing at the same rate that it did during the first years of its colonization.

* This was confirmed in the following note sent me by the Rev. F. C. R. Jourdain:—

" A point which should be taken into consideration is the diminution in the rate of reproduction which appears to have taken place of late years. From reference to diaries I find that about 1902-5 in Northamptonshire four or five was about the normal clutch, while sets of six occurred fairly frequently, and I have several records of seven eggs. Nine young were reported on good authority in one nest in Derbyshire. At the present time the average clutch is probably about three, and fours are not infrequently met with, so that the decrease in the average number of young reared must be considerable."

It is important to realize that a decrease in numbers may have a distinct influence on the nature of the food of a bird by increasing the amount available to it of the natural food of the species.

THE FIELD WORK OF THE REGULAR OBSERVERS.
(INQUIRY—PART I.)

Table 2 and the notes that follow will show that the general investigation has been of a very comprehensive nature from every point of view. The field workers volunteered their help mainly in response to (1) an appeal from the Trust, (2) a broadcast by the B.B.C., (3) an article in the *Zoo* magazine.

TABLE 2.

THE AREAS WORKED BY REGULAR FIELD OBSERVERS. PART I.		
<i>County and District.</i>	<i>Type of Country and Little Owl Sites.</i>	<i>Game or Poultry near Sites.</i>
1. Berkshire, Newbury.		
2. Cambridgeshire, Longstanton.	Park and field. Feeding haunts of 2 pairs.	Poultry.
3. Cambridgeshire, Milton.	Fen and river meadows. Holes in trees.	—
4. Cambridgeshire, Girton.	Fields by village. Nests and holes.	Poultry.
5. Carmarthenshire, Laugharne.	Sandhills. Grassfields and hedges. 4 feeding haunts.	—
6. Devon, Plymouth (Shaugh).	Farmland. Feeding haunts of 2 pairs.	Poultry.
7. Essex, Harold Wood and Little Bursted.	Farmland (near woods). 3 nests.	Game preserve. Wild game. Poultry.
8. Herts., St. Albans.	Poultry farm. Nest in farm garden.	Poultry on large scale.
9. Lancashire, Castleton.	Estate. Nest in old building.	None.
10. Leicestershire, Loughborough (Osgathorpe).	Poultry farm. Nest against farmhouse.	Poultry on large scale.
11. Leicestershire, Market Harboro' (East Farndon).	Field. Nest.	—
12. Norfolk, Old Hunstanton.	Field bordering game estate. Feeding haunts of one pair.	Game preserve. Wild game.
13. Shropshire, Wellington.	Apley Castle Estate. 4 nests.	Wild game.
14. Shropshire, Ludlow.	Orchard. 2 nests.	Wild game.

<i>County and District</i>	<i>Type of Country and Little Owl Sites.</i>	<i>Game or Poultry near Sites.</i>
15. Suffolk, Mildenhall.	Field. Garden. 2 nests.	Wild game.
16. Surrey, Old Woking.	River meadows. 1 nest and holes.	Wild game.
17. Surrey, Limpsfield and Lingfield.	Woods. 6 nests.	Wild game.
18. Sussex, Seaford.	Downs. Feeding haunts of 3 pairs (or 2).	Poultry on one site.
19. Yorkshire, Wakefield.	Bretton Park Estate. 3 nests and many holes.	Game preserve.
20. Yorkshire, Barnsley (Kexborough).	Park and pasture. 2 feeding haunts.	Game preserve and poultry near one site. Wild game on both.
21. Worcestershire, Dudley (Gornal).	Farmland on Himley Hall Estate. 1 nest and feeding haunt.	Poultry. Wild game.

The numbers refer to the Districts, as do those in the list of Workers, to follow.

THE REGULAR FIELD WORKERS, WITH NOTES OF THEIR WORK.

1. MR. G. BROWN, Newbury. Sent Little Owls at intervals for gizzard investigation.

2. MR. M. GOODCHILD, King's School, Cambridge. Collected pellets regularly from feeding haunts at his home at Longstanton, Cambs., and also at Brington and Winwick, Hunts.

3. MR. K. HUMPHRIES, Milton. Collected pellets and "larder" contents.

4. GIRTON FIELD CLUB. Collected pellets and cleared nests.

5. MR. J. F. THOMAS, Laugharne. Visited 4 feeding haunts very frequently during April to May and August, 1936. Pellets collected were rich in insect remains especially from the sandhills. Sites worked: (1) on inner edge of sandhills, near rough grassland; (2) grass fields and hedges; (3) valley with stream and grass fields.

6. MRS. BABB, Shaugh (Plymouth). Visited two feeding haunts daily, to observe the birds and collect pellets, from July to December, 1936. "The near haunt, $\frac{1}{4}$ mile from the house, was used by 4 fully fledged young birds and parents. They stayed in fields early morning and evening. At night they came on to the moor. This family was on Collard farm. $\frac{1}{4}$ mile away on another farm was another family. The pellets were gathered from granite posts, boulders and trees." These pellets were remarkable for their insect contents and large size.

7. MR. R. WARREN AND BRENTWOOD SCHOOL FIELD CLUB. Mr. Warren made several clearances of 2 nests and holes

at Harold Wood and also interesting observations of food habits. He and his school club also cleared a nest and holes at Little Burstead several times.

8. MR. A. DICKINSON, St. Albans. Sent pellets from nest and also valuable records of observations of Little Owls made on his poultry farm.

9. MR. H. S. L. UTTLEY, Castleton. Collected pellets at intervals from nest in wall of ruined building. "An isolated pair in an industrial district." "I have seen the birds flying about at all times of day."

10. MR. C. H. SMITH, Osgathorpe (Leics.). Sent pellets and material from nest on his poultry farm, together with valuable records of observations made during two nesting seasons.

11. MR. A. BEVIN, Market Harborough. Sent pellets at intervals from and under nesting hole in oak.

12. MISS JOHNSON, Old Hunstanton. Collected pellets and material from a feeding haunt on edge of an estate from September 3rd to end of October, 1936.

13. MR. A. O. ROLLS, Wellington (Shrops.). Made observations on habits and collected material from 4 nests on Apley Castle Estate during two nesting seasons. Wild game abounded round the nest sites.

14. DR. A. H. ZAIR, Ludlow. Sent pellets and records through the nesting season of 1936. "The nest was situated in an orchard surrounded by fields. There were partridges, pheasants and wild ducks in the owls' radius."

15. MR. A. GRANTHAM, Mildenhall. Sent material from 2 nests and haunts from a field and a wooded garden. Constantly spoke of the large numbers of wild game breeding in the field. Made careful observations on Little Owls' habits.

16. MR. D. G. PUMFRETT, Old Woking. Collected much material from a "breeding hole in a willow about 20 yards from the River Wey". The hole was 10 feet from ground and from 18-24 inches long. Frog remains very abundant in nest. Pellets, wings, etc., also sent from entrance to rabbit burrows. Observations were continued throughout the year of Inquiry.

17. MR. K. R. CHANDLER, Limpsfield and Lingfield. Had 5 nests under observation in 1936. Sent copious material from them, finally clearing some of them to the base.

18. MR. J. F. THOMAS, Seaford. Visited three feeding haunts twice weekly (except during holidays) for a full year. "The sites are all chalk valleys with one side steep." One site, the gateway of an old barn, had chickens near by on both sides. Frequently found pellets at the mouth of rabbit holes. The Seaford pellets were remarkable on account of their rich insect contents at all seasons.

19. MR. J. C. S. ELLIS, Bretton Park, Wakefield. Observed the nests and feeding haunts of 3 pairs from March, 1936, to July, 1937, and a fourth site in 1936. These sites were on Viscount Allendale's estate, strictly preserved for game in 1936, not so in 1937. The sites were worked with great thoroughness and with the friendly collaboration of the keepers. Every possible hole was explored, the observer being obliged sometimes to use his fingers as pincers to procure the material therein. Every problem was tackled in the field and discussed by correspondence. Every feather found was examined and identified either by the analyst or at the British Museum. The sites in Haigh Wood, Bretton Park, Hoyland Bank and Estate Office were all the same type of country, and the nests in the first three were in an oak near a running stream or swamp. The fourth nest was not found, though the site was clearly a feeding haunt. One site was 400-500 yards from the Pheasant field, 1936; two were $\frac{1}{2}$ to $\frac{3}{4}$ mile and the fourth was on the edge of it.

20. MISS FALWASSER, Barnsley. In May and June, 1936, collected pellets and food remains from two Little Owl haunts, *i.e.*, at Kexborough and Cannon Hall Park, near Barnsley. These remains showed a preponderance of rodents.

21. MRS. AYRE, Gornal (Dudley). Made observations from April to December, 1936. Was impressed by fact that the young birds followed the cattle as they moved to fresh grazing, finally returning with the cattle. Sent many pellets from and under nest. "The Owls are on the edge of the Black Country. On three sides are slag heaps. Their field is the beginning of open country towards Shropshire. Himley Hall is a mile away. Domestic fowl are reared 50 yards from the nest, a few ducks 200 yards away. Also there are three Partridge nests within a radius of 50 yards from the pellet tree." The Owls' nest was found in a tree in the same place, just after this was written.

THE GAME-CHICK AND POULTRY INVESTIGATION.

(PART 2.)

The investigation consisted largely of the examination of the gizzards of Little Owls shot on game estates (see Table 3). The results are shown in Table 6. Nest or larder contents and pellets were sent from three new localities and from four of the 1936 sites.

The laboratory work in Part II was of a very intensive character. An extremely close search was made with the help of the microscope and reagents for possible hidden traces of game or poultry chicks.

TABLE 3.
DETAILS OF INQUIRY. PART II.

<i>County, District, Sender.</i>	<i>Type of Country.</i>	<i>Material sent for Analysis.</i>
Bucks., Olney. Miss G. Savory.	Grass and woodland. Many wild partridges. A few pheasants.	Pellets.
Cheshire, Wimslow. Mr. E. Cohen.	Farmland, with lap- wings, partridges, snipe, etc.	Pellets and material from "larder".
Cheshire, Nr. Macclesfield. Mr. R. E. Knowles.	Game Estate, (Swythamley).	1 Gizzard.
Derbyshire, Radburne. Capt. W. K. Marshall.	Radburne Hall Estate. No preserving but wild game near nest site.	Pellets and nest material.
Essex, Harold Wood. Mr. R. Warren.	Border of game estate.	Nest material.
Gloucestershire, Lechlade. Mr. H. L. Elwell.	Ampney St. Peter Game Estate.	19 Gizzards.
Herefordshire, St. Weonards. Mr. S. C. Denison.	Treago Castle Game Estate.	2 Gizzards.
Hereford, Garway. Brig.-Gen. T. H. F. Bate.	Game Estate.	3 Gizzards.
Leicestershire, Osgathorpe. Mr. C. H. Smith.	Poultry Farm.	Records of nesting season.
Middlesex, S. Harrow. Mr. G. A. Shave.	—	1 Gizzard.
Shropshire, Bridgnorth. Miss F. Pitt.	Pheasant and par- tridges preserved and poultry reared within $\frac{1}{4}$ mile from field containing nest, site near a 30-acre wood.	2 Gizzards. Pellets from nest.
Shropshire, Wellington. Mr. A. O. Rolls.	Apley Castle Estate (much wild game).	Pellets.
Surrey, Old Woking. Mr. D. G. Pumfrett	Nest in tree in damp meadow. Wild game abundant.	Nest clearance and pellets.
Surrey, Limpsfield. Mr. K. R. Chandler.	Nests in wooded country. Some wild game.	Nest clearance and pellets.
Yorkshire, Wakefield. Mr. J. C. S. Ellis.	Bretton Park Estate.	Pellets and full records of observations.

The general features of the three kinds of material collected for analysis, *i.e.*, pellets, nest and larder contents and gizzards are now described.

PELLETS.

A pellet or food-casting consists of the indigestible parts of the food which are evacuated from the gizzard (stomach) by way of the gullet and bill. A typical owl pellet consists of a neat packet of such objects as fur, feather, bones and the hard chitinous parts of insects.

Typical Little Owl pellets (Plate) are from 3-4 cm. long by 1.3 cm. wide ($1\frac{1}{4}$ - $1\frac{1}{2}$ by $\frac{1}{2}$ inch). They are sometimes considerably shorter or longer but the girth is always much the same. Autumn pellets, composed almost entirely of insects, are frequently over 5 cm. (2 inches) whereas soil pellets containing earwigs, etc., are often less than 3 cm. They are usually rounded at the ends, though occasionally one end is narrowed almost to a thread. As this is very usual with Kestrels' pellets, great care has been taken and if more than one pellet in a batch has shown this feature, the set has been rejected, unless it came direct from a Little Owl's nest. Pellets of the Kestrel have a narrower girth than those of Little Owl and are usually harder and more compact.

No confusion is likely between the pellets of Little Owl and those of any bird except Kestrel. The Little Owl has been found only rarely to swallow stones and never more than one or two. Pellets containing stones have, therefore, all been rejected as those of Crow, Jackdaw or Magpie. Pellets of other species of owls are invariably larger both in girth and length and so gave no trouble, though they were frequently sent as those of Little Owl. (Plate.)

A typical pellet weighs 1.2 to 1.3 grams. It was interesting to find that this was the case, whatever were the constituents. Exceptionally large or small pellets naturally varied slightly from normal weight. All the batches were thoroughly dried and the weights recorded, but as no useful purpose has apparently been served by so doing, the weights are omitted from the Report.

The appearance of a pellet foreshadows its probable contents. A *rodent or bird pellet* is grey and soft. Frequently the fur or feather is so comminuted that it requires a microscope to detect its structure. More often it is distinguishable at once, though both fur and feather may be present in the same pellet. A *game or poultry chick pellet* is quite unlike one composed of any other kind of bird. The absence of grey feather

and the presence of light-coloured down produces a light yellowish brown pellet, different in aspect from all others. Such was the case with all results of the Zoo and Guildford experiments (described later) and with the two pellets from Mildenhall containing a wild game-chick. The down in all these pellets formed a close envelope unlike the soft grey covering found in those composed of other birds.

Insect pellets are either wholly composed of chitinous fragments, in which case they are dark in colour and loose in texture, or more often the beetles, etc., are embedded in a matrix of dung, soil, moss or grass. Usually a rodent and bird pellet also contains fragments of beetles.

To get an accurate numerical record it is necessary to analyse any one gathering from the same site as a batch, not individually. Especially during the nesting season, the jaws of a mouse, for example, may be found in one pellet, the bones in two others and the fur in several. Very careful sorting and pairing have had to be done. Diagnostic parts that are usually present, such as the jawbones and tibia of mammals, humerus and femur of birds, femurs of *Geotrupes* (dor beetle), heads of carabids and staphylinids, elytra and thorax of *Agriotes* (click beetle) have been collected from any one batch, compared with other parts present and then counted. Birds in pellets present a difficulty in that the bill and quills are seldom swallowed, hence though easily recorded as "birds" the species can sometimes not be named. But during the nesting season, the remains of the same bird were generally found in nest, larder and pellets and were therefore identifiable by matching bones in pellets with wings and quills in the other places. A Little Owl usually has more than one pellet-evacuation site. Mr. J. F. Thomas had several for each of the three Little Owls he observed. He visited the spots twice weekly, often saw the bird and frequently found Little Owl feathers amongst the pellets. Occasionally he found some at the base of a post from which he knew that the bird watched for prey. He writes: "Genuine Little Owl pellets are always found under perches with a distinct view, in fact, now when looking for pellets, I disregard all places except where a branch runs parallel to the hedge giving a view of the open. Mr. A. Grant-ham gives a lucid account of the method by which pellets can be located. "In each case I have seen the birds in the locality during the day and have proved that when seen like this they are never far from their general haunts. The next point is to locate the nearest group of large and partly decayed trees. Then a very close search of the ground beneath these usually

results in the finding of pellets. The enclosed pellets are the result of several weeks study in this method as I saw a Little Owl a few weeks ago $\frac{1}{4}$ mile from the actual spot I visited yesterday. It led me to discover some old elms and a grass paddock at the rear of a house. I obtained permission to search beneath these trees and found besides these pellets, the nesting hole containing young birds. I found no pellets around the nesting tree but beneath trees in close proximity.''

(The sitting bird and nestlings evacuate into the nest itself, hence the difficulty of some workers in finding pellets beneath the nest. Also, midsummer herbage often hides any that may have been dropped below the tree.)

During August and September young birds apparently drop pellets on any spot whilst hunting. Large insect pellets of young birds can be found daily on a field in Girton during these months and there are similar records from elsewhere.

PERIODICITY OF PELLET-EVACUATION.

To this problem there is no certain solution to offer. No observer has been able to watch a Little Owl in the act of ejecting a pellet. Mr. J. F. Thomas found six pellets in seven days in a shed on the Downs in March, but others may have been evacuated elsewhere and as the bird deserted the spot no further records were made. Mrs. Babb collected pellets at Shaugh from the same place daily for many weeks, but the young had left the nest, so it was impossible to gauge how many birds were responsible. Captive Little Owls have been proved to evacuate one (or two small ones) daily. From the scanty traces of food in many of the gizzards of birds shot by day, it seems likely that a pellet is evacuated after the night's feeding and before the bird becomes inert by daylight. The immense number of insects that are active by night found in single pellets also suggests that the pellet resulting from the night's feeding is evacuated before day. The number of such insects found in gizzards have only rarely equalled those found in single pellets.

NESTS AND "LARDERS".

Some Little Owls take their larger prey to a hole, such as a rabbit burrow, tunnel among tree roots or a hole in a tree stump and there prepare it for the young. Wings and portions of the bodies of birds and mammals are usually found in such holes. They are known as "larders" but they appear to be primarily used for "carving" purposes. As the freshly procured food is sometimes found in it awaiting use, the term

“larder” is partly suitable but it does not appear to be used for food storage. This subject will, however, be dealt with later in the Report.

Other Little Owls appear to take their food direct to the nest, possibly because there is no suitable hole near at hand. In such cases the nest contents consist of three layers:—

(1) The fresh or partly used rodent and bird food.

(2) Below this are the wings, tail quills and legs of birds (occasionally a beak or head), bones of mammals and frogs and elytra of cockchafers and dor beetles.

(3) Reaching to the base is a thick layer of debris representing the crushed pellets and faeces, sometimes of more than one season, mixed with woody fibre and humus.

It is impressive that in the nest and holes are found the remains of larger prey than usually occur in food castings at other times of year, *e.g.*, large rats and medium-sized rabbits. The largest birds recorded in 1936, namely Mistle-Thrush and Lapwing, also occurred during the nesting season only. Even the beetles, found in large numbers in nest debris, are mostly large species. Cockchafers and dor beetles are the most frequent and stag beetles are not uncommon locally. No proof has been found in the nest contents that delicate food in the form of passerine nestlings, chicks or young rodents is taken by preference as food for the young. All is grist that comes to the mill and the larger the grist the better. Such is the evidence of the nests and larders.

The contents of a nest are not a pleasant sight. One bird makes a big splash and a mass of wings, feathers and legs looks more like a shambles than it really is when pieced together. The following lists of nest contents (Table 4) may be taken as typical of those of most nests, for there is little variety in the food remains found in any of them.

“*Roughage.*”

Strange objects are frequently found in nests and holes, such as horse, cow and goat hair and tufts of feathers of adult poultry fowls. These have probably been collected as “roughage” to clean out the gizzard and to provide the pellet matrix when soft food, such as earthworms, has been used.

It is well known that captive birds of prey must be provided with such objects for health's sake. The presence of a few feathers of large birds in nests and holes when there are no other traces in the form of bones, legs or heads can only be accounted for in this way. For instance, pigeon's feathers are easily obtained almost anywhere on the ground and the

TABLE 4.
CONTENTS OF EIGHT NESTS.

	Lavenham (Suffolk)	Little Burstead (Essex)	Old Woking (Surrey)	Limpsfield (Surrey) Nest 1	*Shanklin I. of Wight	*Radburne (Derby)	*Bridgnorth (Shropshire)	Limpsfield (Surrey) Nest 5
Dates of Clearance	May 16 ,, 27	June 6 ,, 20	June 21 ,, 29	July 7	June 1 1936	May to June, 1937	June 24 1937	June 18 1937
<i>Mammals :</i>								
Rabbit ...	—	2	—	1	—	—	—	1
Rat ...	2	1	1	1	—	—	—	1
Mouse ...	14	—	1	6	1	3	—	1
Vole ...	5	4	3	9	2	2	1	1
Shrew ...	3	1	2	1	—	—	—	—
Mole ...	—	—	1	—	—	—	2	—
<i>Birds :</i>								
Starling ...	7	6	2	5	—	4	1	2
Blackbird	—	3	1	2	—	—	1	1
Song-Thrush	1	2	2	1	1	—	1	1
Mistle- Thrush...	1	—	—	—	—	—	—	—
House- Sparrow	1	2	—	—	—	—	—	—
Chaffinch...	1	—	—	—	—	—	—	—
Skylark ...	1	—	—	—	—	—	—	—
Jay ...	—	1	—	—	—	—	—	—
<i>Reptiles & Amphibians:</i>								
Lizard ...	—	2	—	—	—	—	—	—
Frog ...	—	—	Many	1	—	—	—	—
<i>Insects and other</i>								
<i>Invertebrates</i>								
Melolonthids	—	—	39	64	12	7	8	27
Scarabæids	3	2	1	34	2	10	7	11
Staphylinids	—	1	7	—	—	—	—	—
Carabids ...	61	24	40	52	—	—	—	7
Necro- phorids	—	1	8	2	—	—	—	—
Elaterids	6	2	—	7	2	—	—	—
Curculionids	15	—	9	8	4	—	—	—
Millipedes	Many	—	—	Many	—	—	—	—
Woodlice	Many	—	—	Many	—	—	—	—
Earthworms	Many	Many	—	Many	—	—	—	Many

* Only the upper layer of this nest was collected.

remains of a plucked chicken, so often found near a farm, provide good material for "roughage".

It is clear that nest holes and larder holes should be studied together if an accurate estimate of the food is to be obtained. In most cases the observers have found and cleared both. In such cases the analyst has had to be careful not to count the same bird or rodent twice or even three times. The wings of a bird are frequently found in a larder, the tail quills, legs and sometimes head in the nest and the smaller feathers and bones in pellets in or under the nest. In the same way parts of the carcass of a large rat may be left in the larder, other parts in the nest, whilst some of the bones, including the jaws, may occur in pellets. The parts of the larger prey must therefore be very carefully pieced together. Another difficulty is that feathers undergo rapid deterioration in the nest and may become frayed and discoloured very rapidly, due to both mechanical and chemical action within the nest.

The presence of birds' wings in the nest does not always mean that no larder hole has been used. Mr. C. H. Smith records for the pair under his close observation: "I have been watching the nest hole and also the larder every day. As the four young birds are nearly a fortnight old, all the food is now taken direct to the nesting hole. There has been nothing in the larder for the last four days." He had found that during the earlier stages, including incubation, the larder had been largely used for carving purposes. Certainly in this case the use of a larder marked the earlier stages of breeding. When the parents became extremely busy the food was taken direct to the nest.

THE NEST AFTER THE NESTING SEASON.

The nesting hole continues, at least with some Little Owls, to yield food remains after the young birds have left it. A Limpsfield nest, for instance, that was thoroughly cleared on July 7th showed on September 4th this remarkable assemblage:

Rabbits, 1; Rats, 4; Mice, 5; Voles, 3; Shrews, 2; Starlings, 3; Blackbirds, 1; Song-Thrush, 1; Frogs, 1; (Beetles) Melolonthids, 13; Scarabacids, 4; Staphylinids, 6; Carabids, 829; Necrophorids, 2; Elaterids, 16; Curculionids, 4; Cerambycidids, 7; Lucanidids, 9.

Of the Carabids 705 were the genus *Pterostichus* and almost entirely *P. madidus*.

This list probably marks the transition between the normal food of the nesting season and that of the rest of the year.

It is from August onwards that insects predominate over every other kind of food. It is not known whether it is the juvenile birds or adults or both that use the nest for feeding purposes when its primary function is over nor for how long this practice is continued.

GIZZARD CONTENTS. PARTS I AND 2.

A study of the contents of the 51 gizzards examined during the whole Inquiry shows that:—

(1) There is no striking difference to be found in the contents of gizzards sent from all types of country during Part 1 of the Inquiry and those from game estates in Part 2.

(2) There is an increase in the number of small rodents in Part 2 of the Inquiry. This is common to all material received in 1937, including the districts from which material was also sent in 1936.

(3) One only of the 51 gizzards contained a pellet ready for evacuation, 25 contained enough fresh material to justify the conclusion that a pellet was in process of formation. The other 25 were practically empty. A few particles, mere "left-overs" from the last evacuation, sometimes enabled identifications to be made. Examples of such fragments were the rostrum of a weevil, one pincer of an earwig, the scales of a moth, a few rodent hairs and feather barbs.

Thus there is but little evidence to be obtained from these gizzard contents that the Little Owl is a great day feeder. Nor can these 51 Little Owls, judging from the nature of their last meal, be considered as specially partial to game-chicks or to birds of any kind. But in the opinion of the writer, gizzard evidence though helpful is less satisfactory than that from nests and pellets, as it is limited to the evidence from the last meal only.

TABLE 5.

GIZZARD CONTENTS. INQUIRY PART I. FEBRUARY, 1936 TO 1937.

<i>County and Locality.</i>	<i>Sender, Date, Sex of Little Owl.</i>	<i>Gizzard Contents.</i>
1. Bucks. (Newbury).	G. Brown. Feb. 1st. ♂	Contained 1 pellet composed of 6 earwigs, 4 larvae, 2 <i>Chrysomela</i> , 1 <i>Pterostichus madidus</i> , 3 <i>Staphylinus æneocephalus</i> . Moss.
2. Cheshire (Warrington).	Prof.R.Newstead Feb. 13th ♀	(Killed by telegraph wires.) 2 Field voles (4 lower jaws, etc.). (Analysed by sender.)

County and Locality.	Sender, Date, Sex of Little Owl.	Gizzard Contents.
3. Bucks. (Newbury).	G. Brown. March 13th. ♀	8 beetles (4 <i>Geotrupes</i> , 1 <i>Nebria brevicollis</i> , 1 <i>Staphylinus æneocephalus</i>). Fragments of a Little Owl's feather.
4. N. Wales (Corwen District).	Prof. R. Newstead. April 13th. ♀	1 Field vole. Elytra of <i>Aphodius</i> and <i>Agriotes</i> sp. (Analysed by sender.)
5. do.	do. April 13th. ♀	Remains of 1 Meadow-Pipit. Several elytra <i>Aphodius</i> sp. (Analysed by sender.)
6. Wilts. (Aldbourne).	Capt. W. Brown. May 11th. ♀	4 Woodlice. 1 <i>Geotrupes</i> . 3 Weevils. Other beetles. Setæ of earthworm.
7. Bucks. (Newbury).	G. Brown. May 11th. ♂	102 earwig pincers (51 insects.) 7 <i>Pterostichus madidus</i> , 10 <i>Harpalus æneus</i> , 1 <i>Staphylinus olens</i> .
8. Northumber- land (Gunnerton).	J. Russell Goddard. May 25th. ♀	1 Starling (adult), (sacrum, broken bones, 1 foot, feathers from breast).
* 9. do.	do. May 25th. ♂	2 <i>Pterostichus</i> sp., 1 <i>Nebria brevicollis</i> , 1 <i>Amara</i> sp., 1 <i>Geotrupes</i> .
10. Cambridge- shire (Girton).	N. King. June 1st. Nestling of about 10 days.	Full gizzard. Chiefly cockchafer and <i>Geotrupes</i> , 2 fragments of bone. Moss. Much sand. (Found dead below nest.)
* 11. Essex (Chelmsford).	Miss D. J. Brooks. June 19th. ♂	Head and scales of moth. A few hairs of bat. Gizzard empty except particles on walls.
12. Monmouth- shire (Abergavenny).	D. Carter. July 11th. ♀	3 large caterpillars and some small ones, 12 <i>Pterostichus</i> , 1 <i>Carabus violaceus</i> , 1 cockchafer. (Killed by car.)
* 13. Kent (Stockbury).	K. Humphries. August 7th. ♀	9 beetle fragments (1 <i>Geotrupes</i> , 2 Carabid, beetles, etc.)
* 14. Bucks. (Newbury).	G. Brown. Sept. 3rd. ♀	Millipede rings, 1 earwig, 1 <i>Geotrupes</i> , 2 Carabids, 1 <i>Staphylinus æneocephalus</i> . (Very small remnants.)
15. N. Wales (Corwen District).	Prof. R. Newstead. Oct. 3rd. ♀	Filled with remains of insects, 215 earwig pincers, <i>Pterostichus</i> sp. <i>Geotrupes stercorarius</i> , grass. (Analysed by sender.)
* 16. Bucks. (Newbury).	G. Brown. Oct. 20th. ♂	Empty except 1 Little Owl feather.
* 17. Bucks. (Newbury)	G. Brown. Oct. 20th. ♂	17 earwig pincers (9 insects), 1 <i>Pterostichus</i> , 1 <i>Staphylinus æneocephalus</i> (very small remnants.)
* 18. do.	do. Nov. 11th. ♀	Empty.
* 19. do.	do. Nov. 11th. ♂	Mouse fur and bone fragments, 1 earwig (pincers). (Very small remnants.)

*Empty or with mere traces of food.

<i>County and Locality.</i>	<i>Sender, Date, Sex of Little Owl.</i>	<i>Gizzard Contents.</i>
*20. Nottinghamshire (Bingham).	R. E. Knowles. Jan. 7th. ♂	3 earwigs (pincers and fragments), 2 <i>Phytonomus punctatus</i> , vegetable matter. (Grit with insect particles.) Feather of Little Owl (broken up.)
*21. do.	do. Jan. 9th. ♀	" Nothing save elytra of <i>Amara apricaria</i> and fragments of a Staphylinid beetle." (Analysed by H. Britton, Manchester.)
*22. Monmouthshire (Wye stone Leys).	Brig.-Gen. T. H. F. Bate. Jan. 14th. ♀	2 weevils, 3 <i>Staphylinus anecephalus</i> , 2 other beetles. (Very small remnants.)
23. Suffolk (Saxmundham).	Lord Cranbrooke. Jan. 15th. ♂	1 field mouse (head and shoulders intact. Rest broken up. Stomach of mouse full of corn) 8 larvæ.
*24. Dorset (Beaminster).	Miss G. Lister. Jan. 23rd. ♀	Comminuted beetles. (Analysed by sender).
25. Cheshire (Gawsworth).	R. E. Knowles. Feb. 11th. ♂	1 field mouse (jaws, slice of skull, bones), 1 Carabid, beetles, 1 larva.

RESULTS : *Rodents* in 5 gizzards.
Birds in 2 gizzards.
Insects in 21 gizzards.

TABLE 6.

GIZZARD CONTENTS INQUIRY. PART II. MARCH, 1937, TO JULY.

<i>County and Locality.</i>	<i>Sender, Date, Sex of Little Owl.</i>	<i>Gizzard Contents.</i>
* 1. Yorkshire (Bretton Park Estate).	J. C. S. Ellis. March 16th. ♂	A few fragments of beetles.
2. Monmouthshire (Wye stone Leys).	Brig.-Gen. T. H. F. Bate. March 31st. ♂	Fragments of 1 rat (medium size), 1 earthworm, 3 <i>Pterostichus</i> .
* 3. do.	do. April 6th. ♂	1 small larva, 1 carabid head. (Very small remnants.)
* 4. Shropshire (Bridgnorth).	Miss Frances Pitt. April 9th. ♀	A few grey down feathers, 1 <i>Geotrupes</i> , 1 larva. (Very little.)
* 5. Shropshire (Bridgnorth).	Miss Frances Pitt. April 20th. ♂	Particles of 2 weevils, several minute larvæ, 4 rodent hairs. (Very small remnants.)
* 6. Gloucestershire (Ampney St. Peter).	H. L. Elwell. April 23rd. ♀	Empty except 3 very minute beetle fragments. (Shot 9 p.m.)
* 7. do.	do. April 24th ♀	Fur of small rodent, 3 beetles (fragments). (Shot 7 p.m.) (Very little.)

*Empty or with mere traces of food.

<i>County and Locality.</i>	<i>Sender, Date, Sex of Little Owl.</i>	<i>Gizzard Contents.</i>
* 8. Gloucestershire (Ampney St. Peter).	H. L. Elwell. April 26th. ♀	Empty. (Shot 9 p.m.; bird in poor condition.)
* 9. do.	do. April 26th. ♀	Rodent fur, 1 carabid, particles of beetles. (In good condition.) (Very little.)
* 10. do.	do. April 28th. ♀	A very little rodent fur sticking to gizzard wall. (Good condition.)
11. do.	do. April 28th.	Many insect fragments, a little rodent, 6 earwigs (pincers), fur, 3 carabids. (Poor condition.)
12. do.	do. May 1st. ♀	Feather fragments with grey down, 1 field mouse, 1 <i>Geotrupes</i> , 2 small carabids, many beetle fragments.
13. Cheshire (Swythamley Park).	R. E. Knowles. May 6th. ♀	1 shrew, beetle fragments.
* 14. Gloucestershire (Ampney St. Peter).	H. L. Elwell, May 7th. ♀	A few beetle fragments, a Little Owl feather. (Poor condition. Shot at 7.30 p.m.)
* 15. do.	do. May 7th. ♂	Empty except fragments of one small beetle and a little grit and moss. .3 gram of comminuted whitish feathers. No grey down. No bill or bones. Game-chick? A few carabids.
* 16. Monmouthshire (Wyestone Leys).	Brig.-Gen. Bate. May 14th. ♂	A little fur and flesh of small rodent, fragments of beetles, grass and moss. (Shot 12 p.m.)
17. Gloucestershire (Ampney St. Peter).	H. L. Elwell. May 23rd. ♀	Vole (fur, jaws and a few bones.) (Shot 7-8 p.m.)
18. do.	do. May 21st. ♀	Fur and flesh of small rodent, legs cockchafer, fragment of <i>Geotrupes</i> , grass.
19. do.	do. May 25th. ♀	Cockchafer and other insects.
20. do.	do. May 25th. Nestling.	Cockchafer, click beetle, 2 carabids & others.
21. do.	do. May 25th. Nestlings.	Full of cockchafers and 1 <i>Geotrupes</i> .
22. do.	do. June 6th. ♂	A few small feathers of Black-bird, flesh of same, 11 carabids, 2 click beetles, 1 weevil.
23. Herefordshire, (Treago Castle, St. Weonards).	S. C. Denison. June 10th. ♂	Fragments of cockchafer. (Very small remnants). (Shot 11 p.m.)
* 24. Gloucestershire (Ampney St. Peter).	H. L. Elwell. June 19th. ♂	

*Empty or with mere traces of food.

County and Locality.	Sender, Date, Sex of Little Owl.	Gizzard Contents.
25. Herefordshire (St. Weonards).	S. C. Denison. June 29th. ♂	Full of beetles, 23 heads, etc., of small carabids (e.g., <i>Harpalus</i> <i>æneus</i>), pill beetles, etc.
26. Middlesex (Harrow).	G. A. Shave. June 27th. Fledged young.	2 voles (3 lower jaws & several bones), 1 nestling Lark (legs, 1 wing, feathers), 4 carabids, 1 <i>Geotrupes</i> , grit.

RESULTS : *Rodents* in 11 gizzards.
Birds in 5 gizzards.
Insects in 23 gizzards.

FEEDING HABITS OF THE LITTLE OWL.

It is now clear that the pellets, nest and larder contents and gizzards all show that a toll of rodents, birds and insects is taken by the Little Owl. These will be dealt with later in separate sections. The field observers have, however, worked hard to elucidate certain problems in connection with these three important food items, therefore the feeding habits of the Little Owl as observed by them and corroborated in the laboratory will now be discussed.

(1) Does the Little Owl hunt habitually by day as well as by night? Two of the observers have seen it, through field glasses, at various times of day, pick up from the ground objects too small to distinguish. Others have watched in vain to see this. Almost every correspondent who has seen it take a rodent or bird has mentioned 7 p.m. (summer time) as the hour when it became busy. It seems probable that, especially during the nesting season, it frequently picks up small prey, e.g., worms, insects, etc., during daytime but that rodents and birds are procured chiefly in early evening onwards and again near dawn. Weather, abundance or scarcity of food and other factors may cause differences in the behaviour of individuals in this respect. But even Little Owls must sleep some time during the 24 hours and several observers have surprised them whilst doing so during daytime.

EVIDENCE OF CORRESPONDENTS ON DAYLIGHT FEEDING.

“ They get on the move about an hour before dusk. They seem lazy during the day. I spotted one perched near the trunk of an oak. It was still exactly the same six hours after, and got on the move and alert just as the light was going.” (A. O. Rolls, Wellington, Salop).

“ I don't know how far day hunting is individual but I think that the great majority do sleep more or less till evening. But

I have seen Little Owls on the alert in trees, pouncing down on some insect on the ground or picking over droppings in the road in the middle of the day." (Rev. F. C. R. Jourdain).

"I am certain the daytime feeding of the Little Owl is over-estimated. I have never once seen anything suggesting it round Bretton." (J. C. S. Ellis).

"I certainly think they do it in summer. What else can they be doing when they sit on rails and small trees on my rabbit warren and keep on going down to the ground and up again? I feel sure that here they feed fledged young in daylight, as I see them fly to the young, which call loudly." (H. F. Witherby).

Mr. C. A. Smith endorses this: "The old birds are to be seen hunting for food all day long now that the young birds are a fortnight old. Before the young arrive they are most active just after daybreak, returning to the trees about 7 a.m. (summer time)."

This problem must remain undecided, but it seems likely that Mr. Smith's experience applies to most Little Owls, namely that the general habit is to hunt very little by day for large prey except during the latter half of the nesting season, when family exigencies force them to be active.

There is also evidence to be found in the food remains that the Little Owl is not a great feeder by day.

(i) Half the number of Little Owls shot during daytime for the examination of their gizzards have revealed either no remains of food or very scanty fragments—mere "left-overs" from the last pellet evacuation (see Section on Gizzard Contents). It seems reasonable to suppose therefore that the pellet produced from the night and early morning food is evacuated before the bird becomes inert in the daytime.

(ii) The entomologists have been impressed by the fact that most of the insects occurring in large numbers in the food remains are species that hide by day and come into the open by night. The writer has walked with a flashlight turned on the ground over a Little Owl's feeding haunt at 11 p.m. *Pterostichus madidus* was running in hundreds and the pellets from that site consisted of little else for several weeks. By day it was difficult to find a single *Pterostichus* on that field.

The matter is important, for if the Little Owl is not a great day feeder, this may partly account for the fact that game and poultry chicks, which are usually under shelter by early evening have seldom been found in the food remains during the years of Inquiry.

(To be continued.)

THE DECREASE IN BLACKGAME IN DUMFRIESSHIRE.

BY

HUGH S. GLADSTONE.

BRITISH ornithologists—no less than British sportsmen—should be grateful to Lt.-Colonel Lord George Scott for the manner in which he has discussed (pp. 141-52) “The Decrease in Blackgame”—in his recently published book *Grouse Land and the fringe of the Moor*—since the facts and figures which he produces, dealing as they do with a district which he knows intimately, are of more than usual importance.

From personal experience, I can vouch for it that the Black Grouse (*Lyrurus tetrrix britannicus*) has decreased—almost to vanishing point—in the vicinity of my own home in Dumfriesshire. It is often unfair to quote an author in part only, but to carry the point I wish to make I may refer to Lord George Scott’s statements: “it may not be very wide of the truth to attribute the disappearance of Blackgame partly to the increase of wild Pheasants in certain areas” (pp. 145-6) and again: “it seems probable that where Blackgame are decreasing in number, the three main causes are (1) over shooting (2) increase of vermin (3) insufficient food” (p. 150).

I agree that “increase of vermin” and “over shooting” may be contributory “causes” for the decrease of Blackgame: such results are only to be expected on the breaking up of large estates and I also cannot help feeling, in these days of motor transport, that few sanctuaries now remain which are un-get-at-able. It is also, of course, highly probable that there are other obscure factors at work which are inimical to Blackgame; the third cause—“insufficient food”—is, however, the one to which I attach most importance as I believe this insufficiency to have been caused by the “increase of wild Pheasants”. The diet of the Black Grouse and the Pheasant is very varied but, as both are members of the Order *Galli*, it is not surprising that it should be similar* and I am of the opinion that the progeny of the semi-domesticated Pheasant of the rearing-field—when it has strayed to the domain of the Black Grouse—soon acquires (if it does not revert to) the habit of maintaining itself on food which should be the prerogative of the species whose proper territory it has invaded.

* *A Practical Handbook of British Birds*: (edited by H. F. Witherby): 1924: Vol. II., pp. 859 and 874: (sections on “Food” by F. C. R. Jourdain).

Few countries have suffered more from the importation of exotic creatures than New Zealand, and it is therefore of interest to quote from the bulletin issued by the *New Zealand Forest and Bird Protection Society* :

According to a well-known biological law, the introduction of any non-native species, if successful, is bound to be followed by the disappearance of some native species with which, to be successful, the alien competes. No two kinds of animals of the same requirements for food and shelter can long occupy the same place ; one of them will disappear. . . . A continental fauna is already *full*, in a sense that all the ecologic niches are occupied. To repeat, there is no possibility of adding a new animal without affecting the interests of one or more native ones. . . . In final analysis the total quantity of animal life in a locality is controlled by the total production of plant life there.*

Although the statements in the above extract may appear too positive, there is more than a modicum of truth in them and it is to be emphasized—since my notes deal with the decrease of Blackgame in Dumfriesshire—that the Pheasant was only introduced to the lowlands of this county at the end of the eighteenth century† while hand-rearing, and a consequent increase in numbers, only became general locally during the last forty or fifty years.

The idea of the Black-cock and the Pheasant cock fighting for the crown may be spectacular but is not the real reason for the supremacy of *Phasianus* over *Lyrurus*. The Pheasant is, by nature, not the arboreal inhabitant it has become in many localities : it loves the wet rough hill-land adjoining cultivation just as much as the Black Grouse loves the fringe of the moor : the Pheasant hen is a better mother than the Greyhen and has a larger number of progeny : moreover, the Pheasant is a noted explorer into strange places, and—thanks to the widespread hand-rearing of the species—these explorers are annually being reinforced from the base.

I have therefore no hesitation in giving it as my opinion that the great decrease of Blackgame is mainly due to insufficiency of food caused by the invasion of Pheasants and their dominance in the area referred to ; evidence for which I give below.

In an article which I contributed to this journal‡ some thirteen years ago, I stated that Blackgame had occurred at one time or another, in every county (except ten) in

**Forest and Bird* : Bulletin No. 36 : pp. 11-12 issued by *The New Zealand Forest and Bird Protection Society* : May, 1935.

†Hugh S. Gladstone : *The Birds of Dumfriesshire* : 1910 : pp. 336-7.

‡*British Birds* : (1924) : Vol. XVIII., pp. 66-8.

England, Scotland and Wales. I also gave my opinion, based on letters from correspondents, as to the then *status* of the species and stated summarily that it was generally acknowledged to have decreased and to be annually decreasing. It is obvious, where Blackgame have never been common, or at the time of report are scarce, that any increase becomes the more readily remarkable ; reported increases, under such circumstances, are, therefore, misleading. The object of these present notes is to show that, in what was once a stronghold of Blackgame, the species has now all but totally disappeared because of the ascendancy of the Pheasant.

Twenty-seven years ago—in my *Birds of Dumfriesshire*—I wrote :

Since about 1870, a steady decrease must be recorded, for which it is not altogether easy to account. The bird was formerly in considerable numbers on the Lochar Moss, but is now rarely, if ever, seen there ; and the noticeable falling-off for years past in the number of Blackgame throughout the county* is likely to continue unless farther steps be taken to preserve and encourage them. The diminution of cropping in our uplands, and the general drainage of “ sprittie ” or rush-covered stretches of hill-land, may have something to do with their decrease ; but the increase of the Pheasant and its consequent extension of range, thereby making two hungry mouths to fill where the food-supply has already been diminished to a point below the proper requirements of one, is to my mind a still more probable cause. A beat carefully “ nursed ” and with the Pheasants well kept down, yielded to four guns, on November 1st, 1906, seventy-one Blackgame : forty-four being old cocks, fourteen young cocks, ten old hens, and three young hens. Much has been written for and against the desirability of sparing *all* hens, and unhesitatingly I vote against such a proceeding. If in the early autumn the old hens can be killed, an immense amount of good is done, which will be felt in the following season. The Greyhen is not supposed to be fertile for more than two or three years,† and for some unaccountable reason the old barren hens seem to be the most attractive to the Blackcock when making up his harem in the spring. The early opening date of the shooting season (August 20th) is to be regretted, unless discrimination is used and only old birds are killed ; and it is a most excellent rule never to shoot a cock on which one can see any brown feathers. The maintenance of a young and healthy stock is the first ideal to be aimed at by those who wish to encourage this species rather than the Pheasant, which latter in some districts bids fair to become almost ubiquitous.‡

It may be added that on October 25th, 1910, the “ carefully nursed ” beat—shot by the same four guns as in 1906—produced 114 Blackgame (45 old, 29 young, cocks ; 24 old, and 16 young, Greyhens) and, during the season, the whole

**Trans. Edin. Field Nat. Soc.*, 1904-5, Vol. V., Part 3, p. 184.

†J. G. Millais : *Game Birds and Shooting-Sketches* : 1894 : p. 58.

‡Hugh S. Gladstone : *The Birds of Dumfriesshire* : 1910 : pp. 320-1.

beat produced 336 Blackgame and 350 Pheasants. To my everlasting regret the "carefully nursed" beat—and much of the ground adjoining—passed from under my control in 1911, but from the present proprietors and tenants I have learned that—on the area where 336 Blackgame and 350 Pheasants were shot in 1910—a bag of only 3 Blackgame! but 697 Pheasants!! was obtained in 1936.

Various causes for the decrease in Blackgame have been suggested and in so far as the area to which I refer is concerned the following may be eliminated. There are no Capercaillie nor have overhead wires (telegraphic, telephonic or electric) served as death traps. Vermin (be it stoats, Carrion-Crows or Gulls) are neither more nor less numerous since 1910, though I certainly think that foxes are more plentiful nowadays. There have been no agricultural changes: cropping may, perhaps, have slightly increased (though always too scanty from a shooting point of view) and no perilous hill-drains have been dug. The promoters of afforestation cannot be held to blame for the decrease since no plantations have been made here nor have any woods been cut down.

Without entering into the controversy as regards the attitude displayed towards Blackgame by the Forestry Commission, I feel that, in common fairness, I must state that I know from personal experience that Blackgame do damage to young larch. My evidence on this vexed question appeared in print ten years ago,* and I then offered the excuse that this noxious habit might have been increased, or acquired, owing to a shortage of food caused by the competition of Pheasants.

So much has been written about the shooting of Greyhens that I may here be allowed to affirm the opinion that I have already expressed—that it is most desirable to shoot old barren hens—but I cannot help reflecting that in the days of my forefathers (and that was the heyday of Blackgame) Greyhens of ALL ages were sacrosanct.

It must not be thought that I base my contention—that the increase of Pheasants has caused the decrease in Blackgame—on such a simple reason as mere starvation. It is known that kindred species such as Partridges and Grouse suffer periodically from recognized endemic diseases: it is therefore highly probable, if not already certain, that the Black Grouse suffers from some similar and no less subtle an infection and, if but few diseased Blackgame have been recorded, it is to be remembered that moribund birds have the habit of secreting themselves. The late Otto Graf von

**The Field*: 15th December, 1927: p. 983.

Zedlitz—writing of Blackgame in Silesia—has pointed out that even if an average stock is favoured with good food and favourable weather conditions it speedily attains saturation point and—being unable to stand up to the consequent decrease in the food supply and being then more affected by unfavourable weather conditions—soon goes into a decline.* He does not definitely mention the word “disease”, but he attributes the decline to an insufficiency of food, and it is acknowledged that the periodic devastation of Grouse and Partridges is often due to lack of proper sustenance. It may be that Blackgame cannot stand the proximity of the Pheasant and that lack of space on suitable ground—due to overcrowding by Pheasants—may have a deleterious effect on their fertility or even on their ability to breed, for it is known that many birds and animals are easily upset in this way. My contention, however, is that the principal cause for the decrease in Blackgame is an insufficiency of their natural food brought about by the increase of Pheasants: this insufficiency has led to their being unable to withstand some endemic disease against which, under normal conditions, they were able to contend until the balance of Nature was upset by the invasion of a second kind of bird requiring the same food and shelter.

So far as the area to which I refer is concerned, I am convinced that nothing short of extirpation of Pheasants—and importation of Blackgame from elsewhere—can ever restore the desirable *status quo ante*, but situated as the area is—in the highlands of Dumfriesshire—it is always being fed with Pheasants which stray upwards from the lower ground where they are not only allowed to thrive but are also hand-reared extensively on many estates.

The restoration of Blackgame in their rightful domain is beyond individual effort: concerted action on the part of interested parties is essential. Apart from the self-denying ordinance of eradicating Pheasants, it would be necessary, on many estates, to import a fresh stock of Blackgame. Augmentation of existing stocks by hand-reared birds has, hitherto, not been a success. Blackgame have been bred in captivity at Drumlanrig and Capenoch in Dumfriesshire, also at Netherby in Cumberland, whence the late Sir Richard Graham wrote to me on October 27th, 1927:—

I am trying if Blackgame will lay eggs in confinement, the same as Grouse. This season the hand-reared Blackgame have not done

*Zedlitz, O. Graf: *Berichte des Vereins Schlesischer Ornithologen*: Vol. XIII: No. 2, December, 1927: pp. 101-10.

well ; chiefly because the ground on which they were being reared did not suit, being the same as where the Grouse were being reared.

The idea is—the ground being suitable—will Greyhens rear their young in pens with one wing cut, the same as Grouse hens will ? Also will Greyhens, having their first nest of eggs lifted, start at once and lay a second nest as Grouse hens will ?

I understand that Sir Richard's experiments were not satisfactory and the only instances I know of hand-reared Blackgame having bred in captivity were in the Zoological Gardens, London, in 1840, and at Capenoch in 1899, but all died either before, or after, the autumn moult. Possibly the assistance of the Imperial Chemical Industries Limited (whose researches, at Knebworth, Hertfordshire, into the welfare of Partridges are only now being appreciated) might be evoked.

It may be argued that, as an economic proposition, the propagation of the Pheasant is of more importance than the maintenance of a stock of Blackgame. The breaking-up of estates—to which I have already referred—means an increase in landed-proprietors who, in many cases, vie with each other in providing annual "covert-shoots". The motor-car and caterpillar-tractor leave no sanctuaries inaccessible and Man's insidious advance cannot be checked. The Black Grouse is an old-fashioned bird : he resents Man's interference and it may well be that there is no home for Blackgame in the modern sporting or ornithological Britain of to-day any more than there is a home for the Bustard.

NOTES

ROSE-COLOURED STARLINGS IN THE BRITISH ISLES.

WE have received the following notes additional to those already published on this subject (*cf. antea*, p. 149).

KENT.—A bird which from the description appeared to be an immature female was seen by Mr. J. R. Tart at Dungeness early in June.

SUSSEX.—A single bird was observed by Mrs. A. G. Glenister on June 21st near Seaford accompanying a flock of Starlings.

MONMOUTH.—Mr. H. M. Salmon writes that he has examined an adult obtained near Monmouth on September 11th or 12th.

CARNARVONSHIRE.—Mr. H. E. Forrest writes that a bird, which was probably the same as that reported by Mr. Caton Haigh as seen about July 17th, was noted by another observer in the neighbourhood from the end of June.

WEXFORD.—Mr. C. J. Buchan observed one at Kilmore on June 9th. This bird, which was evidently an adult, was first seen with Starlings, but later fed alone.

SOME DOMESTIC HABITS OF A PAIR OF SPOTTED FLYCATCHERS.

FOR several years past I have reasons to believe that the same pair of Spotted Flycatchers (*Muscicapa s. striata*) has returned and occupied for breeding purposes an old tea-kettle fastened to a wall of Highfield House, Cheddar.

In 1935 the birds were double brooded. Building commenced early on the morning of May 21st, the first egg being laid on May 29th, while the fifth and last was laid on June 2nd. Incubation began on this date and four young were hatched on the morning of June 14th. Three left the kettle early on the morning of June 27th the fourth leaving the next day, there remaining one addled egg. Thus nidification lasted one week, incubation 12 days, and fledging 13-14 days.

On July 6th, after an absence of about eight days, the adults returned to the neighbourhood of the kettle accompanied by the young, and a few feathers and cobwebs were added to the old nest, the young being fed between building. On the next day a few bents and more cobwebs were added and on July 8th the first egg was laid and the full set of four

by the 11th. All hatched off on the morning of the 24th. Three young left the kettle on August 6th and the fourth on the following day. In this case the incubation period was thirteen days and fledging 13-14 days.

In 1936 in the same kettle and presumably the same birds began building on May 19th, four eggs being deposited on consecutive days by June 6th, all four hatched off on the 19th and left the kettle together on July 3rd, the nidification period being about a fortnight or about double that of the first nest in 1935, incubation period 13 days, fledging 14 days.

The male often fed the female during incubation either at the nest or when she flew up to him and received it with quivering wings on an overhead wire. The task of incubation fell entirely upon the female.

I was rather puzzled to know in what manner the adult frequently held four flies in its bill whilst a fifth was adroitly captured, but I saw that they were somewhat bunched near the tips of the mandibles and were perhaps adhering there, each insect was being held quite long enough to ensure death before the next was caught. In late evening the food brought by both birds to the young consisted almost entirely of a white moth mostly caught amongst the branches of a large sycamore growing close by. These were broken up and the bodies fed to the nestlings, the adult swallowing the wings, but towards fledging time, these moths, variable in size, were put whole down the youngsters throats, and not one wing of a moth was ever found in the kettle or upon the asphalt floor beneath.

After feeding the young the female would stand erect for a few seconds waiting to take the excreta. She would reach and gently touch the young with her bill. Then one would flutter its wings rapidly, turning round at the same time with its back towards the entrance, and as the "blob" of excreta was voided, she took it "directly" into her bill and flew away with it. So far as my observation went, it was only the female which removed the excreta. I also saw her hop down amongst the young and turn them about in a rather rough manner when searching for something.

Sometimes after feeding, and as the male appeared on the overhead wires with food, the hen flew up and alighted on the wire beside him and quivering her wings in a squat attitude would ask to be fed, but he only occasionally obliged her.

When near fledging time feeding continued until very late. On July 2nd the last food was given at 10 p.m. B.S.T.,

and I could hardly discern the adult at five yards distance.

I usually remove all traces of the old nest before the birds arrive in the spring, but this year (1937) I did not do so and this was probably why the birds occupied a last year's Blackbird's nest a few yards away instead of the kettle.

STANLEY LEWIS.

BARRED WARBLER IN NORTHUMBERLAND.

ON August 24th, 1937, Messrs. T. A. Willis, M. H. Rowntree and I saw a Barred Warbler (*Sylvia nisoria*) on Holy Island. We put it up from bushes in a small garden. It was reluctant to fly or to show itself, and as there was no other cover near, each time we succeeded in putting it out it came back again to the garden. Although it was difficult to get a good view of it except on the wing, it appeared to be an adult bird, with barring on the underside.

H. G. ALEXANDER.

GARGANEY IN NORTHUMBERLAND.

ON August 22nd, 1937, Messrs. T. A. Willis, M. H. Rowntree and I saw a Garganey (*Anas querquedula*) on the pond on Holy Island. It was in eclipse, but it appeared to be a drake. When it was on the water the pale eye-stripe was conspicuous, and when it flew up, the whitish patch in the wing showed very distinctly. Mr. R. Perry, who also saw it, had seen a bird that he suspected was a Garganey a week earlier. There was no sign of it on the two following days.

H. G. ALEXANDER.

RUFFS IN ORKNEY.

THOUGH described as a passage migrant in Orkney there are not a great number of records of the Ruff (*Philomachus pugnax*) in these islands. I recorded one from near Kirkwall (*antea*, XVIII., 1924, p. 174) and identified another one in 1934, shot by Dr. Skae on Skail Loch, near Stromness, on September 29, 1923, which is now in the Stromness Museum. I have now to add two further records. On September 23, 1937, Mr. J. G. Marwick of Stromness, Orkney, sent me a bird for identification, which had been picked up dead on the island of Sanday some days previously, and a few days later another one which had been found with a broken wing at Voy, Stromness, on September 25, 1937. I identified the first as a young male Ruff, the second as a young Reeve.

G. CARMICHAEL LOW.

FLOCK OF RUFFS ON FAIR ISLE.

ABOUT mid-day on September 16th, 1937, a flock of waders whose numbers I estimated at 150 to 200, appeared over

Fair Isle. The flock was seen by Messrs. Jerome and James Wilson and James Stout, three of the best island ornithologists, and they considered that it was composed chiefly of Ruffs (*Philomachus pugnax*) with some Golden Plover, Knots and a few Bar-tailed Godwits. An islander who was out shooting Golden Plover for the pot fired into the flock and brought down eight Ruffs and two Knots. The flock also flew through some telegraph wires beneath which three Ruffs and one Little Stint were subsequently found with broken wings. Thus eleven out of fourteen birds from the flock were Ruffs, which suggests that there were over 100 Ruffs in all.

Most of the birds in the flock do not appear to have remained on the island but a flock of about 30 Ruffs was present for several days afterwards. P. A. D. HOLLOW.

MARSH-SANDPIPERS SEEN IN KENT AND SUSSEX.

ON September 26th, 1937, we visited the Midrips and the Wicks, on the western border of Dungeness. In a small sedge-surrounded pool at the latter, situated almost exactly on the line of the Kent-Sussex boundary, we found two medium-sized grey and white waders. They were standing together in shallow water against the edge of the sedge on the far side from us, and about thirty yards distant, asleep, with their bills buried in their back feathers. At first glance we took them to be Greenshanks (*Tringa nebularia*), for we had already seen one at another pool, five minutes previously, and knew that there were others about. They were grey on the upper parts with an obscure indication of striping, as though the edges were a faint shade paler than the bodies of the feathers. The tops and sides of their heads and the backs of their necks were white, rather finely speckled with grey, leaving a plain white superciliary stripe. Their under parts were wholly white, their bills dark (apparently black) and their legs a dark olive.

When we advanced a few steps nearer they woke up, and one moved a little to one side, and we saw at once that they could not be Greenshanks. They were at least a third smaller than a Greenshank, their bills were not long enough and they stood and walked with their necks gracefully curved, quite unlike the gawky, stiff-necked, attitude that the Greenshank assumes when alarmed. The next two most likely species to be met with in such a place in autumn, the Green and Wood-Sandpipers (*T. ochropus* and *glareola*) we were able to rule out of court at once, for they were distinctly larger than either of these two, the colour pattern of their

backs was totally different, and they lacked any dark markings on the lower neck and breast.

After being watched for a further few minutes they rose and flew, almost directly away from us, inland and we lost them in the distance. In flight they resembled a Greenshank even more closely, for their backs showed an unbroken area of white extending from nearly the end of the tail to a point midway between the shoulders. Their wings appeared to be grey, the outer primaries slightly darker in tone than the rest of the wing, and no white showed at all. After flying a few yards they called, a whistling note repeated four or five times, quite unlike a Greenshank's, but a little like a Redshank's, though lower pitched, rather more harsh and the repetitions less rapid. It also resembled the call of the Wood-Sandpiper, but seemed to be less twangy. We had heard Greenshanks a few minutes earlier and we heard and saw Redshanks five minutes later. The only wader that fits this description is the Marsh-Sandpiper (*T. stagnatilis*) a species that has already been recorded from the district on three occasions.

N. F. TICEHURST.

AVERIL MORLEY.

SANDWICH TERNS IN LONDON.

IT may be of interest to note that on October 5th, 1937, I saw two Sandwich Terns (*Sterna s. sandvicensis*) flying up and down part of the Thames west of Hammersmith Bridge. Both birds were calling, and this together with their large size and black yellow-tipped bills, left no doubt as to their identity.

E. G. PEDLER.

SKUAS AND OTHER BIRDS IN THE WASH.

THE following observations made while on board Boston fishing smacks trawling in the mouth of the Wash may be of some interest.

On September 5th, 1936, about a dozen Skuas were seen, the Great Skua (*Stercorarius skua*) and the Pomatorhine (*S. pomarinus*) being identified. On September 24th, 1937, seven or eight Skuas were seen, but only the Great was identified; none had elongated tail feathers. On this date Swallows (*Hirundo r. rustica*) (mostly young) were passing continually across the Wash from north to south mostly singly or in twos and threes. Three lots of Lapwings (*Vanellus vanellus*) were seen coming in from the North Sea. Two flocks of about a dozen flying fairly high and a pair flying just above the surface of the sea. All were flying due west (by compass) and the wind was fresh S.W.

C. F. TEBBUTT.

GADWALL AND SCANDINAVIAN LESSER BLACK-BACKED GULL IN SOMERSET.—Mr. H. H. Davis writes us that he identified an adult male Gadwall (*Anas strepera*) at Barrow Gurney Reservoirs on August 22nd, 1937. The bird remained until October 10th.

On August 22nd Mr. Davis also identified at the same place a *Larus f. fuscus*, which being in company with two British Lesser-backed Gulls, showed clearly distinctive difference in the mantle being as dark as the primaries.

RUFF AT LUNDY.—Mr. H. H. Davis informs us that he watched a Ruff (*Philomachus pugnax*) at a small pond on Lundy on September 11th, 1937. The bird is not common in the west and had not previously been noted on Lundy.

LITTLE GULLS IN CORNWALL AND CAMBRIDGE.—Miss M. M. Hutchinson writes of a Little Gull (*Larus minutus*) which she observed diving at Portreath on the north Cornish coast on September 7th, 1937. The bird dropped into the water after the manner of a Little Tern but did not totally submerge and was riding buoyantly on the surface a moment later. From Miss Hutchinson's description the bird was possibly an adult, but the underwing could not be observed.

Mr. D. I. Molteno informs us that he saw an immature Little Gull feeding among Black-headed Gulls at Cambridge sewage farm on October 7th, 1937.

CORRECTION.—In review of *Bird Behaviour* six lines from bottom of page 158 for "significant outer back" read "significant route back".

LETTERS.

THE COURTSHIP AND MATING OF THE GOOSANDER.

To the Editors of BRITISH BIRDS.

SIRS,—With reference to Mr. L. Parmenter's notes on the above subject (*antea*, pp. 152-3) the following observations may be of interest:—

On January 24th, 1936, a sunny morning with a fresh easterly wind blowing, there were 17 Goosanders (*Mergus merganser*) on the Pen Ponds, Richmond Park, Surrey. Two of them, a male and female, flew to the Upper Pond from the Lower. The drake then swam *very* slowly about, followed closely by the duck, her head and neck stretched along the surface of the water, and her crest raised. Once I saw the duck lift her neck, head and bill up vertically, then stretch them along the water again. The drake, though he was in front and his tail was toward her, raised his head and bill upward to a vertical position in response, and then lowered them to normal. The slow swimming about of the pair, as described above, continued for half an hour, and

then the duck placed herself across the drake's path. He swam round her and proceeded on his former course. At once she again placed herself before him at right angles to his path. This time the drake swam to her side and coition followed after the manner of Mallards, the drake holding the duck by the crown feathers. Both birds then rose on their tails, flapped their wings, preened, and swam apart from each other.

On January 31st, 1936, a dull, very mild morning, there were 51 Goosanders on the Pen Ponds. Most were busy diving, but there were two pairs consisting each of a male slowly swimming about, with a female closely floating behind him, her head and neck stretched forward on the water. Neither of the drakes showed any sign of excitement, unless the very slow swimming is one.

On January 15th, 1937, a dull, mild morning, 2 Goosanders only were on the Upper Pen Pond, swimming about as described above. On one occasion they both excitedly stretched the neck and bill almost perpendicularly upward. The drake was at the time about a length in advance of the duck. They then continued the slow swimming until I left, nearly an hour after I first saw them.

These observations support Mr. Parmenter's suggestion that the duck Goosander "usually takes the initiative in mating" (p. 153). But there is a possibility that in this species the reproductive organs of the female may mature somewhat earlier than those of the male, and observations made at a later date, say in April, are desirable.

W. L. COLYER.

INQUIRY AS TO SONG-PERIODS.

To the Editors of BRITISH BIRDS.

SIRS,—Seventy-nine observers have promised to record bird songs during part or all of the period, August, 1937, to July, 1938, in connexion with the British Trust Inquiry, particulars of which were published in the July issue. This is a very gratifying number; but unfortunately there are considerable gaps, where, as far as I have been notified, no regular observations are being made. As it would be far better to have observations from November or December to July than none at all from these districts, may I make an appeal for additional recorders from the following areas?

In England, the counties of Cornwall, Dorset (except the Bournemouth end), Suffolk, Cambridge, Bedford, Huntingdon, Northampton, Lincoln, Hereford, Shropshire, Stafford, Durham, Northumberland, all Wales (so far the only recorder is in Denbighshire), all Scotland (the only two recorders are in Dumfries and Renfrew), and all Ireland (the only recorder is in Dublin).

The position is that many parts of lowland England are well covered, but the mountainous regions of the north, and of Wales, Scotland and Ireland, seem to have very few observers. As there may well be important differences in song-periods between these districts and the lowlands, it is specially desirable to have observations from them. Regular daily observations are, of course, the most useful; but irregular observations will be much better than nothing. Forms will be sent on application to W. B. Alexander, University Museum, Oxford.

H. G. ALEXANDER.

P.S.—Since the above was written, as a result of the efforts of the Scottish Ornithologists Union, a few more Scottish observers have been added; but big gaps still remain.

H.G.A.

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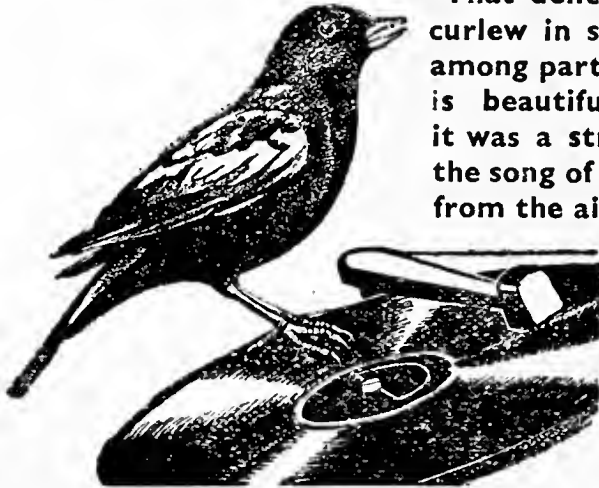
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KITTIWAKES AS SHORE-BIRDS.

BY

H. G. ALEXANDER.

WHILST staying at Seascale, Cumberland, in August, 1937, I discovered a place on the coast at Sellafield, where quantities of sea-birds were always to be seen. In addition to thousands of Curlews and Oyster-catchers and many Redshanks, Lapwings, Turnstones and other Waders, there were large flocks of Gulls and Terns, and I was very much surprised to find that some hundreds of the Gulls were adult Kittiwakes (*Rissa t. tridactyla*). The part of the shore in question is, at low tide, a great expanse of muddy shingle and mussel-beds; and the two little rivers, the Calder and the Ehen, here flow out to the sea within a hundred yards of one another.

I first visited the place on August 5th, but my time was limited, and I could only estimate that there were "hundreds" of Kittiwakes in two or three distinct flocks. I paid a much longer visit on August 10th, when I estimated the number as between three and four hundred. I only twice noted a single immature bird, and it may have been the same bird each time. On August 17th, the number appeared to be rather less—probably under three hundred. I passed the place in the train again on August 25th, when I could see that Kittiwakes were still present in some numbers. Mr. S. Marchant made a similar observation from the train on August 23rd. On September 25th, however, when he again visited Sellafield, he found fewer birds altogether, and no Kittiwakes at all.

To this I should add that, even before August 5th, I had noticed Kittiwakes flying over the sands in twos or threes, going north—that is, towards Sellafield—and this I continued to note at various points along the shore from Drigg Point northwards. Also, at low tide, I several times noted small numbers of Kittiwakes—up to half a dozen or so—resting on the sands with Black-headed and other Gulls.

I had hitherto regarded the Kittiwake as a species rarely to be seen inshore, and very rarely settling on anything but the sea, except when at its breeding stations. In mid-winter sometimes a number come close inshore at Dungeness with the fishing boats, and occasionally one will settle on the shingle. And off rocky coasts I believe odd birds may fairly often be seen settling on rocks. But a large assemblage settling day after day on a flat shore seems to be something quite abnormal.

I have made some attempt to find out if any similar observations have been made, and I am indebted to several other observers for valuable information. Messrs. J. B. and H. Kenrick, on August 8th, 1937, observed a flock of about thirty Kittiwakes, including, they believe, some immature birds, on sands near Aberlady, on the Firth of Forth. Here, too, the Kittiwakes were near flocks of other sea-birds—Gulls, Terns and Waders. The birds were on ground that was covered by every high tide, as was most of the ground where I saw them in Cumberland. Mr. H. Kenrick also draws my attention to a statement in Canon Raven's *Ramblings of a Bird-Lover* (p. 53) where he writes: "On a spit of sand [at Ownathinchy, near Cork, Ireland] were a flock of dozing Kittiwakes, their short dark legs and the black-ringed necks and dark tertiary coverts of the young birds recognizable at a glance . . . never till Ownathinchy did I note them resting on the sand." This, too, is an August observation.

Dr. N. F. Ticehurst also tells me that a number of Kittiwakes, at one time up to about eighty, were seen on the beach to the west of Dungeness from May 19th, and through most of June this year. These were seen by a number of different observers. After some controversy as to their identity, it was generally agreed that they were immature Kittiwakes. Mr. J. R. Tart tells me he has seen small numbers of young Kittiwakes on that part of Dungeness in previous years; but this year the number seems to have been unusually large.

I have at present little light on where the Sellafeld Kittiwakes may have come from, or what may have brought them to the shore. When the Rev. H. A. Macpherson published his *Vertebrate Fauna of Lakeland* in 1892, he had little to say of the Kittiwake, but he describes it as "in winter and spring . . . fairly common along our shores"; and he adds the surprising information that in "the spring of the year a few Kittiwakes often assemble in the fields a few miles from salt water to feed on the worms and grubs exposed by early ploughing". At that time Kittiwakes did not nest on the St. Bees cliffs. To-day they do. These cliffs are only ten miles north of Sellafeld. But I doubt if the Sellafeld birds have any connexion with St. Bees. When I visited St. Bees on August 12th, some young Kittiwakes were still on the cliffs, and a few old and young were sitting on the sea below the cliffs. It is, I believe, quite a small colony.

It seems possible that some Kittiwakes habitually rest on the shore during the moult. I did not find any feathers at Sellafeld; but, as I have said, they were mostly resting

below high-water mark. It seems practically certain that they went off to sea when they wanted to feed ; and those seen flying along the shore at and near Seascale were presumably returning to the resting-ground after feeding. Although there is a good deal of evidence that they can feed on land, I did not see them attempting to feed on the shore.

I may perhaps take this opportunity to add that, during the past ten years, I have accumulated a sufficient number of records of Kittiwakes observed in the Midlands, hardly ever after storms, and usually as quickly passing migrants, only spending a day or an hour at a reservoir, to convince me that they voluntarily cross the land more often than has been supposed.

Perhaps one may sum up by saying that, although the vast majority of Kittiwakes spend eight or nine months of the year at sea, often well out of sight of any land, they seem to visit the land more often than has been suspected ; and, in particular, some proportion of both old and young birds apparently spend part of the summer resting on the shore, possibly at the time of the moult. But the whole matter seems to require further investigation.

REPORT OF THE LITTLE OWL FOOD INQUIRY. 1936-37.

(ORGANISED BY THE BRITISH TRUST FOR
ORNITHOLOGY.)

BY

ALICE HIBBERT-WARE, M.B.O.U. (Analyst).

(Continued from page 187.)

DOES THE LITTLE OWL RAID THE NESTS OF OTHER BIRDS ?

No instance of this has come before the notice of the regular field observers.

The full record of nest-raiding during the Inquiry is as follows :—

(i) Four nestlings were found by the analyst in food remains, namely, one Blackbird, two House-Sparrows and one Sky-Lark.

(ii) Two Starlings' nests were recorded by correspondents as having been raided in 1936.

(iii) Mr. A. W. Boyd (Northwich) has found the Little Owl a menace to his colony of Tree-Sparrows in nesting boxes round his meadow. One ringed nestling was taken from the Owls' nest in 1936.

(iv) Mr. A. Clark (Longfield) recorded a Blue Tit's nest as being raided in July, 1937. The incident is interesting. A pair of Blue Tits built in a 2½ in. pipe stuck vertically in a bank of lime sludge in a paper mill yard. The nest was 14 in. from the top of the pipe. It contained young birds on June 18th. On July 2nd a live Little Owl was found lodged, head first in the pipe. It was pulled out with tongs and flew off. A young Blue Tit then flew out of the pipe. Three dead nestlings, full of maggots, were found in the nest. One parent bird was flying round outside.

The Little Owl had clearly been investigating the pipe for its contents. The cause of mortality of the decomposed nestlings is obscure, but the nest was in an unfavourable position for the parent birds.

The evidence for nest raiding is so scanty as to lead to the conclusion that it is not a usual habit but takes place exceptionally when nests in holes are easily found in situations such as walls, trees, pipes and nesting boxes.

STORAGE OF FOOD AND THE "BEETLE BAIT THEORY".

(2) Does the Little Owl make a practice of storing food in quantities more than sufficient for the present needs of itself and its young ?

The field observers have searched in vain for any such stores. None of the many larders cleared by them has contained more than one entire animal. Everything in a larder has usually been partly eaten. The one and only case of an apparent "store" was proved to be that of a sick Little Owl that continued to catch what it was unable to eat (*Incident 1*).

Mr. J. C. S. Ellis wrote on September 30th: "The hole in the wall is a store—the first I have found. To-day it contained a few Little Owl feathers, a few from a House-Sparrow, a quantity of black horse hair, the remains of a dor beetle and a newly killed but untouched long-tailed field-mouse." As nothing was added eventually to the collection, it was, therefore, not a permanent store. The uneaten parts of birds and mammals may be left in holes and accumulate and such debris may sometimes be the source of the carrion beetles that have been found in nests and pellets in small numbers. But there is no foundation whatever from the evidence accumulated during the Inquiry for a belief that the Little Owl prepares carrion in order to attract carrion beetles to it, so that after a lapse of time it may return to it and feed on the beetles. Yet this fantastic story which accords to the Little Owl a degree of intelligence (including memory and forethought) entirely unknown among birds, is believed and even "improved upon" by credulous people, as the following letter shows.

From a gamekeeper of 40 years' experience:

"This is what I have seen them do to young game. When the young partridge or pheasant are direct under it, it will dart down and it will have the brains out of two in less than a minute. And it will carry them away to their cemetery (but not till night) and I have found the burial ground when I have been on my beat. And I have noticed that it always faces the east. And there you will find that the victims are half buried. And from May until August they will carry the game to their cemetery. And when their young are old enough they will turn over their oldest victims and return to their nest with black beetles. They pay visits to the cemetery every half-hour."

More temperate opinions in favour of the beetle-bait theory cannot be given, as no others have been sent. Yet this fable gets credence from some people on account of its frequent insertion in the Press and even in popular books of Natural History. Hence it is of importance that if not true, it should be disposed of.

The answer of the writer is : In 2,460 pellets and 76 nests and holes, 75 burying beetles only were found. None were found in the gizzards. It is, of course, obvious that if the Owls made a habit of leaving carrion as a bait for beetles, carrion-feeding species would have occurred much more frequently than this.

Mr. J. C. S. Ellis expressed the experience of the field observers when he wrote after the nesting season :—

“ My considered opinion about laying-out is as follows : A Little Owl kills a bird with intent to feed. If undisturbed, it eats the choice portions if the bird is large (*e.g.*, the breast is easy to get at). The remainder is erroneously called a ‘lay-out’. Beetles frequent the remains. In course of time a Little Owl may visit them (without fore-knowledge) and find the beetles.”

SPECIAL INCIDENTS AND PROBLEMS.

Incident 1—A Sick Little Owl.

(1) A series of observations made by Mr. A. W. Dickinson (St. Albans) are of great interest though they do not, as was thought at first, prove a storage habit for the Little Owl.

A pair of Little Owls had for years used a hole in an apple tree as a nest site. In December last, Mr. Dickinson noticed feathers in a hole one foot in diameter and depth, on the opposite side of the tree to the old nest. He found in the hole 4 House-Sparrows, parts of a Lark and a Tit and 2 field-mice. A fortnight later all was unchanged. Then after a few days 6 mice and voles and a House-Sparrow appeared. Nothing had been eaten. Snow followed, after which 2 Sparrows (except wings) had gone.

From February 20th Mr. Dickinson kept a diary of observations. Daily he found a Little Owl fast asleep in the hole. Also daily he found two or three mice added to the store. These were not always eaten, so they accumulated. On March 7th they had all been eaten and a fresh mouse stored. The Little Owl could be seen each evening mouse-catching in the rick yard at about 6 p.m. and the opportunity was then taken to count the mice in the hole.

From March 29th the bird was evidently ill and Mr. Dickinson supplied it with rats and mice. He finally wrote, “ When I picked the dead bird up, it was smothered with brown lice. I think they had sucked the bird’s life away though it did not seem in a really poor condition”. It is probable that death was due to internal trouble and that the lice were a result rather than the cause of sickness. The pellets of this Little Owl were twisted into strange shapes and were unlike those of a healthy bird.

Since this Little Owl was probably a sick bird from the start, the episode gives no certain proof of either essentially night feeding or of a storage habit for the species. It does show that the hunting instinct outlasted the bird's appetite. It is also worthy of note that the rickyard adjoins extensive chicken coops and though the Little Owl could easily have gained access to the latter, it never did so. This has been Mr. Dickinson's experience over many years. He is confident that the Little Owl takes its natural food whenever it is possible to procure it readily.

Incident 2—A Red-legged Partridge.

The nest tree of a pair of Little Owls was found at Lavenham, Suffolk.

On May 25th under the roosting tree (a dead willow in a field near by) Miss Hutchinson found feathers of a Red-legged Partridge, in a circle, about 16 feet from the tree. A trail of feathers led to the tree, where another patch lay. A Little Owl flew from the tree. Several Little Owl pellets were collected from beneath the tree.

The feather trail led through the fence on to the railway embankment. Here the grass was long and a distinct passage through it was marked by beaten down grass and many Partridge feathers. A third patch lay by a Red-legged Partridge's nest, with 9 cold eggs. The intestines of an adult rabbit and two young also lay there. Miss Hutchinson then went to the Little Owl's nest tree and collected pellets. At 9 p.m. she watched the nest tree. A Common Partridge was feeding beneath it. At 9.15 a Little Owl came from the hole and sat in the entrance. On May 27th she revisited the Red-legged Partridge's nest. The eggs had all disappeared, leaving no sign of egg shells.

Miss Hutchinson continued to collect pellets and made a thorough clearance of the Little Owl's nest. All the material was sent to the analyst. Not a trace of Red-legged Partridge (or any game bird) was found in either pellets or loose material. The Partridge was probably taken by a mammal. The eggs may have been removed by a rat. In any case, the incident was proved to have had no connexion whatever with the Little Owl. It is reported merely to show the importance of tracking down circumstantial evidence whenever possible.

Incident 3—A Pheasant's Wing.

In July, 1936, Mr. Pumfrett found a wing of a young Pheasant near his Little Owl's nest at Old Woking. No Pheasant remains were found in the thorough nest clearance

he made soon after. On August 23rd he sent a large consignment of material from "a long, large hole in the ground near where the wing of the Pheasant was found. Is it the debris of a fox or badger?" Badger it probably was, as was shown by the numerous black and white hairs attached to the faeces. A number of feathers of a Pheasant were also sent from the hole. So the matter was settled.

Incident 4—The Gawsorth Nest.

Mr. R. E. Knowles sent in January, 1937, two consignments from an old nesting hole at Gawsorth, Cheshire. The weight of the material was $14\frac{3}{4}$ lbs. He felt sure that abundant remains of game-chicks of past seasons would be found to justify his belief that Little Owls kill game-chicks but do not eat them. Accordingly the writer put this material to specially minute tests.

This material, which represented the nest debris of probably several seasons contained much wood fibre and many fragments of bracken, oak leaves and acorns. Except for a few frayed feathers and bones of a Starling and Blackbird and a few rodent bones (including one large rat jawbone), the whole mass consisted of a conglomeration of the elytra, legs and heads of innumerable dor beetles and cockchafers, with a few carabids, in a matrix of crushed pellet material. There was, however, one entire skeleton of a medium-sized rat. At the entrance of the hole were the faeces of a mammal, apparently those of a stoat. It seems likely that a rat had taken possession of the hole, but even so, it would hardly have disposed of the ancient dry remains of mammals and birds so universally found in old nest holes. The writer can only suggest that this particular pair of Little Owls made more use of "larders" than is usually the case for the preparation of their bird and rodent food, and that the nest hole had also been considerably used by mammals after the nesting season. The case is unique for the records of the Inquiry.

Incident 5—The Buckleigh Nest.

Another consignment of old and puzzling nest contents was sent by Mr. Howard Lancum on May 25th, 1936, from Buckleigh, S. Devon. The material consisted of (1) a Green Woodpecker, (2) some large feathers of an adult poultry fowl, (3) cockchafers, (4) two full-sized, empty shells of *Helix aspersa*, (5) 1 small Little Owl feather. The contents obviously did not belong to a nest of the season. The Woodpecker was a complete "shell", empty from having been fly blown. The head and body were intact, with one side of the head skeletonized. One wing and leg had dropped from the body,

obviously from decay. The ribs, however, on one side were broken (from a shot wound?). The 11 adult chicken feathers were the sole traces of a fowl.

These contents were seen by Dr. C. B. Ticehurst. His opinion (with which the writer agrees) was: "The Woodpecker crept into the hole to die. The chicken feathers were taken there, if by a Little Owl, as roughage." The Little Owl was not responsible for either bird.

Incident 6—A Dead Little Owl.

A mutilated and partly decomposed juvenile Little Owl was found, in June, 1936, by Mr. Pumfrett at Old Woking, in a hole in the roots of a tree not 40 feet from the nest. "The hole is too small for a fox to enter. I could not discover any insect or animal remains in this hole." The hole was kept under observation for several weeks but it was not used again. It seems likely that a rat or stoat killed the juvenile Little Owl and put it in the hole. It is of interest that a single leg of a Little Owl was found in a Little Owl larder at Hildersham (Cambs.) and that rodent faeces and a half walnut shell, bearing marks of rodent teeth, were found in the same hole. Traces of rats are frequently found when tracking down evidence connected with the Little Owl.

On the other hand these Little Owls may have been guilty of cannibalism! Col. W. A. Payn has recorded a case of a clean-picked leg of a Little Owl in a nest. The problem must remain unsolved.

Incident 7—A Possible Association of Little Owl with Other Species of Owls.

Capt. W. K. Marshall (Derby) sent a batch of large pellets in May, 1936, for examination. He was told that they were those of either Barn or Tawny Owl. He replied: "I thought these pellets were large but have you ever known Tawny Owl pellets in a tree inhabited by Little Owl? I have known this oak tree for the past 16 years. In that period it has frequently been inhabited by Little Owls and when I collected these pellets, I put two Little Owls out of the tree. The pellets were on the ground at the entrance to a hole in the tree. In spite of the size I am not satisfied that these are Tawny Owl pellets." The writer then told Capt. Marshall of how she and her brother were taken in July, 1933, to see "a Little Owl's nest" in a field at Dry Drayton (Cambs.). On reaching the tree, to the surprise of all, a Barn Owl flew from the supposed nest. A Little Owl was perched in a tree a few feet away. Pellets of both species were found in the hole, which was a disused nest.

Capt. Marshall was asked to clear his hole. He did so and wrote: "I think you are right. I examined the entire hole and send you all the pellets there were." They consisted of 10 large Tawny Owl pellets composed of mice and finches and of 5 small insect pellets of the Little Owl. Unfortunately the hole was then disused by both species.

The Little Owl is sometimes accused of being a menace to other owls. No evidence of this has been observed. These two incidents seem to indicate that other owls may even share the feeding hole of the Little Owl, at least for pellet evacuation. In both the incidents the pellets of the two species showed entirely different food remains. There had been no competition over the matter of food.

SOME CAUSES OF MORTALITY AMONG LITTLE OWLS.

There has been some evidence to show that a Little Owl sometimes falls a prey to other animals, *e.g.*, rats (?) (*Incident 6*). One of the Bretton Park nests was found denuded of its eggs this year and blood-stained egg shells were found near by. It was known that this was not due to human agency.

There is reason to believe that prolonged frost and wet weather are sometimes a cause of mortality. The writer received two Little Owls during a wet spell this year and the post-mortem failed to find any other cause of death. Miss Julie Schinz (Zürich) records that a family of juvenile Little Owls succumbed to frost in her bird sanctuary. She also relates that hard weather in 1929 was responsible for the death of large numbers of Little Owls near Zürich. "At a meeting of the Wissenschaftliche Kommission der Ala, Herr Nägeli, taxidermist for the Zoological Museum, described how in 1929 he received hundreds of dead Little Owls that had been killed by the intense cold."

Little Owls are not infrequently killed by hitting motor vehicles and overhead wires. The writer has received several such in past years.

It may be that these and other causes are having their part in the diminishing numbers of Little Owls in some parts of Britain, though doubtless the gun and trap are the chief factors. More certain evidence on this subject is needed.

VERTEBRATES OTHER THAN MAMMALS AND BIRDS.

Amphibia.

Frogs (*Rana temporaria*) were very abundant in the Woking nest. Elsewhere they were occasional.

Reptilia.

Lacertilia. Lizards (*Lacerta vivipara*) were rather frequent from

Seaford and Laugharne. Two were found at Little Burstead. One slowworm (*Anguis fragilis*) came from Laugharne.

Ophidia. One grass snake (*Natrix natrix*), three inches long, came from Seaford.

LIST OF RODENTIA.

Brown rat (*Rattus norvegicus*).

House-mouse (*Mus musculus*).

Long-tailed field-mouse (*Apodemus sylvaticus*).

Field-vole (*Microtus agrestis*).

Bank-vole (*Clethrionomys glareolus*).

Rabbit (*Oryctolagus cuniculus*).

RODENTS.

During Inquiry Part I the remains of rodents were found as follows: Rabbits, 17; Rats, 50; Mice, 220; Voles, 141; Mice or Voles, 42, giving a total for the year 1936 of 470 rodents.

During the nesting season large and medium-sized rats and young rabbits were taken. The dead animal was frequently found under or near the nest tree in a partly eaten condition. The jaws, bones and some of the fur were among the nest contents or else in pellets. The rats found during the rest of the year were usually small, but often larger than mice. Their jaws, fragments of skulls and the bones and fur were found in pellets.

Mice, voles and young rats were found in the pellets throughout the year. In open country they occurred occasionally; on the edge of woodland and in enclosed fields they formed an important part of the diet. As the entire animal is usually eaten, the presence of jaws with their characteristic teeth made identification easy. If, however, the jaws were not present, they were recorded as "small rodents".

When present in large numbers, rodents are undoubtedly eaten in large numbers. Mr. Dickinson (St. Albans) relates how for many years Little Owls were invaluable in keeping down rodents on his farm. Now that the bird has become scarce, the rodents have become a bad scourge. Several other people have described the same thing.

The most noteworthy feature of the rodent part of the Inquiry has been their marked increase as a food item during the whole of 1937. At Bretton Park, where rodents were always one of the most frequent types of food, they became in January almost the sole constituent. Not only were most of the pellets completely composed of mice but large numbers

consisted of rodent fur only. This continued to the end of the Inquiry in July. Further evidence came from Altrincham (Cheshire). Mr. E. Cohen sent three consignments of material from a hole at the foot of an oak from which he saw a Little Owl fly. He wrote: "It is mixed farming land. There are plenty of rabbits and lapwings and a few partridges and snipe." The material and pellets which he removed from the hole consisted of:—

1937.

- May 25th : 3 Long-tailed field-mice, jaws and most bones present
2 *Geotrupes* sp. ; 4 *Necrophorus* sp. (beetles).
May 27th : 2 Long-tailed field-mice ; 1 *Geotrupes* sp. ; feathers of Little Owl.
June 2nd : 2 Long-tailed field-mice ; 1 *Geotrupes* sp. ; feathers of Little Owl.

Capt. W. K. Marshall kept a nest under observation on Radburne Hall Estate, Derby and sent material regularly.

- May 27th : 1 Long-tailed field-mouse ; feathers of Starling (juv.) ; beetle fragments.
June 4th : Lower jaw of large vole, enclosed in fur ; wing of Starling (juv.) ; *Geotrupes* sp.
June 9th : Much fur, teeth and ribs of long-tailed field-mouse ; *Geotrupes* sp.
June 16th : Jaw and fur of vole ; wing of Starling (juv.) ; *Geotrupes* sp.

The pellets sent by Mr. A. O. Rolls (Wellington, Salop), which were rich in rodent remains in 1936, showed a great increase in the number present in the pellets of 1937. The same is true of the nest clearances made in 1937 by other workers of 1936 at Harold Wood, Limpsfield and Old Woking.

Mr. Rolls and Mr. Chandler (Limpsfield) have taken the opinion of local gamekeepers as to whether there has been an increase of rodents in 1937 in their immediate districts (near the nest sites). In both cases the answer was that this has been the case to a marked degree.

MAMMALS OTHER THAN RODENTS.

INSECTIVORA. The remains of 44 shrews (*Sorex araneus castaneus*) were found in 1936, including one water shrew (*Neomys fodiens bicolor*). A slight increase in abundance was noted in 1937.

8 moles (*Talpa europæa*) occurred in nest contents.

Some claws and broken bones of a hedgehog (*Erinaceus europæus*) were found in pellets at Seaford in two consecutive weeks. As similar claws and bones were also found in pellets of a Carrion-Crow at the same time and place, the Little Owl had presumably been pecking at carrion.

CHEIROPTERA. A few hairs of a bat in a gizzard were the only traces found of this mammal.

The study of Table 7 will be seen to lead to the following conclusions.

(1) From May till mid-July the Little Owl takes a toll of Starlings, House-Sparrows, Blackbirds and Thrushes. Other species of birds are taken occasionally but not in important numbers.

(2) In mid-July a sudden diminution in the amount of bird food occurs. It must be realized that the numbers quoted for July belong partly (probably mostly) to the two previous months, as a single clearance of a nest made when the young birds have flown, shows the bird food that has been taken in May and June rather than in July.

(3) From September till April bird food almost disappears from the diet. House-Sparrows continue to be used occasionally also, very rarely, other species. The eight birds recorded for January were all found in the hole used by the sick Little Owl (*Incident 1*) and probably do not all belong to that month.

(4) In April, birds begin to increase in the food, reaching their maximum during the period of the feeding of the nestlings in May and June.

The list of species shows that the birds used as food are almost entirely those that usually or frequently feed on the ground. They are thus easily procured by a bird of prey whose habit throughout the year is to pick up rodents and insects.

The maximum number of birds found in a nest clearance (with the larders) is fourteen—there are usually eight or ten. The belief of many people that the Little Owl is a voracious feeder on birds, at least during the breeding season, is not justified by the evidence of 1936 and 1937. Two or three birds weekly is not a large number for the mouths of four or five birds of prey. It is noteworthy too that all the birds recorded (with the exception of the Hawfinch) are common species. There has not been a single reference in the whole of the correspondence during the years of Inquiry to Warblers, Nightingales, Shrikes or in fact to any bird that is not on the list (Table 7) (with the exception of a Tern and a nestling Tern and Gull, see p. 218 and the Skokholm incident described subsequently).

Whatever the Little Owl may have done in past years, it does not appear at the present time either to raid nests (see Habits) or to feed on birds in such large numbers as to be harmful to the species that form its prey.

The following incident seems, however, to contradict these conclusions. It must, therefore, be examined with care.

LITTLE OWLS ON SKOKHOLM ISLAND, PEMBROKESHIRE.

This island, occupied by Mr. R. M. Lockley as a bird reservation, holds an almost unique colony of Storm-Petrels (*Hydrobates pelagicus*). The bird is 6.5 inches long (rather smaller than a Swift). The nests are in burrows in turf, close together. About two hours after sunset the Storm-Petrels fly about and hover over the burrows.

In 1934 a pair of Little Owls nested on the island. In a hole in a wall a large number of wings and tails of Storm-Petrels were found. In both 1936 and 1937 a large cache was again found, numbering in the former case some 200 Storm-Petrels. The island contains rabbits but no rats, and no horses or cows to provide dung-beetles. Here, in a colony of small birds which hover just above the ground by night, were perfect conditions for the Little Owls' hunting ground.

It is obvious that it is altogether unsuitable that the Little Owl should be allowed to breed on Skokholm. By every possible means Mr. Lockley is justified in his efforts to prevent it from doing so. But the incident has little connexion with the present Inquiry, for the Skokholm circumstances are exceptional in every detail. What takes place on a small island where feeding is abnormal has little relevance to an Inquiry into the feeding habits of the same bird on the mainland where its normal diet is easily procured.

CORRESPONDENTS' REPORTS OF FOOD SEEN TAKEN OR FOUND IN NESTS, ETC. IN 1936.

June 28th: "When I went up to the nest of the Little Owls I found in it, with the two young Owls, two moles and one young rabbit."—Dr. A. H. Zair (Salop).

June 12th: "I saw the male Owl kill one young Blackbird."—Mr. J. Slee (Middlesex).

August 7th: "I saw one once with a Blackbird in its bill but such pellets as I have found show a great preponderance of beetles."—Mr. Waterhouse Gibbins (Glos.).

August 7th: "On one occasion last year, a Little Owl took a young Blackbird off the lawn within five yards of where my wife was sitting."—Mr. G. K. Page (Hants.).

"My observations cover nearly 30 years. I say very definitely that the Little Owl's food almost solely consists of insects, especially beetles and moths and of small rodents. This last season (1936) I have had some half-dozen nests under observation and the only proof I could find of slaughter of birds has been the presence of legs of young Starlings."—Mr. Camden Clarke (Burton-on-Trent).

“ I have only once actually *seen* one catch a bird—a Black-bird at 7.30 p.m. (summer time).”—Mr. H. F. Witherby (Chobham).

May 31st, 1936 : “ In a nesting hole, up a hollow log lying on the ground on May 26th, where there were two young about a week old, I found the following :—2 young Starlings (one decapitated and the wing of another), the wing and primary feathers of the same species. Also the hind-quarters of a short-tailed field-vole and shrew, the hind-quarters of a large brown rat and four other small rats complete. Three days later all these had apparently been eaten except a mouse and the remains of a rat.”—Mr. C. W. Heycock (Winchester).

August 18th : 1935 : “ About 9 a.m. I picked up a dead Little Owl, killed by a car. The gizzard contained a pink and green grasshopper about $\frac{3}{4}$ in. long, undigested.”—Mr. M. D. Lister (Surrey).

April 27th, 1936 : “ A Little Owl here has a rabbit's skull and lower jaw in its new nesting hole.”—Rev. R. Pimm (Leics.).

June 2nd, 1936 : “ I took the chance to watch them at work this evening from 7.30 till 8.30 p.m. It was very interesting. In the course of that hour the male bird arrived home with four kills. The first was a young rat about twice the size of a farm mouse. The others appeared to be field-mice or voles. After arriving at the tree, each time with the kill in his claws, he would take it in his bill and get nearer the hole. He would then make a noise not unlike a hen clucking quietly and the female would pop out with a little wheezing screech, taking the food for the young. Not once did the male go into the nest.”—Mr. D. Carter (Abergavenny).

April 24th, 1936 : “ I was walking along a row of hawthorn trees when I noticed a round hole. A Little Owl sat in the bottom and by its side was a half-grown rabbit. In the other larders were mice, beetle wings, bones, birds' legs and feathers. One had nothing but mice, fresh killed.”—Mr. F. W. Bates (Copmanthorpe).

September 1st, 1936 : “ A pair of Little Owls nested in a disused hive for some years at Ringwood farm, Minster Lovell. We opened the hive one hot summer day and found two owlets with no less than 17 freshly killed mice round them. Every one was fresh and we wondered what the total bag that day must have been. No feathers were found in the nest.”—Mr. C. B. Bartlett (Charlbury).

May 20th, 1936 : “ Whilst the hen was sitting, three or four dead mice were placed in a small niche above the nest daily.

I noticed long-tailed, short-tailed, house mouse, a shrew and one young rat. When brooding began, the mice were whole, but throughout the last week of brooding their heads have been torn off. The eggs are hatching to-day."—A. J. Harthan, Evesham (Worcester).

One pair of Little Owls had chosen a diet different from the rodents, Starlings, Blackbirds and insects described by the other correspondents. Mr. A. C. G. Thompson (Streatham) records, on June 6th, 1936, "the larder contents of a Little Owl's nest I found on the beach at Dungeness. There were three young in a hole at the foot of an elder tree. With them were the wings and beak of a Common Tern and the bodies, minus heads, of a Common Tern chick and a Black-headed Gull chick."

It seems probable that this variation from the normal diet, described by the other correspondents, was due to the fact that on this particular site, sea birds were more easily procured than were rodents, Starlings, Blackbirds and insects.

A TAME LITTLE OWL FED ON DEAD DAY-OLD CHICKS.

Miss Margaret Perry of Guildford made the following experiments to test whether the parts of young chicks are too soft to reappear in pellet form. She sent all food remains to the analyst together with full notes of her observations on the bird. Her Little Owl had never seen either a chick or a mouse previously to the experiments. That she had to train it to accept its new supper is shown by the fact that the bird evinced terror when the dead chick was placed in the cage, beating itself against the bars till the chick was removed. Hunger eventually forced it to peck at it. This is mentioned merely to account for the sparsity of results in the first two experiments. No inference is intended to be drawn. One cannot deduce habits of wild birds from their behaviour in captivity. But it is reasonable to suppose that the working of the alimentary system is alike for both.

Experiment 1. Sept. 16th. Little Owl given one day-old chick.

Result : (a) 1 pellet. Composed of down, tendons, lower mandible.

(b) Faeces. Contained 5 bits of down in lime.

(c) Uneaten : 2 wings, legs, entrails, vertebrae.

Experiment 2. September 22nd. Given one day-old chick.

Result : Chick pecked but not eaten. Remains found on floor.

No pellet formed and faeces revealed nothing.

Experiment 3. September 24th. Given one day-old chick.

Results : 1 pellet, composed of a mass of down enclosing 1 humerus, vertebrae, fragments of skull, bill.

Faeces : 2 bits of down in lime.

Uneaten : Legs, 1 whole wing and fragment of the other, most of the body.

Experiment 4. September 27th. One day-old chick.

Results : 5 pellets (4 very small). The whole chick was eaten except the wings. The pellets, showing the bones, have been kept intact as specimen pellets.

Experiment 5. September 29th. Given one day-old chick.

Results : 3 small pellets. Contained much down, the bill, a few bones and the gizzard.

Faeces : Traces of down.

Uneaten : Wings, one leg and a small quantity of entrails.

Experiment 6. October 2nd. Given one day-old chick.

Results : 4 small pellets contained all the down, both wings and legs (one leg folded in separate pellet), vertebrae, bones, bill.

Faeces : Traces of down.

Uneaten : Nothing left except a minute quantity of entrails.

Experiment 7. October 4th. One day-old chick.

4 pellets. Everything was swallowed except the entrails and one leg.

Pellet 1 contained the wings in down.

Pellet 2 contained one foot in down.

Pellet 3 contained the bill and bones in down.

Pellet 4 contained the gizzard in down.

The second leg was not found but as the cage is used for feeding and roosting only, it was probably lost by the Owl in the house. The pellets contained, besides a vast amount of down, 2 feathers of the Little Owl.

In all the above experiments, the chick (with a little cabbage) was the whole day's ration. It was, therefore, hungry when the chick was presented. On December 17th, however, it was given a chick and a mouse at 9.40 a.m. at an hour when not usually fed. The mouse, though new food to it, was taken first and most completely—only the tail and a bit of skin were left. Later the chick was eaten. Two pellets were ejected, one at 6.15 p.m., the other being found at 8 a.m. The first contained the skull and jawbones, a few other bones and a little fur of the mouse. The second contained a large amount of down, both wings and several bones of the chick.

On December 30th the Little Owl was given 2 day-old chicks. The three resulting pellets contained the whole of the down, 3 legs, most of the vertebrae, the bills and many of the bones.

EXPERIMENTS AT THE LONDON ZOO.

Two similar experiments were worked at the London Zoo, through the kindness of Mr. D. Seth-Smith.

(1) On June 22nd the two caged Little Owls were given a Turkey taken from the egg and four young Pheasants in down. Results : 5 small pellets. Three of them were analysed, 2 being kept intact as specimens. Copious down enclosed the bills, bones and feet of the chicks.

(2) On June 28th 4 poultry chicks of about 10 days were used. The result was 4 large pellets composed of down, bills, feet, vertebrae and other bones.

The results of these experiments show clearly that if a chick is eaten its harder parts reappear in the pellets just as completely as do those of other birds and mammals. The bill appeared in the pellet in almost every case and the down, in large quantity, did so invariably.

It is the opinion of some people that the whole structure of the chick is so soft as to prevent it from reappearing in pellet form. This is certainly not so with the down, bill and feet. The bones are, it is true, very soft in a fresh pellet but the pellet does contain them and they harden at once on drying and cannot possibly be overlooked by the analyst. Chick pellets, moreover, are easily recognized (in birds with pale down) by their yellow coloration which distinguishes them from all others known to the writer.

POULTRY CHICKS.

Records of the Field Observers.

There were two records during the Inquiry of poultry chicks being taken by Little Owls.

In 1936 two chicks were found by Mr. C. H. Smith in a nest on his farm and in 1937 he found five more. No traces of poultry chicks have been found otherwise in pellets, nests, larders or gizzards.

The details of the two records are as follows:—

On May 31st, 1936, Mr. C. H. Smith (see Table 2) found two partly eaten chicks in a Little Owl's nest on his farm. Some chick bones and feathers were also found in some pellets he sent on the same date, doubtless of the same birds.

On June 6th, 1937, Mr. Smith wrote: "I have been watching the nesting hole and also larder against the house every day for the last two weeks. In them I have found four young Blackbirds, one young Song-Thrush, two poultry chicks and a young rabbit, with the usual large quantity of beetles. I have been to the nest once a day. The chicks were partly eaten but these were in the larder."

June 27th, 1937: "The Little Owls have this week killed three poultry chicks. I actually saw one old bird eating the chick. The neck was picked clean of flesh from the back of the head to the shoulders where the neck was severed. This was at 9.30 p.m. On Thursday at 6 a.m. I found another in exactly the same condition and on Saturday another. The head in none of them had been touched."

Mr. Smith possibly "asked for trouble" with his pair. So certain was he (after many years' experience with Little Owls on his farm), that they never took live chicks that he allowed them to act as scavengers with dead chicks by placing them on the tops of the huts and perhaps created their taste for them.*

Mr. A. Dickinson (St. Albans), another of the regular observers, wrote on June 14th, 1936:—

"I am rearing upwards of 1,000 head of chickens, Turkeys, Guinea Fowls and Pheasants. So far I cannot trace a single case to these birds as having killed any of my young birds. Nor have I seen or heard of them being amongst the coops any time during day or evening. This includes the period of incubation and rearing of young." Some of Mr. Dickinson's coops actually adjoin the ricks where, till lately, Little Owls have hunted regularly for rodents. The writer has visited the farm and seen the nest and hunting sites.

Several of the observers have questioned local farmers on the subject.

Mr. J. F. Thomas, Laugharne: "I talked to many farmers and rabbit catchers during April. None of them could give any evidence of Little Owls taking chickens."

Mr. Chandler, Limpsfield: "The keeper of a Surrey Estate tells me he has never known the Little Owl take either Pheasants or poultry chicks. He shoots the birds at every opportunity, however."

Mrs. Babb, Shaugh, Devon, collected pellets daily from feeding haunts on farmland. The two farmers expressed their opinion freely that the Little Owl is helpful on their farms.

Mrs. Ayre, Gornal (Dudley): "I asked the farmer if he knew the Little Owls were there. He said he did but that they never troubled him. He rears lots of poultry but had no complaints."

No adverse opinions about poultry chicks were reported by the observers.

REPORTS FROM CORRESPONDENTS.

There were none for the years of the Inquiry, 1936 to July, 1937. Miss Harding (Horley) wrote that in July, 1935, a number of chicks were taken from her small poultry farm and the delinquent Little Owls were shot. No other complaints were made for that year.

*It is interesting to note that Dr. Collinge describes a parallel case. Of his two records of Pheasant chicks being taken, one was of a Little Owl that had been fed by the keeper on dead Pheasant chicks.

GAME CHICKS.

Records from the Food Remains.

July 24th, 1936: The bill, bones and a few feathers of a Pheasant chick were found in 2 pellets from Mildenhall.

May 14th, 1937: A gizzard sent from Hereford contained comminuted feather material that might possibly represent a chick, though on slender evidence.

These are the sole records for 1936 and 1937.

Mr. Grantham who sent the Mildenhall pellets wrote: "I am enclosing a few pellets and shall be particularly interested to hear the contents as there were an exceptionally large number of both young Pheasants and Partridges in the vicinity and if these Little Owls really do kill many of these young birds, I feel sure remains will be found in these pellets." There were no game chicks in these pellets but the one recorded above occurred in a set 10 days later from the same site.

EXPERIENCES OF OTHER FIELD OBSERVERS.

Mrs. Ayre (Gornal, Dudley) wrote in 1936: "It may be of interest that there are three Partridge nests with young within a radius of 50 yards of the Owl tree."

Mr. Rolls (Wellington) wrote in 1936: "About 50 yards from the Owls' nest was a Partridge nesting. This hatched off 7 young now all strong on the wing, although while watching I saw the freshly hatched Partridges within 4 yards of the Owls' nest with both Little Owls perched on the edge of the stump. I saw this several times. Another Partridge hatched off 12 right under one of the haunts of this pair. These again were not touched. The same with some Pheasants hatched near." Mr. Rolls wrote again in 1937: "My Little Owls seem determined not to disgrace themselves by touching game. You will see by the map they are right in the middle of it, simply surrounded by the nests of wild game birds."

Mr. Pumfrett (Old Woking) wrote in August, 1936: "A pair of Partridges has succeeded in raising a covey of about 10 or 12 youngsters which would have been a sore temptation to a game-eating owl living in such close proximity."

The experience of the field observers has been unanimous that their special Little Owls have shown no partiality for poultry or game chicks as such.

REPORTS FROM CORRESPONDENTS.

Owing to the scarcity of reports, in both parts of the Inquiry, from those specially interested in the rearing of

game, an exception has been made in their favour and any reports that belong to 1935 have been included with those of the actual years of the investigation.

REPORTS OF GAMEKEEPERS.

June, 1935, Mr. S. J. Hague, Gawsworth, Cheshire : " In the entrance to Owls' nest were three Partridge chicks about 10 days old."

Mr. H. Goodall, Chelford, Cheshire : " Last season, 1936, I had trouble with them, 8 Pheasant chicks over a week old were missing from one coop. A Little Owl was shot ; no more chicks were afterwards missing."

July, 1935, Mr. A. Healey, Hedgerley, Slough : " I watched Little Owls kill 4 Partridges, take them to their hole in a tree before killing them."

1935, Mr. W. Bowen, Black Knapp, Chipping Norton : " I noticed that 3 chicks had gone. I watched and a Little Owl came. I shot it but am not sure that he was the culprit."

OTHER REPORTS.

Mr. Howard Lancum wrote : June 5th, 1936, Bexley, Kent : " A Little Owl was seen with a freshly killed Pheasant chick on the border of a wood. The chick was about seven days old. it was decapitated. Subsequently the larder was found. The pellets therein contained juvenile Pheasant feathers and skull, rodent remains, beetle remains and feathers of a Chaffinch."

Mr. Lancum also recorded for June 12th, 1935, Roburgh (S. Devon) : " A Little Owl flushed from larder in old oak. Larder $\frac{1}{4}$ mile from game-rearing field. Contained 5 Pheasant chicks killed on different dates; oldest being about 14 days dead and most recent 2 to 3 days. None of the chicks dismembered or mutilated. On June 14th larder contained 2 more chicks. Four pellets examined were composed of rodent bones and fur, elytra of beetles and one snail (*Helix aspersa*). No traces of game."

Goldington, Beds., Major J. Deane wrote : " Last year (1935) we had quite a number of young Pheasants in coops on the lawn. We more than once saw Little Owls fly off carrying Pheasant chicks. We shot and trapped four close to the coops."

The reports from interested correspondents on the game chick question have not all, however, been adverse to the Little Owl. For instance, F. W. King, Walton-on-Thames, wrote : " I have reared up to 6,000 birds a season. Night and day I have lived in the woods and not once have I lost a bird from an owl. Often I've watched the Little Owl come

down close to young Pheasants and kill a mouse but never once did I miss a Pheasant."

A nest clearance from a Suffolk game estate was received from the keeper on August 18th just in time to be recorded in the Report. The large amount of debris had been collected as soon as the young birds had flown. The main contents were feathers, etc., of several Starlings, and one Blackbird, jaws, etc., of several rats of various sizes (one very large), small rodents, many non-carrion beetles and one burying beetle. The keeper expressed his opinion that the Little Owls had not eaten the animals but had stored them at the entrance to the nest in order to cultivate beetles and maggots. But the debris was full of portions of pellets containing rodent and bird remains. Also fragments of only one carrion beetle were found, and fly maggots have never been found in the Little Owl's food. They would be too soft to reappear in dry remains, but if taken largely, they would certainly have been found in gizzard contents containing freshly procured food, and this has never been done.

COMMENTS ON THE OBSERVERS' RECORDS AND THE CORRESPONDENTS' REPORTS.

One game chick in two pellets, another doubtful one in a Little Owl's gizzard (based on the slender evidence that there was no grey down with the feather fragments) and 7 poultry chicks. Such is the result of 1½ year's intensive search for game and poultry chicks, in the field and in the laboratory. And yet the Little Owl is considered by many game preservers and keepers to be a veritable fiend as a chick destroyer. It cannot be that the game world was ignorant of the Inquiry for it was well advertised; a special appeal was made by the B.B.C. to game people to take part in the investigation and when they failed to do so, a special further inquiry was arranged exclusively for them.

Every suggestion to account for the absence of chicks from pellets, nests, larders and gizzards has been carefully sifted. Some say, for instance, that the Little Owl kills chicks but does not eat them. But Mr. Smith saw it done and the Mildenhall Pheasant chick was found in pellets. Others say that it uses as food the brains only of the birds that it kills. If so, what becomes of the chicks? They have not been found in nests and holes. Moreover, the heads of the Osgathorpe chicks were found intact. The analyst has spent whole days searching, with microscope and reagents, for brains in gizzards and pellets but has found none. A more probable theory (prior to investigation) was that the chick is eaten but

the bones, bill and down are too soft to reappear in pellet form. But this is confuted by the experiments at Guildford and the Zoo and by the Mildenhall pellets all of which prove conclusively that, when chicks are eaten, the down, bill and bones reappear in the form of very characteristic pellets.

Hence the only conclusion seems to be that chicks are not an important part of the diet of the Little Owl.

Individual Little Owls undoubtedly sometimes pick up chicks, but there is no chick-eating habit on the part of the bird as a species.

This conclusion is endorsed by a study of Table 2, which shows that the Little Owl sites watched by a band of observers in different counties, were almost all in close proximity to Partridges, Pheasants or poultry chicks. The letters just quoted from the same field observers show how keenly they were on the watch for chicks being taken by the Little Owl, yet none were found. The most specialized work done on this side of the Inquiry was that of Mr. J. C. S. Ellis on Lord Allandale's estate at Bretton Park, near Wakefield (Table 8). He was fortunate in having the friendly collaboration of the gamekeepers who took a real interest in his investigations which were very thorough. Extracts from three of Mr. Ellis's letters are interesting :

(1) At the start of the Inquiry (May 8th) he wrote : " Will you let me know if anything unusual turns up and if and when you find game remains, as I have a struggle to keep the ' blighters ' alive, so terrible are the tales I hear from the keepers about their depredations."

(2) On June 10th he wrote : " No Little Owls have touched any Pheasant chicks to date. I fear more for the Partridges as there are plenty about round the nests."

(3) On August 26th (in answer to a direct question by the writer) : " The keepers say they have not lost a bird through Little Owls this season and we have never proved that a single game bird has been touched by the Little Owl."

A summary of Mr. Ellis's work on two of his four nest sites (see Table 8) shows that rodents and birds (except game) predominated in the analyses over insect food during the nesting months. This is partly due to the fact that the Bretton Park nests were in very inaccessible places, hence they could not be cleared to the base and the debris which usually contains prolific insect remains was not collected. Except, however, for the comparative scarcity of insects in the records these nest contents may be taken as typical of Little Owls' food on the more open parts of estates, where rodents and birds are easily procured.

TABLE 8.
Food Remains from Bretton Park Nesting Sites.
 HOYLAND BANK SITE.

	Rodents	Birds	Invertebrates
April	1 Rabbit 2 Voles 3 Mice	1 Blackbird 1 Skylark	13 Insects Earthworms
May	6 Mice 1 Mouse or Vole	1 Starling	87 Insects Millipedes
June	1 Rabbit 2 Mice	2 Starlings 1 House-Sparrow 1 Lapwing	(Pellets very scarce)
July	4 Voles	2 Starlings 1 Chaffinch 1 Song-Thrush 1 Blackbird	2 Insects (Pellets very scarce)
August	Rabbit (probably carrion)	1 Starling 1 Skylark	70 Insects Earthworms
September	1 Rat 2 Mice	—	<i>Tipula</i> sp. very abundant 13 other Insects
October	4 Mice	—	<i>Tipula</i> sp. very abundant 22 other Insects
November	2 Mice	—	<i>Tipula</i> sp. still occurred

HAIGH WOOD SITE.

	Rodents	Birds	Invertebrates
April	1 Rat 2 Mice	—	21 Insects
May	2 Rats 3 Mice	1 Bird (not game)	24 Insects Millipedes
June	Rabbit fur 1 Rat 1 Mouse or Vole	1 House-Sparrow 2 Blackbirds	22 Insects Earthworms
July	1 Rabbit 2 Mice or Voles	1 Starling 1 Mistle-Thrush 1 Song-Thrush	47 Insects (33 Earwigs)
August	—	1 Hawfinch 1 Yellow-hammer	36 Insects (including <i>Tipula</i>)
September	1 Mouse or Vole	—	<i>Tipula</i> sp. very abundant 4 other Insects
October	1 Mouse or Vole 2 Rats	1 Greenfinch	<i>Tipula</i> sp. very abundant
November	2 Rats	—	<i>Tipula</i> sp. still occurred

INVERTEBRATES (OTHER THAN INSECTS).

<i>Annelida</i> (Earthworms)	<i>Lumbricus</i> sp. Earthworms occurred very frequently—sometimes partially digested in pellets, sometimes fresh or dry in nests. <i>Setæ</i> (hairs) were constantly found.
<i>Arthropoda</i> (Woodlice, Spiders, Insects)	<i>Oniscus</i> sp. Woodlice were very common in the food remains. Spiders occurred frequently in pellets.
* <i>Myriapoda</i> (Millipedes)	Millipedes composed whole pellets in some districts and were abundant in most: <i>e.g.</i> , Abington (Cambs.), Seaford, Lavenham. They were among the commonest of the food items. <i>Julus</i> sp. <i>Polydesmus</i> sp.
<i>Gastropoda</i> (Snails)	<i>Helicella</i> sp. and other small snails were frequent. There was one record of <i>Helix aspersa</i> .

LIST OF THE INSECTS IDENTIFIED IN THE FOOD MATERIAL.

Coleoptera.—Beetles. 121 species determined by Dr. Blair, Mr. Fryer, Mr. F. J. Coulson and Mr. A. A. Allen.

<i>Cicindelidæ.</i> <i>Cicindela</i>	<i>campestris</i> L.	<i>Dytiscidæ.</i> <i>Colymbetes</i>	<i>fuscus</i> L.
<i>Carabidæ.</i> <i>Cychrus</i>	<i>rostratus</i> L.	<i>Dytiscus</i>	<i>marginalis</i> L.
<i>Carabus</i>	<i>catenulatus</i> Scop.	<i>Helophoridæ.</i> * <i>Megempleurus</i>	<i>rugosus</i> Ol.
‡ „	<i>nemoralis</i> Müll.	<i>Megalelephorus</i>	<i>æqualis</i> Th.
‡ „	<i>violaceus</i> L.	<i>Sphæridiidæ.</i> <i>Sphæridium</i>	<i>scarabæoides</i> L.
„	<i>granulatus</i> L.	<i>Staphylinidæ.</i> ‡ <i>Staphylinus</i>	<i>olens</i> Müll.
„	<i>monilis</i> F.	‡ „	<i>æneocephalus</i> DeG.
„	<i>monilis</i> F var <i>consitus</i> Panz	„	<i>globulifer</i> Fourc.
„	<i>arvensis</i> Herbst	„	<i>cæsareus</i> Ceder.
<i>Leistus</i>	<i>spinibarbis</i> F.	„	<i>parumontosus</i> Stein.
‡ <i>Nebria</i>	<i>brevicollis</i> F.	„	(<i>Ocypus</i>). <i>cupreus</i> Rossi.
<i>Clivina</i>	<i>fossor</i> L.	<i>Philonthus</i>	<i>fuscipennis</i> Mann.
<i>Broscus</i>	<i>cephalotes</i> L.	<i>Oxytelus</i>	<i>inustus</i> Gr.
* <i>Pseudophonus</i>	<i>pubescens</i> Müll.	<i>Quedius</i>	sp.
‡ <i>Harpalus</i>	<i>æneus</i> F.	<i>Necrophoridæ.</i> <i>Necrophorus</i>	<i>humator</i> Goetz
„	<i>latus</i> L.	„	<i>vespilloides</i> Herbst.
<i>Pæcilus</i>	<i>cupreus</i> L.	„	<i>vespillo</i> L.
†* <i>Pterostichus</i>	<i>madidus</i> F.	<i>Silphidæ.</i> <i>Silpha</i>	<i>tristis</i> Ill.
‡* „	<i>vulgaris</i> L.	„	<i>tyrolensis</i> Laich var <i>nigrita</i> Creu.
„	<i>diligens</i> Stm.	„	<i>obscura</i> L.
„	<i>macer</i> Marsh.	<i>Ablattaria</i>	<i>lævigata</i> F.
‡ <i>Abax</i>	<i>ater</i> Vill.	<i>Phosphuga</i>	<i>atrata</i> L.
<i>Cyrtotonotus</i>	<i>fulva</i> DeG.		
„	<i>apricaria</i> Payk.		
„	<i>aulica</i> Panz.		
<i>Amara</i>	<i>ænea</i> DeG.		
<i>Calathus</i>	<i>fuscipes</i> Goeze.		
„	<i>melanocephalus</i> L.		
<i>Læmostenus</i>	<i>terricola</i> Hbst.		
<i>Brachinus</i>	<i>crepitans</i> L.		

<i>Histeridæ.</i>		* <i>Agriotes</i>	<i>sputator</i> L.
<i>Hister</i>	<i>unicolor</i> L.	* "	<i>obscurus</i> L.
"	<i>neglectus</i> Germ.	* "	<i>lineatus</i> L.
"	<i>carbonarius</i> Ill.	† <i>Corymbites</i>	<i>pectinicornis</i> L.
<i>Byrrhidæ.</i>		<i>Cerambycidæ.</i>	
† <i>Byrrhus</i>	<i>pilula</i> L.	<i>Clytus</i>	<i>arietis</i> L.
<i>Lucanidæ.</i>		<i>Rhagium</i>	<i>bifasciatum</i> F.
<i>Leucanus</i>	<i>cervus</i> L.	<i>Stenochorus</i>	<i>meridianus</i> Preyss.
<i>Dorcas</i>	<i>parallelopipedus</i> L.	<i>Chrysomelidæ.</i>	
<i>Sinodendron</i>	<i>cylindricum</i> L.	<i>Timarcha</i>	<i>tenebricosa</i> F.
<i>Scarabæidæ.</i>		"	<i>coriaria</i> Laich.
<i>Onthophagus</i>	<i>ovatus</i> L.	<i>Chrysomela</i>	<i>staphylea</i> L.
"	<i>vacca</i> L.	* "	<i>polita</i> L.
"	<i>fracticornis</i> Preyss.	"	<i>hyperici</i> Forst.
<i>Aphodius</i>	<i>fossor</i> L.	<i>Cryptostomidæ.</i>	
"	<i>fimetarius</i> L.	<i>Cassida</i>	<i>rubiginosa</i> Müll.
"	<i>ater</i> DeG.	<i>Tenebrionidæ.</i>	
"	<i>granarius</i> L.	<i>Blaps</i>	<i>mucronata</i> Lat.
"	<i>merdarius</i> F.	<i>Anthicidæ.</i>	
"	<i>inquinatus</i> F.	<i>Anthicus</i>	<i>antherinus</i> L.
"	<i>punctato-sulcatus</i> Sturm.	<i>Meloidæ.</i>	
† "	<i>prodromus</i> Brahm.	<i>Meloë</i>	<i>proscarabæus</i> L.
"	<i>contaminatus</i> Herbst.	"	<i>violaceus</i> Marsh.
"	<i>obliteratus</i> Panz.	<i>Curculionidæ.</i>	
"	<i>luridus</i> F.	<i>Otiorrhynchus</i>	<i>clavipes</i> Bons.
"	<i>rufipes</i> L.	* "	<i>ligneus</i> Ol.
"	<i>depressus</i> Kug.	<i>Strophosomus</i>	<i>singularis</i> L.
† <i>Ceratophyus</i>	<i>typhæus</i> L.	"	<i>faber</i> Herbst.
<i>Geotrupes</i>	<i>spiniger</i> Marsh.	<i>Barypithes</i>	<i>lateralis</i> Payk. sp.
† "	<i>stercorarius</i> L.	<i>Liophlæus</i>	<i>tessulatus</i> Müll.
"	<i>mutator</i> Marsh.	* <i>Phyllobius</i>	<i>pyri</i> L.
†* <i>Melolontha</i>	<i>vulgaris</i> F.	†* <i>Barynotus</i>	<i>obscurus</i> F.
* <i>Amphimallus</i>	<i>solstitialis</i> .	<i>Alophus</i>	<i>triguttatus</i> F.
<i>Elateridæ.</i>		†* <i>Sitona</i>	<i>humeralis</i> Steph.
† <i>Lacon</i>	<i>murinus</i> L.	† <i>Phytcnomus</i>	<i>punctatus</i> F.
<i>Elater</i>	<i>balteatus</i> L.	"	<i>fasciculatus</i> Herbst.
<i>Melanotus</i>	<i>rufipes</i> Hbst.	<i>Tychius</i>	<i>venustus</i> F.
<i>Athous</i>	<i>hæmorrhoidalis</i> F.	<i>Procas</i>	<i>armillatus</i> F.
"	<i>vittatus</i> F.	<i>Cleonus</i>	<i>piger</i> Sc.

Also larvæ of *Telephorus* sp. (many) *Agriotes lineatus* and many unidentified larvæ.

Lepidoptera.—Moths. Eggs determined by Mr. H. Worsley Wood.

Sphingidæ.

Sinerinthus ocellatus (eyed hawk). Eggs.

Sinerinthus populi (poplar hawk). Eggs.

Lasiocampidæ.

Lasiocampa quercus (oak eggar). Eggs.

Cosmotriche potatoria (drinker). Eggs.

Notodontidæ.

Phalera bucephala (buff-tip). Larvæ.

Noctuidæ.

**Agrotis exclamationis* (heart and dart). Larvæ.

**Triphaena pronuba* (yellow underwing). Larvæ.

Many unidentified larvæ.

Diptera.—Two-winged flies.

Tipulidæ.

*†*Tipula paludosa* (daddy-longlegs. Crane fly). Eggs and larvæ.

Hippoboscidæ.

Ornithomyia aviculaiva. Puparia.

Hymenoptera.—Bees and wasps.

Ichneumonidæ.

Ophion obscurus.

Many unidentified *Hymenoptera*.

Orthoptera.—Grasshoppers and earwigs.

*†*Forficula auricularia* (common earwig).

Unidentified grasshoppers.

Hemiptera.—Bugs.

Podops inunctus.

*Notified as a pest by the Ministry of Agriculture.

†Very frequent.

‡Frequent.

List of Correspondents, in addition to the regular Field-workers (see p. 172), who have sent in Food Material to Miss Hibbert-Ware.

W. G. Bramley, Yorks.

Stewart Boardman, Surrey.

Miss D. B. Brooks, Essex.

Bruton King's School, Somerset.

Cyril Beresford, Kent.

H. J. Burkill, Surrey.

Miss E. P. Cobb, Herts.

E. A. Cobby, Suffolk.

Dick Carter, Monmouthshire.

John Daniels, Surrey.

Mrs. Denham, Cambs.

Lt.-Col. Foster, Cambs.

E. P. Gawne, Herefordshire.

D. J. Hemmings, Radnorshire.

G. Hibbert-Ware, Cambs.

Hedingham Castle Camp, Essex.

Eric Humphries, Northants.

Miss M. M. Hutchinson, Suffolk.

Donald Johnson, Suffolk.

Knapwell School, Cambs.

Gwyn Lewis, Monmouthshire.

John Lowe, Cheshire.

R. M. Lockley, Pembrokeshire.

G. E. Manser, Kent.

Mrs. M. Mitchell, Cornwall and
Worcs.

Donald MacInnes, Cambs. and
Sussex.

Miss V. Maxse, Sussex.

E. M. Nicholson, Surrey.

E. L. Nicholson, Essex.

Miss Newnham, I. of Wight.

T. Hyde-Parker, Yorks.

Quendon Camp, Essex.

J. Ross, Essex.

W. A. Ramsay, Sussex.

Jack Sweet, Herts.

John Slee, Middlesex.

Sawston School, Cambs.

Swaffham Bulbeck School, Cambs.

F. Stubbs, Staffs.

Dr. C. B. Ticehurst, Kent.

Miss E. L. Turner, Norfolk.

John Wizzell, Surrey.

(To be continued.)

NOTES ON OUTER HEBRIDEAN BIRDS.

BY

C. M. N. WHITE, B.A., M.B.O.U.

SINCE Colonel Meinertzhagen pointed out (*Ibis*, 1934, pp. 52-61) that the Outer Hebrides present a particularly interesting feature of geographical variation in certain species, several short notes have amplified details. My own studies of the subject have caused me to visit North Uist, Harris and Knapdale, Argyllshire.

The suggestion that high atmospheric humidity was the factor to which these heavily pigmented races were due, must now be viewed in the light of certain fresh data. For one important feature which has emerged is the discovery that some Hebridean races occur on the western mainland. This has apparently led to the suspicion that other birds found on the western mainland but not reaching the Outer Hebrides may form similar new races distinct from those of elsewhere in Great Britain. In Knapdale I paid attention to common Passeres which do not occur in the Outer Hebrides, and do not consider that any of them form distinct races. The idea to the contrary, it may be pointed out, has been partly fostered by the examination of certain soot-stained birds which give an apparent but quite misleading impression of dark pigmentation. Consequently any material quoted from industrial areas of south-west Scotland requires an assurance that this source of error has been eliminated in making a comparison.

It is interesting to note that no general rule can be enunciated for the distribution of Outer Hebridean subspecies. The Rock-Pipit and Wren are known only from the Outer Hebrides; the Stonechat and Hedge-Sparrow are found on the western mainland; the Song-Thrush is represented by an intermediate in west Scotland; the Starling also occurs in the Shetlands; the Red Grouse and perhaps the Dipper are of the Irish form. It is not out of place to add that our knowledge of the range of these subspecies is in many cases far from complete, and as they are mostly common species it should not be difficult to fill in gaps in the Inner Hebrides and west Scotland, whilst Ireland also merits further attention in this respect.

In addition to Outer Hebridean races, I have included a few records of interest of other species.

SHETLAND STARLING (*Sturnus v. zetlandicus*).—Common in N. Uist, Harris and Scalpay; birds which I observed spent a great deal of time feeding on the shore among seaweed. In the field the dark colour

of the juvenile plumage was particularly striking. Juveniles from Scalpay examined are moulting into first winter plumage, but the remains of the juvenile plumage are still darker than in similar typical *vulgaris*. Adults seem to differ only in size—three males have wings 133, 136, 138 mm. against 126-134 in twelve males from England.

HOUSE-SPARROW (*Passer d. domesticus*).—This bird is now very common about human habitations in N. Uist, Harris and Scalpay.

BRITISH CHAFFINCH (*Fringilla c. gengleri*).—Birds from Knapdale are not different from those from elsewhere in Great Britain.

MEADOW-PIPIT (*Anthus pratensis*).—A juvenile from N. Uist is exceptionally heavily streaked with black both above and on the breast, and is darker brown above than juveniles from England. However, adults from S. Uist to Harris show no peculiar characters; further juveniles would be of interest.

HEBRIDEAN ROCK-PIPIT (*Anthus s. meinertzhageni*).—This is perhaps the best marked Hebridean race, being a blackish-grey instead of olive-brown bird above, with very heavy breast streaks. It is so far only known from S. Uist, Benbecula, N. Uist and Scalpay. Birds examined from Skye and Muck are not this form.

In my experience Rock-Pipits in the Hebrides are as much birds of the moorlands near the sea as of the actual shore, and are commonly found in company with Meadow-Pipits.

ROCK-PIPIT (*Anthus s. petrosus*).—I collected one bird on Scalpay which is not the Hebridean form; it appears to me inseparable from British examples and I must therefore refer it to that form with the caution that it may prove to belong to the Faroe form, which does not seem distinguishable in autumn plumage. It was with Greenland Wheatears, and this perhaps suggests the latter view.

BRITISH SONG-THRUSH (*Turdus e. ericetorum*).—This form may be a winter visitor to the Outer Hebrides, as a bird from N. Uist (January 23rd, 1936) shows, unless it came from Stornoway, where typical *ericetorum* is known to breed. Birds from south-west Scotland are much nearer to this form than to *T. e. hebridensis*, which they slightly approach in a rather darker upper surface, and particularly greyer rump. The difference does not seem quite sufficiently constant to justify a distinct race being named.

HEBRIDEAN SONG-THRUSH (*Turdus e. hebridensis*).—In June and July in N. Uist the Song-Thrush appeared to be scarce, but I am inclined to ascribe this rather to breeding than to actual fact, as birds were very difficult to find in the long heather. In Harris it was more numerous in September, but very wild. A bird from Scalpay was on the shore and had eaten several small crabs.

BLACKBIRD (*T. m. merula*).—I only once saw a Blackbird in N. Uist, June 29th, 1935, but they were several times observed in gardens in Harris in September. The only female I saw looked remarkably dark.

ROBIN (*Erithacus r. melophilus*).—Robins were common in croft gardens about Tarbert and one was seen in Scalpay, September, 1937. They included juveniles moulting into adult plumage. Argyllshire Robins are typical *melophilus*.

GREENLAND WHEATEAR (*Ænanthe æ. leucorrhœa*).—A female was obtained in Harris on September 16th (wing 106 mm.) and others were seen in Harris and Scalpay.

HEBRIDEAN STONECHAT (*Saxicola t. theresae*).—Birds from N. Uist and Scalpay are of this race; juveniles do not appear to differ in colour from those of *hibernans*. Published records suggest that it is rather uncommon in the Outer Hebrides, but in N. Uist it was tolerably

common and not uncommon in Harris. I have examined in the Royal Scottish Museum a small series from the Butt of Lewis, also of this form.

HEBRIDEAN HEDGE-SPARROW (*Prunella m. hebridium*).—A bird from Harris is of this race. It appears distinctly scarce in the Outer Hebrides though quite common in Knapdale, where the Hebridean form is found. Hedge-Sparrows from Lancashire approach this race in the colour of the head. In my experience the dark colour of the Hebridean race is quite noticeable in the field.

HEBRIDEAN WREN (*Troglodytes t. hebridensis*).—Common in N. Uist and Harris; not noted in Scalpay. A single bird from Knapdale is to me identical with the typical form.

BUZZARD (*Buteo buteo*).—Two pairs bred in N. Uist in 1935. In April, 1936, I saw four Buzzards near Loch Sweyn, Knapdale, on several occasions.

KESTREL (*Falco t. tinnunculus*).—In April, 1936, when voles were numerous in Knapdale Kestrels were correspondingly numerous; in July of the same year members of the Oxford Ornithological Society were surprised at their scarcity, which was also true of April, 1937. Their presence in numbers together with the Buzzards noted above was evidently due to the exceptional number of voles. In June, 1935, in N. Uist Kestrels were also exceptionally numerous, but I was unable to get any data about voles; however, in September, 1937, I saw only one Kestrel in Harris so that the same factor may have determined their numbers in these localities also.

SOOTY SHEARWATER (*Puffinus griseus*)—GREAT SHEARWATER (*P. gravis*).—I saw one Sooty and two Great Shearwaters between Canna and S. Uist on September 13th, 1937, flying north-east. The cap contrasting with the back in *P. gravis* is most striking to distinguish it from *P. kuhlii* with which I am very familiar, and this experience of *P. gravis* makes it possible to confirm the correctness of my identification of *P. kuhlii* off the Sussex coast in September, 1936.

NOTES

BREEDING OF SKY-LARK.

I FIRST noticed a Sky-Lark (*Alauda a. arvensis*) building amongst rough grass on the West Lancashire Golf Course on June 12th, 1937. The nest then consisted of a hollow in black earth with a partial rim and bottom lining of dry grass. Once when the hen was collecting material—in doing so she picked up and threw away many pieces of grass—a cock paraded around her, walking in zig-zag fashion with his tail and crest elevated. He appeared to be gathering and rejecting small pieces of grass continuously. The hen kept chasing him away and finally made a very determined rush at him, when he flew away singing.

The nest was completely lined by 9 a.m. on June 13th. It remained empty and unaltered on the 14th. The first egg was laid by 8 p.m. on the 15th, the second by 3.30 p.m. on the 16th and the third and last by 8 p.m. on the 17th. At 8.15 p.m. on the 18th the eggs felt very warm.

When I visited the nest at 8.30 p.m. on June 27th, I was astonished to find two slightly damp chicks and one apparently intact egg in the nest. The hen was not brooding at the time but returned about five minutes later. At 5 p.m. on June 28th, the hen was brooding three chicks, all the eggs having hatched, thus giving an incubation period of 10-11 days. On the evening of July 4th, the chicks were still in the nest but had all left by the evening of July 6th. This gives a fledging period of under 9 days. The only incubation periods of the Sky-Lark I have been able to obtain are between 10 and 12 days.

J. S. TAYLOR.

[All observations made in the field give an incubation period ranging from 10 to possibly 12 days. Mr. Evans, however, has recorded 13-14 days in an incubator, but though of considerable value as checks, these cannot be accepted when opposed to a series of field observations. As, however, hatching was spread over 2 days in the case described, incubation probably began before the clutch was complete, giving an incubation period of 11 days.—F.C.R.J.]

SOME BREEDING HABITS OF MISTLE-THRUSH.

RECENTLY I came across a case of a Mistle-Thrush (*Turdus v. viscivorus*) apparently selecting a nesting-site just over a fortnight before building began.

On the morning of February 18th, a Mistle-Thrush on a sycamore tree at Crosby, Lancashire, was taking great interest in a portion of the tree some twelve feet from the ground, where three branches met the trunk, and kept hopping from each of these branches in turn into the hollow formed where the three met. It continued travelling round the hollow for over five minutes while I was watching it. During the next fortnight, I noticed a Mistle-Thrush several times in the adjoining trees, and on the morning of March 6th, found that building had been started in the hollow in the sycamore. Little progress was made, however, for snow fell in the following week and the material was blown down. On March 13th, building was recommenced but the site was eventually deserted.

One or both birds of another pair fed their first brood almost up to the day when the second brood was hatched. About May 17th, this pair appeared with a brood of four fledged young ones in the garden and fed them assiduously for the following days. The cock was tail-less and the hen had a conspicuous white feather in the breast so that they were easily distinguished. On May 21st, I noticed the hen had partially constructed a nest some twenty feet up in a wych elm in the road opposite, and on the same day a fresh Mistle-Thrush's egg appeared on the ground in the next-door garden. In due course the bird began to sit and all through the period of incubation, the cock fed the young, although they appeared well able to look after themselves. On June 10th, I saw the hen feeding one of these young birds in the garden, when taking a rest from her eggs, while on June 14th she and the cock were feeding newly hatched chicks in her second nest of the year.

J. S. TAYLOR.

FOOD OF NESTLING SWALLOWS.

FOR the fifth year in succession I append a list of insects, brought by adult Swallows (*Hirundo r. rustica*) as food for their young; they were obtained during August, 1937, in Carmarthenshire.

Dr. F. W. Edwards, of the British Museum (Nat. Hist.), has very kindly identified the insects so far as their condition permitted.

As usual, *Dilophus febrilis* occurred most often, and, in fact, it represents more than half the total number of insects. In addition to the Diptera there are two plant-bugs and a very small beetle.

DIPTERA.

BIBIONIDÆ	<i>Dilophus</i>	<i>febrilis</i> L.	(22)
STRATIOMYIIDÆ	<i>Microchrysa</i>	<i>polita</i> L.	(2)
TABANIDÆ	<i>Hæmatopota</i>	<i>pluvialis</i> L.	(1)
MUSCIDÆ	<i>Orthellia</i>	<i>cæsarion</i> MG.	(2)
	?		(1)
ANTHOMYIIDÆ	? <i>Cænusia</i>		(2)
EPHYDRIDÆ	<i>Notiphila</i>	?	(1)
	?		(4)
OPOMYZIDÆ	<i>Opomyza</i>	<i>germinationis</i> L.	(2)

COLEOPTERA.

STAPHYLINIDÆ	<i>Tachinus</i>	<i>rufipes</i> De G.	(1)
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HEMIPTERA.

SALDIDÆ	<i>Acanthia</i>	<i>orthochila</i> Tieb.	(1)
DELPHACIDÆ	<i>Liburnia</i>	<i>pellucida</i> F.	(1)

The figures in brackets denote the number of specimens obtained. *D. febrilis* was taken on eight occasions, the Anthomyiidae on four, and *M. polita* and *C. cæsarion* twice each.

J. F. THOMAS.

RESULTS OF RINGING AND TRAPPING SWALLOWS
IN CARMARTHENSHIRE.

MY notes on the above are rather complicated this year, because in 1936 there were three sheds in each of which two pairs of Swallows (*Hirundo r. rustica*) were nesting and I was able to catch only three birds out of the four in each shed. It was annoying also this year to see that two birds (Sheds 15 and 17) had rings on and not to be able to catch them! I think we may assume that the pair caught (1937) in Shed 18 were likewise a pair in 1936.

Sheds 1-7.—Not nesting in August, 1937.

Shed 8.—Not nesting in August, but ♂ caught 100 yards away.

Sheds 9 and 10.—Both different.

Shed 11.—One bird ♀ different, mate not caught; former ♂ found dead in the shed—probably died in 1936.

Sheds 12-14.—One bird different ♂ ♀ ♀; mates not caught.

Shed 15.—(Two pairs nesting in 1936; three birds caught.)

One pair 1937: ♀ different, ♂ a ringed bird; one former ♂ caught 1,200 yards away.

Shed 16.—(Two pairs nesting in 1936; three birds caught.)

One pair 1937: ♀ same, ♂ different.

Shed 17.—♂ same, ♀ a ringed bird but not caught.

Shed 18.—(Two pairs nesting in 1936; three birds caught.)

One pair 1937; same pair.

J. F. THOMAS.

THE IRISH DIPPER IN ARGYLLSHIRE.

THROUGH the kindness of a friend I have recently secured two specimens of the Dipper from Kintyre, West Argyllshire, both adult males, shot on September 25th, 1937. Mr. H. F. Witherby has examined them for me and reports that they are certainly the Irish Dipper (*Cinclus c. hibernicus*). Some time ago Col. Meinertzhagen reported an Irish Dipper from the Island of Arran in the Clyde, and Mr. Witherby tells me that he has examined two others from that locality. From the known range of certain other sub-species of birds on the west coast, it is likely that this form of the Dipper may be found in a considerable part of the west of Scotland, though the extent of its range still requires to be worked out. In the western islands Dippers are not very easily obtained but no doubt they will be got in course of time. It is rather unfortunate that the names "Irish" and "Hebridean" have been given to some of these western sub-species, but, of course, when they were first discovered no one suspected that they would have so extended a range as afterwards proved to be the case. It remains to be seen how far inland in the west of Scotland the Irish Dipper occurs. J. M. McWILLIAM.

YOUNG CUCKOO IN NOVEMBER IN SUSSEX.

MY daughter writes to me from Wadhurst, Sussex, that on October 17th, 1937, she heard a persistent plaintive note and found that it proceeded from a young Cuckoo (*Cuculus c. canorus*). Later she saw it being fed by Hedge-Sparrows and observed the bird again on the 18th and 19th and on November 7th. This would seem to be a very late date.

BASIL KING.

STONE-CURLEW IN GALWAY.

MAJOR R. ARCHER HOUBLON informs me that on May 31st, 1937, he saw a Stone-Curlew (*Burhinus æ. ædicnemus*) near Recess, Co. Galway. The bird was about fifteen yards from the road-side, and allowed itself to be examined at leisure through glasses from a car. Major Archer Houblon has seen numbers of the species abroad. This is the fourteenth record for Ireland, and the second for the month of May.

G. R. HUMPHREYS.

KENTISH PLOVER IN NORFOLK.

ON October 10th, 1937, at Blakeney Point, Norfolk, I watched a Kentish Plover (*Charadrius a. alexandrinus*) at close range for over an hour. While I was watching the bird through my

telescope from about 30 yards distance, a Dunlin came into the same picture and I could then see that the latter was the larger bird. Ringed Plover were also present for comparison.

Here is my description of the bird: upper-parts, sandy-drab, a streak above the eye, and the forehead and under-parts white. I did not notice any black mark above the forehead. In a normal light the bill and legs were black, but when the sun shone immediately on them they showed signs of a dark chocolate-brown colour. I may add that there were three or four juvenile Ringed Plovers present, and their legs were always to be distinguished at any time by their yellowish or brownish-yellow colour. At one period during my watch I noticed the Kentish Plover wash itself in a shallow pool, and had there been any trace of mud on the bird's legs or bill, it would have been removed. After this incident the bird's legs and bill were exactly the same colour as before.

A. REAVLEY JENKINS.

AMERICAN PECTORAL SANDPIPER IN CHESHIRE.

ON September 13th, 1937, Mr. W. B. Alexander and I visited a small mere near Nantwich in south Cheshire. The water level was low and on the muddy margin of the mere a Curlew-Sandpiper (*Calidris testacea*) and an American Pectoral Sandpiper (*Calidris melanotos*), a bird previously unrecorded for Cheshire, were feeding together. They flew across the mere and then allowed us to approach within a few yards. In fact, the Curlew-Sandpiper went to sleep while I was watching them through a telescope at ten yards distance.

The Pectoral Sandpiper was bulkier and perhaps just a shade larger than the Curlew-Sandpiper. The following is a description of its plumage, every detail of which was seen closely: Head and neck dark and streaked; crown with a rufous tinge; pale eye-stripes and parallel with the eye-stripes two tiny pale lines on the crown. Bill black or very dark; slightly decurved and perhaps not quite so long comparatively as a Dunlin's. Iris dark. Breast thickly streaked with fine grey lines which ended abruptly to form a line cutting off breast from pure white belly; these lines extended for a short way on either flank beyond this line of demarcation. Back and wings: feathers dark with pale margins—rather like a hen Pheasant's; across scapulars two pale V's not unlike those on a Little Stint, but less distinct and not so white. Rump and central tail-feathers black or very dark; white patches on either side of the tail; central tail-feathers long and protruding; side tail-feathers paler and much fanned in

flight. The central tail-feathers when seen closely through a telescope proved to have reddish-chestnut edges. Legs dirty yellow.

An examination of skins in the Dresser Collection put the identification (of which Mr. Alexander was already confident) beyond any doubt. In the skins of the Siberian Pectoral Sandpiper (*C. acuminata*) many of the breast-markings differed from those of *C. melanotos* in being V-shaped, whereas the markings on the breast of the American species were single lines running parallel and close together. When they are seen side by side the differences between the two species are fully apparent.

A. W. BOYD.

GREAT GREY SHRIKES IN WESTMORLAND AND NORFOLK.—Mr. J. W. Cropper informs us that he watched at close quarters with a telescope a Great Grey Shrike (*Lanius e. excubitor*) on October 19th, 1937, in Borrowdale. The bird is an infrequent visitor to the north-west of England.

Miss J. M. Ferrier also informs us that she had a good view of one at Scolt Head Island on October 8th, rather an early date.

WILLOW-TIT IN BEDFORDSHIRE.—Mr. M. F. M. Meiklejohn informs us that he saw and heard a Willow-Tit (*Parus a. kleinschmidti*) on October 19th, 1937, in Luton Hoo Park, Bedfordshire. The Marsh-Tit is frequent in the locality, but Mr. Meiklejohn had not previously seen there a Willow-Tit. It may be remembered that in the article on the distribution of the Willow-Tit, there appeared to be no record for the occurrence of the bird in Bedfordshire (*cf.* Vol. XXX., page 361).

SWALLOW NESTING IN A BOX.—Miss J. M. Ferrier informs us that last June on returning home from abroad she found that a Swallow (*Hirundo r. rustica*) had built a nest in a shoe box on a shelf six feet from the ground in a large cupboard leading out of a bedroom, the window of which was always kept open. The Swallows had two broods and the young returned to the cupboard to roost each night, so that it was used by the birds from the beginning of June to October 20th when the second brood left.

LITTLE GULL IN SURREY.—Mr. E. G. Pedler informs us that on November 1st, 1937, he identified a Little Gull (*Larus minutus*) in winter plumage resting within ten yards of him at Barn Elms Reservoir. The distinguishing features noted were: "the bird's small size and rather rounded wing-

tip, short coral legs, black bill, and dark spot behind and somewhat below the eye."

RINGED AMERICAN HERRING-GULLS.—We are informed that over 6,000 Herring-Gulls (*Larus argentatus smithsonianus*) were marked with aluminium and bright celluloid rings in Canada and in the United States in the summer of 1937. Any observer chancing to meet a straggler on this side of the Atlantic can learn the origin of the bird by reporting the exact order of the various bands (including the metal one) to "Gull Survey", American Museum of Natural History, New York City.

REVIEWS.

More Songs of Wild Birds. By E. M. Nicholson and Ludwig Koch. (H. F. & G. Witherby.) Gramophone Records and Illustrated. 15s.

PERHAPS the best thing that can be said of these three new double records of British Bird songs is that they are even better than the first set. Not all are of equal merit; but most are extraordinarily good. And, unlike the first records, many of these give clear records of songs that are not very easy for most observers to hear in the open. To listen to a Wood-Lark in almost continuous, full song for two minutes is a rare treat. Those who find difficulty in distinguishing the songs of Blackcap and Garden-Warbler should have much less difficulty after listening to the records of the two species. There is just enough of the characteristic call-note of the Willow-Tit—happily without any background interruptions—to enable many who do not already distinguish it from the Marsh-Tit to go out into the country with hopes of discovering it in districts from which it has not yet been recorded. And so on.

Two of the records might be described as "Studies in Ornithological Cacophony". One is taken underneath a Heronry, and records the weird bill-clapping and strident cries of old and young Herons, whilst a number of other woodland species (carefully noted in the Programme of the Records) provide a more musical background. And there is a record which includes the clamorous cries of Little Owls and most of the Crow tribe. These records are very amusing, and provide an effective contrast to the song-records. The Curlew record is one of the finest, the Wood-Wren is very good, and so one might go on.

The accompanying book is in this case more strictly a commentary on the records than the first book was. In addition to the useful Programme of the Records, we have vivid accounts of the way in which they were obtained written by Mr. Koch and Mr. Nicholson; the latter, especially, as the observer who was not making the records, can bear witness to the extraordinary difficulties that had to be overcome last spring. Mr. Nicholson also provides a useful account of the life-history of each of the birds whose voices are recorded, and there are good photographs of them all. In fact, another very good fifteen shillings worth. H.G.A.

A Book of Birds. By Mary Priestley. (Gollancz.) Illustrated. 7s. 6d. IN this anthology Mrs. Priestley has given us a wide and somewhat haphazard collection of extracts. They range from the Bible to books and papers of the present day, and from those authors who see but

charm and poetry in birds to those who view them with discrimination and describe their actions with exactness. The birds concerned are also widely spread and range from the Arctic to the Antarctic and from South America to Malaya.

Mrs. Priestley's aim indeed has been to make a book for everybody "who has ever taken a moment's joy in watching a bird", and in this she may be said to have succeeded. It is gratifying that she has generously decided to divide her share of royalties between the British Trust for Ornithology and the International Committee for Bird Preservation.

The book is illustrated with most excellent engravings by C. F. Tunnicliffe. Most of the modern wood-cuts of birds which we have seen portray what can only be termed as monstrosities, and one can scarcely imagine any genuine bird-lover looking at them without shuddering at their distortions, and wishing that we might have a Hitler to order their abolition. But no such feelings are evoked by Mr. Tunnicliffe's engravings. These are really like birds, not only in detail but in their characteristic and natural poses. Though some of those of birds in flight are not very successful most are good and not a few very good.

LETTERS.

AGGRESSIVE DISPLAY OF ROBIN BEFORE MIRROR.

To the Editors of BRITISH BIRDS.

SIRS,—In his article (*antea*, p. 137) Mr. George Brown notes that a Robin (*Erithacus v. melophilus*) "appeared to take quite an interest in the Blackbird's efforts" before a looking-glass, but itself never displayed. Since I read this article a Robin has been several times discovered here in a room in which a mirror tray is set up on a sideboard. Usually it is content to help itself to fruit (especially to grapes), but twice it has been observed displaying and violently attacking the lively image in the mirror until turned out of the house. This Robin, which is this year's bird, is very tame, and while still in juvenile plumage (early in September) it was caught by hand in the house and ringed. No effort has been made to tame it by feeding, and there is a dog in the house. But so far from being afraid, once or twice while the dog slept it has perched on its back. It seems to be quite as much at home indoors as out of doors.

E. J. M. BUXTON.

• WILMSLOW, CHESHIRE.

THE COURTSHIP AND MATING OF THE GOOSANDER.

To the Editors of BRITISH BIRDS.

SIRS,—In the last paragraph of his letter on this subject (*antea*, p. 200) Mr. W. L. Colyer suggests that observations later in the year, say in April, may show some difference in behaviour. In the London district most of the Goosanders (*Mergus merganser*) have left by the last week of March; but up to the end of their stay I have observed no change in their behaviour.

At Staines reservoirs, I have sometimes seen two, and on one occasion three, Goosander ducks posturing in the manner described, almost submerged and looking like logs of wood, before a drake, which for twenty minutes or more apparently took no notice of them.

In this matter, the behaviour of Goldeneyes (*Bucephala clangula*) closely resembles that of Goosanders. The ducks solicit in just the same manner, and often for as long periods.

A. HOLTE MACPHERSON.

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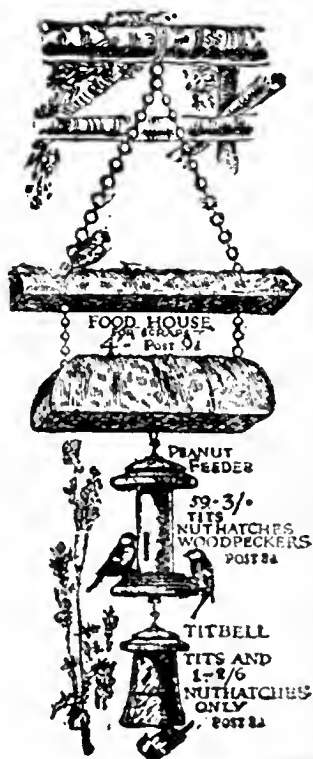
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SKOKHOLM BIRD OBSERVATORY HOMING EXPERIMENTS.

1. 1936-37. PUFFINS, STORM-PETRELS AND MANX SHEARWATERS.*

CONTRIBUTED BY
DAVID LACK AND R. M. LOCKLEY.

METHODS.

THE formation of a Bird Observatory at Skokholm, off the South Wales coast, has provided opportunities for testing the homing capacities of various nesting sea-birds, after the manner of Watson and Lashley [8] with other sea-birds, and more recently Rüppell [5-7] with many land-birds, and Goethe [1] with Herring-Gulls.

In the present experiments three hole-nesting species, the Manx Shearwater (*Puffinus p. puffinus*), Storm-Petrel (*Hydrobates pelagicus*) and Puffin (*Fratercula a. grabæ*) were selected, but the Puffin proved harder to catch than the others, and Storm-Petrels tended to desert their nests, hence most experiments were carried out with Manx Shearwaters. Each bird was marked with a light, numbered, metal leg-ring of the British Birds Marking Scheme, was taken from its nest, transported from Skokholm in a closed box and released at a distance. Observers then kept watch for its return on Skokholm. Lockley [2, 3] may be referred to for a general account of the breeding habits of these birds; Manx Shearwater and Storm-Petrel return to their nests only during the hours of darkness, and both these species are in the regular habit of fasting for several days on their nests when the other parent fails to relieve the incubating bird. Birds were taken from certain shallow burrows where they are more easy to catch than in the deeper warrens. They were released as soon after catching as possible, being taken by boat to the mainland and then to British destinations by car and rail, to farther away by passenger ship, while for the long-distance experiments in 1937, Imperial Airways kindly provided facilities.

EXPERIMENTS WITH STORM-PETREL (*Hydrobates pelagicus*).

Of three birds taken from eggs and released Start Point, S. Devon, 18/6/36, one was recovered 24/6/36. One taken from chick 21/7/36, released Isle of May, was recovered 17/8/36. (For distances travelled, see p. 244.) Other individuals released at Start Point (two), London (one), Danzig (three),

*Read at the ninth General Meeting of the Institute for the Study of Animal Behaviour, London, December 20th, 1937.

Marseilles (two), were not recovered, remaining parent deserted nest, so this species was not used again.

EXPERIMENTS WITH PUFFIN (*Fratercula a. grabæ*).

Of six birds taken from nesting burrows and released at Start Point, S. Devon, 18/6/36, two were recovered 23/6/36.

EXPERIMENTS WITH SHEARWATERS. (See pp. 244-5.)

DISCUSSION.

Failure to recover a bird by no means necessarily implies that the bird failed to return, for Manx Shearwaters sometimes slip in and out of their burrows very quickly when feeding young, and are therefore easily missed. In many of the recoveries the bird had probably returned before the date on which it was recorded. Further, in those cases where the other parent deserted the nest, it would be an extremely lucky chance to recapture the homing bird among the thousands of individuals frequenting Skokholm, if it was not in its own burrow. In the case of the Storm-Petrels sent to Marseilles, rabbits burrowing caused the nests to be destroyed, thus preventing return and recovery.

Releases 14 to 18, 23 and 24, were made late in the season, being birds picked up, not from shallow, easily examined burrows—there was a shortage of these at the time—but from a thickly populated warren, and the only way of recovering these has been to watch for the arrival or departure of the inmates at the various entrances to this warren. They may, however, well be recovered in future seasons.

The experiments are not yet adequate to show the limits of the homing ability of the Manx Shearwater, and are being continued. For estimating the distance of the homeward flight, the approximate distance direct from Skokholm is given, and, where very different, also the distance by the nearest sea-route. The Manx Shearwater is exclusively marine except that it comes to the coast to nest. Probably the bird normally migrates only over the sea, for otherwise one might have expected more inland records, and Mr. W. E. Kenrick informs us (*in litt.*) that of fifty-three accurately dated inland records of the Manx Shearwater which he has analysed, all are autumn occurrences covering the period August to November when young Manx Shearwaters are leaving their burrows for the sea, and 70 per cent. were associated with very strong winds from between south and west, suggesting that these were storm-blown young birds. It is noteworthy that all those Shearwaters released on the coast flew straight away from the land on release, even

TABLE.—RESULTS OF RELEASES.

I. MANX SHEARWATERS (*Puffinus p. puffinus*) TAKEN FROM SKOKHOLM.

Place of Release.	Approx. Distance from Skokholm in Land Miles.	Date of Release.	Date of Recovery.	Taken From.	Direction of Flight on Setting out.		Remarks.
					From.	out.	
1. Start Point, S. Devon	125	18/6/36	18/6/36	Egg.	Out to sea (S.).	Back in 10 hours.	
2. Evesham, Worcs.	150	—	14/7/36	2/5/37 Empty Burrow.	Wide arc. ; S. then N.E.	35 miles inland.	
3. Evesham, Worcs.	150	—	13/7/37	18/7/37 Empty Burrow.	S.W.	35 miles inland.	
4. Birmingham	160	—	14/7/36	— Empty Burrow.	S.W.	90 miles from Welsh coast, 50 miles from Bristol Channel.	
5. Birmingham	160	—	13/7/37	1/8/37 Empty Burrow.	N.W., then N.E.	do.	
6. Northenden, Lancs.	160	210	23/5/37	6/6/37 Egg.	Down river, W.		
7. Limerick, Ireland	160	360	27/7/37	3/8/37 Chick.	Down river, W.		
8. Frensham, Surrey	200	390	8/6/37	9/6/37 Egg.	Wide circuit, then slightly W. of S.	Back in 24 hours.	
9. Frensham, Surrey	200	390	8/6/37	9/6/37 Egg.	Wide circuit, then slightly S. of W.	Back in 24 hours.	
10. Isle of May, Firth of Forth.	340	800	21/7/36	1/8/36 Young.	Away from coast SW., then SE.	870 miles by S. of England.	
11. Isle of May, Firth of Forth.	340	800	21/7/36	17/8/36 Young.	Away from coast, E.	do.	

<i>Place of Release.</i>	<i>Approx. Distance from Skokholm in Land Miles.</i>	<i>Date of Release.</i>	<i>Date of Recovery.</i>	<i>Taken From.</i>	<i>Direction of Flight on Setting out.</i>	<i>Remarks.</i>
1. <i>Direct. 2. By Sea.</i> (if very different)						
12. 60°15'N., 4°20'W., at Sea S. of Faeroes.	610	—	28/6/36	10/7/36	Egg.	S.
13. Thorshavn, Faeroes	730	—	29/6/36	10/7/36	Egg.	NE. (Misty)
14. 43°37'N., 9°21'W., at Sea off W. Spain.	600	—	20/7/36	8/5/37	Not known.	Rather W. of N.
15. Do.	600	—	20/7/36	—	do.	Rather W. of N.
16. Do.	600	—	20/7/36	—	do.	E.
17. 36°48'N., 12°41'W., at sea SW. of Portugal.	1,100	—	21/7/36	—	do.	W.
18. 30°9'N., 15°26'W., at sea off N.W. Africa.	1,600	—	23/7/36	—	do.	NW.
19. Stockholm Sweden	1,070	—	9/7/37	—	Egg.	Not noted.
20. Stockholm "	1,070	—	9/7/37	—	Egg.	Not noted.
21. Venice Italy	930	3,700	10/7/37	24/7/37	Egg.	S. one afterwards
22. Venice "	930	3,700	10/7/37	—	Egg.	veering W.
23. Off Boston, U.S.A.	3,000	—	12/8/36	—	Chick.	Not noted.
24. Off Boston, U.S.A.	3,000	—	12/8/36	—	Chick.	Not noted.
MANX SHEARWATER TAKEN FROM KOLTUR, FAEROES.						
25. Firth of Forth	*450	500	8/7/36	9/8/36	Chick.	E.

*Distances from Koltur.

Other parent deserted.
 Other parent deserted.
 { Chick a week old on return.
 { Other parent deserted.

when this was directly away from Skokholm. Hence, although there is no direct evidence, it seems probable that at least most of the Shearwaters released in these experiments on or by the sea, have returned by sea exclusively and not overland, and this should be borne in mind when referring to the tabulated distances. (Of course, one does not know that the birds returned by the shortest route, so the figures represent only the *minimum* possible distances covered.)

Five birds released inland in England over thirty miles from the nearest sea have returned successfully, and the Birmingham bird was about ninety miles from the nearest sea (Wales), and some fifty from the narrow end of the Bristol Channel. Hence inland releases up to these distances do not disturb the homing facility, although the country was presumably unknown to the birds.

The experiments show that the Manx Shearwater can successfully return from distances up to at least 900 miles direct from Skokholm, the farthest distance being from Venice, about 930 miles direct, while if this bird travelled the whole way back by sea it must have covered at least 3,700 miles. If this bird crossed Italy by land and then continued out of the Mediterranean via Gibraltar, it must still have covered at least 2,600 miles, and if it flew back direct (as seems unlikely) it must have crossed two high mountain ranges. Whichever route the bird took, this is an astounding performance. So far this is the only individual which has successfully returned from outside the known range of *Puffinus p. puffinus*. It was some 660 miles overland from the nearest haunt in the Bay of Biscay (where Manx Shearwaters ringed at Skokholm have been recovered in winter) and nearly 1,200 miles direct from Gibraltar.

The data on the times taken for most of the return flights are not satisfactory, as it was not possible to keep a strict watch on every evening, so birds were not necessarily caught on the first evening of their return. A bird returned from Start Point in at most ten hours, which means an average speed of twenty miles per hour assuming it took the sea-route; the Frensham birds were both back in at most twenty-four hours, and the Venice bird returned in thirteen days, the last being a remarkable achievement if it went by sea the whole way.

The direction taken by the birds on release has shown great variation. The records show that while some birds flew off in the direction of Skokholm, others did not; and the former do not appear to form a significant proportion of the whole.

Birds released in the same locality have departed in very different directions, this being specially noticeable for the two birds released on opposite sides of the Isle of May. The two birds released inland at Frensham each made a wide circuit at 500 feet altitude, which suggests that they were orientating themselves, but the others were not seen to do this, while those released inland at Birmingham and Evesham flew low over the land as they would over the sea.

Most of the birds were taken from an egg or chick, which provides a motive for return. It is interesting that three birds quickly returned which were taken from empty burrows and had no parental cares. These birds had probably lost their eggs earlier in the breeding season.

Different workers on homing have postulated that the birds find their way back as a result of (a) visual memory exclusively, the birds flying blindly till they pick up known landmarks; (b) various special means of orientation, an as yet unlocated sense organ usually being postulated. Rivière [4] considers that some individual untrained racing pigeons may possess a "sense of geographical position". Another view, that the bird retraces the path originally taken seems adequately disproved. That the Shearwaters do not by any means always fly off in the direction of home on release might suggest that the first view is correct. The, as yet, solitary record of one Shearwater returning from some hundreds of miles into unknown country might or might not be a lucky accident. However, it is difficult to know what sort of "landmarks" are used by a bird which normally flies only a few feet above the waves out at sea and which, for most of its life, is altogether out of sight of land. This same problem arises in the return of many marine migratory birds to their breeding grounds in spring. But at this stage the experimental data do not warrant further discussion.

ACKNOWLEDGEMENTS.

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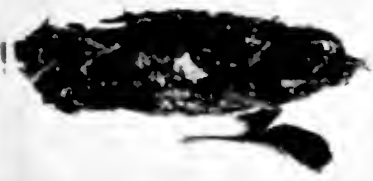
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Little Owl.
(*Photographed by W. A. Ramsay.*)





Sparrow and
Mousec pellet.
(From a tame bird)



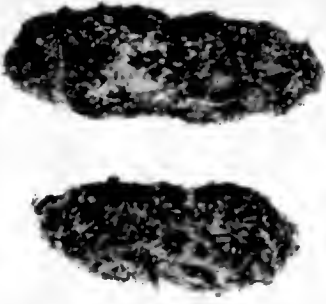
Feather pellet.



Rodent and
insect pellet.



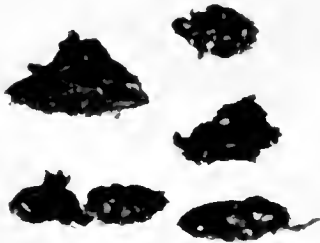
Weathered
Rodent pellet.



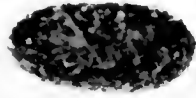
Normal
insect pellets.



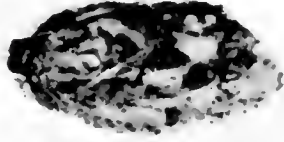
A typical autumn
pellet.



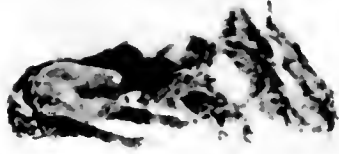
Pellets of
Nestlings.



Earwig pellet.



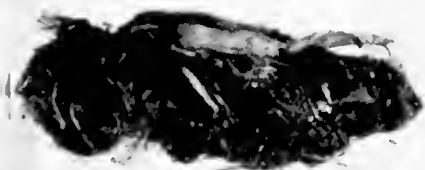
Chick pellets
(From the Zoo).



Day-old-chick pellets
from tame bird.

Typical pellets of the Little Owl.
(Photographed by J. R. Marriott.)

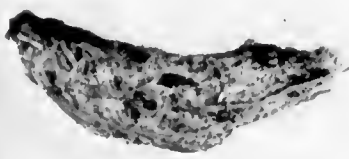




Little Owl (1)



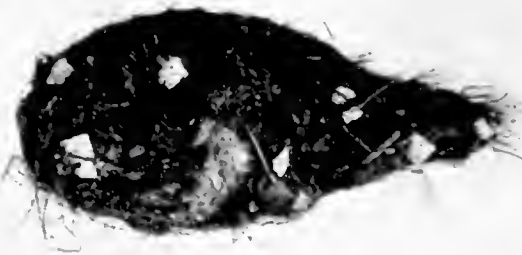
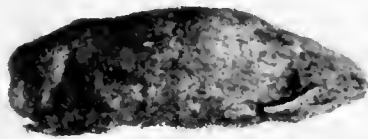
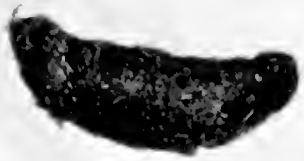
Tawny Owl (2)



Kestrel (4)



Peregrine Falcon (1)



Pellets of some Birds of Prey.
(*Photographed by W. Tams.*)





Rabbit



Mouse



Rat

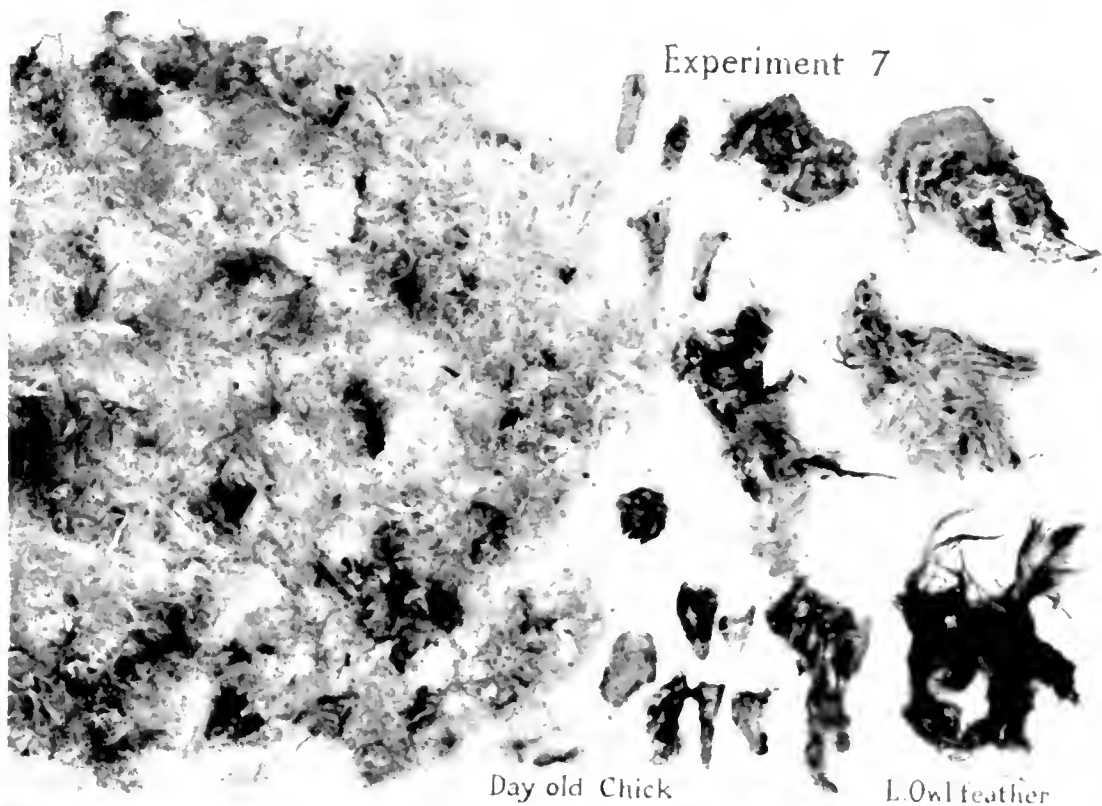


Vole

Remains of Rodents from Little Owl food material.
(Photographed by J. R. Marriott.)

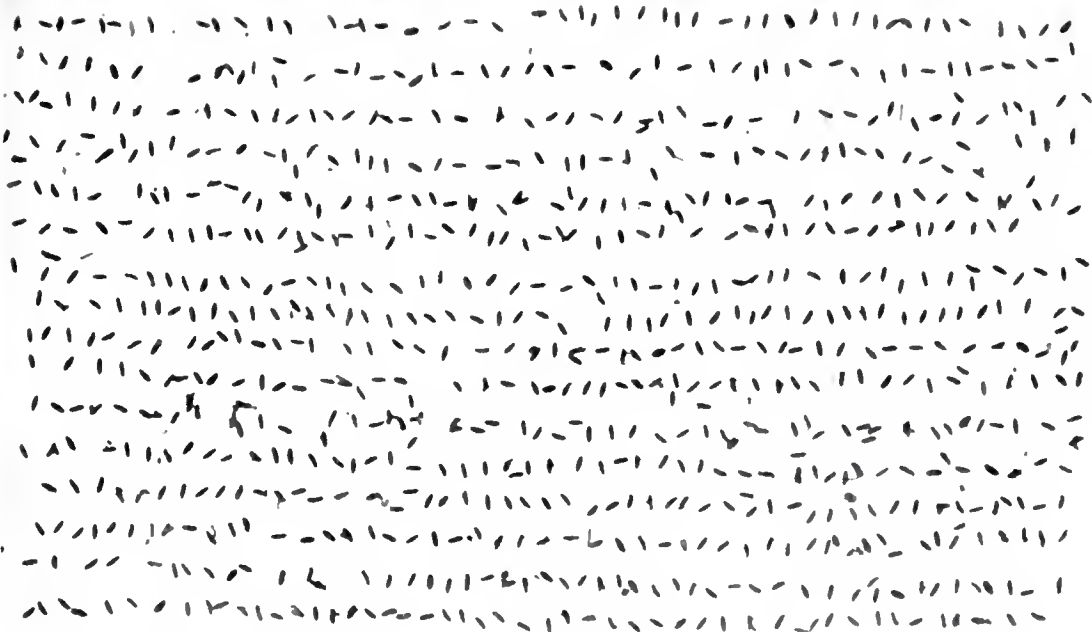


Experiment 7



Day old Chick

L.Owl feather

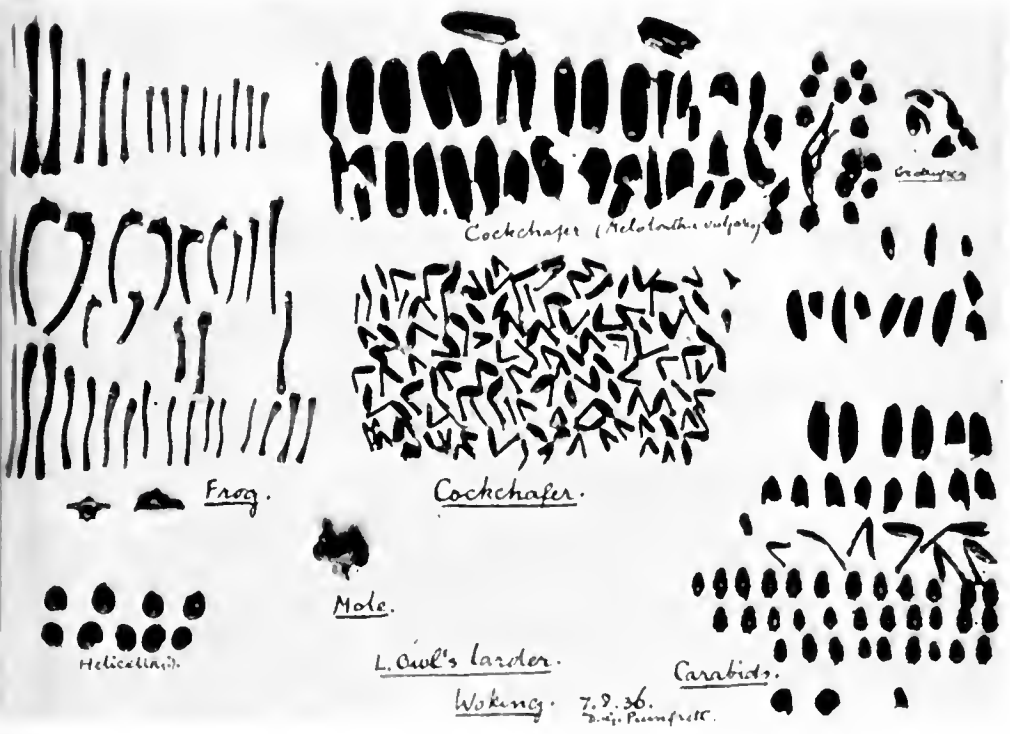


UPPER Result of experiment, showing the down, bill and bones of a chick, taken from a pellet.

LOWER Sample taken from 2,000 eggs of daddy-longlegs (*Tipula*) contained in .6 gram of pellet material.

(Photographed by J. R. Marriott.)

1920
100
100



UPPER—Earwig pincers from a pellet containing remains of 130 earwigs.
 LOWER—Contents of a Little Owl's Larder.



REPORT OF THE LITTLE OWL INQUIRY.
1936-37.

(ORGANISED BY THE BRITISH TRUST FOR
ORNITHOLOGY.)

BY

ALICE HIBBERT-WARE, M.B.O.U. (Analyst).

(Concluded from page 229.)

(Plates 5 to 10.)

THE INSECT FOOD OF THE LITTLE OWL.

The Insect Section of the Report has necessarily to be lengthy because the Inquiry has shown that the Little Owl is a feeder on insects at all stages of growth, at all times of year and in every type of country. Individual Little Owls may differ in *degree* in this matter, according to the nature of the food most readily procured, but they do not normally differ in the *habit* of insect feeding. Five nestlings from three localities, varying from one to three weeks in age, all had beetles in their gizzards. Every nest clearance has revealed many insects in its debris. The pellets of juvenile birds are remarkable for their copious insect contents. It is rare to find a pellet of an adult that does not contain at least traces of beetles and the majority of their pellets are made up of beetles. Hence, one of the main features of the Inquiry is the great prominence of insects in the food material of the Little Owl.

Five insects stand out beyond all the rest on account of their enormous abundance in the pellets. These are: *Tipula* sp. (daddy-longlegs or crane-fly), *Forficula auricularia* (common earwig), *Pterostichus madidus* (a carabid beetle), *Geotrupes stercorarius* (dung beetle) and *Melolontha vulgaris* (cockchafer).

Other species (all beetles) that are outstanding for the same reason but to a rather less degree are:—

Carabus violaceus, *C. nemoralis*, *Nebria brevicollis*, *Harpalus aeneus*, *Pterostichus vulgaris*, *Abaxater*, *Cyrtonotus apricaria*, *Staphylinus olens*, *S. aeneocephalus*, *Byrrhus pilula*, *Geotrupes typhæus*, *Aphodius* sp., *Amphimallus solstitialis*, *Agriotes lineatus*, *Lacon murinus*, *Barynotus obscurus*, *Phytonomus punctatus*, *Sitona* sp. The rest of the species of beetles on the list can be grouped as either occasional or rare in the pellets. There is a great drop in numbers between the frequent and the occasional. Hence the species grouped as "very frequent" and "frequent" may be taken to represent the normal insect food of the Little Owl.

The occasional species are mostly those that are either found in moderate numbers locally (e.g., *Leucanus cervus* in Surrey) or that occur anywhere provided that conditions of life are suitable (e.g., *Necrophorus humator*, where carrion is obtainable). The species marked as "rarely found" are undoubtedly picked up, as it were by chance (e.g., *Cicindela campestris*). In this way a few really rare species have been identified (e.g., *Procas armillatus* and *Meloë rugosus*). The latter had not been found in Britain for many years till the Little Owl picked it up. The Little Owl is certainly a good entomologist.

TABLE 9.

CONTENTS OF SOME LITTLE OWL PELLETS.

A. Single typical pellets.

B. Single pellets specially rich in insects.

SPRING.

- A. Bricket Wood, Herts.
 8 *Pterostichus madidus*.
 2 other carabids.
 2 *Forficula auricularia*.
- B. Powys, Carmarthen.
 6 *Abax ater*.
 1 *Leistus spinibarbis*.
 2 *Calathus fuscipes*.
 2 *Geotrupes* sp.
 1 *Byrrhus pilula*.
 1 *Staphylinus æneocephalus*.
 1 *Agriotes lineatus*.
 1 Curculionid (weevil).
 2 *Forficula auricularia*.

AUTUMN.

- A. Shaugh, Devon.
 Pellet crammed with eggs of
Tipula sp.
 Also contained :—
 11 Carabids (small).
 1 *Byrrhus pilula*.
 1 *Necrophorus humator*.
 2 *Forficula auricularia*.
- B. Seaford, Sussex.
 6 *Pterostichus madidus*.
 6 Other carabids.
 1 *Staphylinus olens*.
 2 *Geotrupes*, sp.
 343 *Forficula auricularia*
 (i.e., 686 "pincers").

SUMMER.

- A. Longstanton, Cambs.
 8 *Pterostichus madidus*.
 4 other carabids (small).
 1 *Staphylinus olens*.
 1 *Geotrupes stercorarius*.
 3 *Forficula auricularia*.
- B. Seaford, Sussex.
 (a) 3 *Pterostichus madidus*.
 1 *Harpalus æneus*.
 2 *Carabus violaceus*.
 1 *Byrrhus pilula*.
 1 *Lacon murinus*.
 4 *Otiorrhynchus clavipes*.
 19 *Forficula auricularia*.
- (b) From same locality.
 16 *Melolontha vulgaris*
 (heads and legs only).
 1 Carabid.
 1 *Otiorrhynchus clavipes*.

WINTER.

- A. Bretton Park, Yorks.
 7 Carabids (small).
 2 *Staphylinus æneocephalus*.
 2 *Agriotes lineatus*.
 1 Curculionid (weevil).
- B. Laugharne, Carmarthen.
 4 Carabids.
 2 *Geotrupes stercorarius*.
 2 *Staphylinus æneocephalus*.
 23 Curculionids.
 (chiefly *Sitona* sp.).
 46 *Forficula auricularia*.

Coleoptera, with their insoluble chitinous parts, lend themselves to very perfect preservation. Even when very much pulverized it was generally possible to identify them, though sometimes impossible to arrive at the full number present. Hence, strange though it may seem from the immense numbers recorded, the Coleoptera are, in fact, understated in the numerical reckonings.

With most members of other orders of insects it was found impossible to make a definite count, as soft-bodied insects, such as moths and craneflies, were usually completely comminuted. Hence the analyst had to depend chiefly on indestructible traces such as scales, eggs, etc., for the identification of the pulverized insect. The pincers of earwigs, however, provided a sure method of reckoning for that insect.

Table 9, showing samples of pellet contents, gives an idea of the richness of their insect remains. It is also clear from these analyses that one or two species usually preponderate in number over the rest of the species represented. In fact, one species of insect frequently dominates the pellets from any one site for several weeks. A correct estimate can therefore probably be made of the seasonal appearance, increase, peak point, diminution and disappearance of an abundant species by means of an examination of a series of pellets. This has been corroborated by observations made on live insects at the same time that pellets containing remains of the same species in large numbers were being found.

TABLE 10.

SEASONAL ABUNDANCE OF THE INSECTS MOST COMMONLY FOUND IN LITTLE OWLS' FOOD DURING ONE YEAR.

	<i>Winter</i>	<i>Spring</i>	<i>Summer</i>	<i>Autumn</i>	<i>Total for Year</i>
	(244 Pellets)	(760 Pellets)	(782 Pellets)	(163 Pellets)	(2,417 Pellets) See Note.
<i>Forficulidæ</i> ... (Earwigs)	1,577	1,283	563	6,794	10,217
<i>Carabidæ</i> ...	292	1,143	2,740	2,862	7,037
<i>Staphylinidæ</i> ... (Rove beetles)	972	727	190	1,584	3,473
<i>Curculionidæ</i> ... (Weevils)	170	883	293	231	1,577
<i>Elatridæ</i> ... (Click beetles)	—	254	331	55	640
<i>Scarabæidæ</i> (<i>Geotrupes</i>) (Dor-Beetle)	118	476	443	706	1,743

AVERAGE NUMBER OF INSECTS FOUND IN 100 PELLETS.

	Winter	Spring	Summer	Autumn
	(244 Pellets)	(760 Pellets)	(782 Pellets)	(631 Pellets)
<i>Forficulidæ</i> ...	646	168	72	1,076
<i>Carabidæ</i> ...	116	150	350	453
<i>Staphylinidæ</i> ...	398	95	24	251
<i>Curculionidæ</i> ...	69	116	37	36
<i>Elateridæ</i> ...	—	33	42	8
<i>Scarabæidæ</i> (<i>Geotrupes</i>)	48	62	56	111

NOTE.—2,460 pellets were examined during a full year of the Inquiry. 43 of them were, however, obtained between February and May, 1937, (after these statistics had been drawn up) by observers who began their work in May instead of in February, 1936. This explains the apparent discrepancy in the number of pellets recorded elsewhere.

There can thus be no doubt that the Little Owl acts as a check on insects that are very abundant and easily obtained. This fact is clearly seen in Table 10 which shows the numerical rise and fall through the seasons of the insects most universally present in the pellets. Earwigs, for instance, diminished steadily in numbers from late spring till late summer, increasing suddenly with an enormous leap in early autumn. *Carabidæ*, on the contrary, whilst abundant throughout the year, increased steadily through the summer months, reaching their maximum in autumn.

Two comments on these tables are necessary :—

(1) The *Melolonthidæ* have not been included though cockchafers are among the most abundant insects eaten by the Little Owl. The reason is that their season is short. The "May bug" appears in small numbers in May, is extremely abundant in the food in June and July and disappears in August. Hence its numbers, however great, cannot compete with insects found throughout the year.

(2) Among the *Scarabæidæ*, *Geotrupes* (dor-beetle) only has been included. The reason is that *Aphodius*, another very frequent dung beetle is of very fragile consistency, consequently its remains, though identifiable, are frequently too comminuted for an accurate count. As a family, the *Scarabæidæ* would take a place much higher numerically than appears in the list for *Geotrupes* only.

INSECTS THAT OCCURRED ABUNDANTLY IN THE FOOD.

Forficula auricularia (common earwig) is at the top of the list as the commonest insect eaten by the Little Owl. Even in

May and June, when its members were diminishing till only one to ten had contributed to single pellets, large numbers still appeared locally, e.g., from 30 to 40 in single pellets from Looe (Cornwall), Longstanton (Cambs.) and Seaford (Sussex). By September these numbers had become the normal ones for all districts and were enormously exceeded in some of them. A plague of earwigs in 1935 at Seaford, for instance, was registered by the huge numbers still found in the pellets of 1936. The record number of 343 (686 pincers) in a single large pellet (1.6 gr.) has already been quoted. Other single pellets from Seaford during the autumn contained 255, 243, 181, 162, 128 earwigs respectively and many in October and November contained from 50 to 100. The insects appear to be taken direct from the ground since the pincers in the pellets were almost invariably buried in a matrix of soil or dung and pulverized earwigs.

Pterostichus madidus was by far the most abundant species of the *Carabidæ*. In fact, there were very few consignments of material throughout the year that did not contain it. This beetle has already been referred to under "Nest Contents". The most numerous of the rest of the smaller carabid beetles were *Pterostichus vulgaris*, *Abax ater*, *Harpalus æneus*, *Nebria brevicollis* and *Cvrtotonotus apricaria*. These were more locally represented than *P. madidus*. The large *Carabus violaceus* (violet ground-beetle) and *C. nemoralis* occurred in small numbers through the winter and spring and were somewhat abundant from May till October. Seven in one pellet was a record number for Ashford (Kent) on July 6th.

Two species of the *Staphylinidæ* were found somewhat sparsely in the pellets from most districts but abundantly in pellets from open country, such as downs and sandhills. *Staphylinus olens* (devil's coach horse) occurring in small but steady numbers as a rule, rose to abnormal numbers in one locality—Seaford Downs—in October. The sender remarked: "No wonder, the beetle is running about everywhere." By far the most numerous species, however, was *Staphylinus æneocephalus*. From autumn to spring most of the pellets from open country contained it in considerable or even very large numbers, for example 82 in three and 212 in six pellets from Seaford (December) and 34 and 24 in single pellets from Laugharne (December). Yet the entomologists do not consider that this species is either very abundant or gregarious. But the Little Owl apparently knows how to find it.

Scarabæidæ. There were very few pellets and nests that did

not contain *Geotrupes* sp. (dor-beetle). Though on account of the bulk of the beetle, the numbers found are not so impressive as those of some other insects, *Geotrupes* is undoubtedly the most constantly present of all the insects that form food for the Little Owl. The fragments of *Geotrupes* are usually embedded in dung, showing that the Little Owl had delved to procure the beetle. Also, not only is dung near the nests and roosts usually well turned over, but two observers have noticed that the bird seems to follow the cows; when their grazing place is changed in autumn no more pellets are found in the usual site; when the cows return, so do the pellets. Three or four *Geotrupes* often occur in one pellet and occasionally even seven. In such cases the heads and legs only are found. *G. stercorarius* (the common dor beetle) appears throughout the year. The black *Geotrupes typhaeus* which frequents rabbit dung becomes abundant in spring disappears in summer and reappears in considerable numbers in autumn.

Aphodius is represented by more species in the pellets than any genus in the whole list. Though not nearly so widely distributed or abundant as *Geotrupes* in the pellets, it occurs very frequently.

Melolonthidæ. This family forms a very important food item during the summer. *Melolontha vulgaris* (cockchafer) appeared in the pellets and nests at the end of May and became extremely abundant in June and July. Though still present in August, it was superseded by *Amphimallus solstitialis* (summer chafer) which continued into autumn. The nest debris was often permeated with the elytra, heads and legs of cockchafers. Whole pellets sometimes consisted entirely of the comminuted insects, whilst in others the legs and heads only were found.

Examples are: 26 cockchafers in two pellets; 23 in two pellets; 28 in three pellets all from Seaford on July 6th, 12th and 15th respectively.

Several correspondents had seen a Little Owl catching cockchafers. Mr. Clark wrote: "In July, 1936, for several nights I watched two adults and a young bird feeding on May beetles. These they took chiefly as the beetles left the grass but occasionally they took them on the wing."

Curculionidæ (weevils) were eaten throughout the year. They became very abundant rather suddenly in March and April, in food material from all localities. *Barynotus obscurus*, for instance, appeared simultaneously from many districts, in large numbers. This species, together with *Phytonomus*

punctatus and *Sitona sp.* were the most common and widely spread of the weevils. Some of the records are 36 in one pellet and 49 in six from Longstanton on March 28th and April 2nd; 41 weevils in four pellets from Ludlow on April 21st; 51 in one pellet from Laugharne on April 10th; 76 in four pellets from Hereford on April 29th. These are merely samples to show the sudden abundance of weevils that occurred from March onwards.

An interesting detail is that the presence of *Barynotus obscurus* was very frequently accompanied by the presence of chunks of wood, usually pine wood in the pellets. Yet the species is one that frequents vegetable refuse, and roots of grass and is often found under stones. The explanation has not been found.

Elateridæ. This family also appeared suddenly in early spring, sometimes in large numbers and reached its peak in summer. *Agriotes lineatus* (click beetle) was by far the commonest representative. Examples of its occurrence are: 17 in two and 23 in four pellets from Ludlow on May 12th and July 6th; 48 in three pellets from Market Harborough, on June 4th; 56 in three pellets from Seaford on June 17th. The larva (wireworm) was fairly frequent at all times of year. Two other species, *Agriotes obscurus* and *Lacon murinus*, in smaller numbers, were also widely distributed.

Tipulidæ. *Tipula sp.* (daddy long-legs or crane-fly) afforded one of the most interesting records of the year. No crane-flies had been found in the pellets in early summer. At the end of August they suddenly appeared almost simultaneously from eleven counties, in very great numbers. 204 *Tipula* pellets were received between August and November. Many of them consisted of little else but *Tipula* eggs in a matrix of pulverized *Tipula*. The black chitinous egg-cases 1 mm. in length literally rained down as the pellets were broken. A pinch of .6 gram (half a pellet) taken haphazard from 80 grams of this material yielded 2,000 eggs (see photo). As very few of the *Tipula* pellets were without eggs, it seems as though the female flies must have been taken as they hovered over grass in the act of egg-laying. The crane-fly is believed to lay her eggs in batches of about 200. The species was chiefly *T. paludosa*.

Several cultures were made to test whether the eggs would hatch when taken from pellets. None did so.

The Little Owl must obviously have acted as a controlling factor on leather jackets during 1936.

Necrophoridae (carrion beetles).

In view of the opinion of some people that Little Owls are specially partial to carrion beetles as food, the exact record of the experience gained by the Inquiry is now given.

Only three specimens of the brightly coloured species of burying beetles were found, the rest, 72 in all, were the black *Necrophorus humator*. Of other genera of carrion beetles, such as *Silpha* less than 20 specimens were found. The seasonal record for *Necrophorus sp.* was : winter, nil ; spring, 27 ; summer, 28 ; autumn, 20. This gives an average of 3 for every 100 pellets.

A similar calculation made for *Geotrupes*, the commonest dung beetle, gives an average of 75 for every 100 pellets in the same three seasons. Dung beetles therefore seem to be used as a food supply more than those from carrion. The fact is that carrion does not lie about so frequently as dung. When it is found within the Little Owl's food territory, no doubt it is dealt with in the same way—turned over and the beetles extracted. The largest number of burying beetles for any one spot was eight in the Woking nest. Five were found in a larder at Wilmslow and four in food remains from Bretton Park and Shaugh. Otherwise the beetle occurred singly or in pairs in pellets containing many non-carrion beetles. A late autumn record was explained by the fact that a rabbit catcher had left many dead rabbits on the Seaford feeding haunts of the Little Owl. But even then, only four were found in a batch of pellets.

An examination of the habits of the common insects recorded shows that in almost all cases the species are such as hide by day and are active by night. Several of them, such as the carabids, earwigs and weevils, only use their wings under special conditions ; others do not possess any. Moreover, the fact that soil, moss or dung is almost invariably present in the pellets containing them is a further proof that they were taken direct from the ground. Hence the evidence goes to show that the Little Owl feeds to a great extent on what is common on the ground at dusk and by night.

INDIVIDUALITY IN FOOD HABITS ?

Any signs of individuality that have appeared in the food habits can be explained by the prevalence of certain food items on or near the feeding ground. Thus the Seaford, Carmarthen and Shaugh pellets are outstanding for the abundant remains of those kinds of insects that frequent open country. The Harold Wood, Bretton Park and Limpsfield sites were in wooded country, consequently rodents and birds were

used as food in greater numbers than in open country, though insects by no means disappeared. On the damp meadows round the Woking nest frogs are very plentiful, hence they appeared in the food in greater numbers than from any other site. On the beach at Dungeness sea-bird chicks may be easier to obtain than the normal food, though there is no evidence at hand to show what else the nest contained. The propensity for Storm-Petrels on Skokholm, as has already been described, is due to the abnormal food conditions of the Little Owl on the island.

How then does it happen that game chicks have not appeared in the food in districts where they are abundant? Partly (in the opinion of the writer) because they are under shelter when the Little Owl begins its night hunting, but chiefly because chicks are not its natural normal food and the latter is taken first wherever it is abundant.

To quote from Mr. Rolls once more: "It seems to me from watching so much the one pair of owls (surrounded by Partridge chicks) that they have got to be hard pushed for food to take game birds; it does not appear to be natural food for them."

An occasional so-called "rogue" Little Owl may, however, acquire a taste for chicks (as, for instance, with the Osgathorpe and Roburgh pairs) and make depredations. But there has been no other evidence of this during the Inquiry.

In the matter of day-hunting, some individuals may practise this as a habit and others only rarely. From the evidence obtained this seems probable. But such factors as frost, rain and need of food for the young may act as an occasional urge. It cannot yet be stated with certainty that some Little Owls hunt habitually by day and others do not.

The results of the Inquiry into the nature of the food of the Little Owl have now been fully recorded. A summary of the conclusions arrived at by the writer from the combined work in the field and in the laboratory is as follows:—

SUMMARY OF THE CONCLUSIONS.

I.—GENERAL FEEDING HABITS.

(1) The Little Owl is chiefly crepuscular and nocturnal in its feeding habits.

(2) It sometimes hunts by day, especially during the nesting season. The extent to which this is done appears to vary with individuals. Very few observers have recorded habitual day-hunting.

(3) It is primarily a ground feeder. The rodents and insects found in the food prove this.

(4) The prevalent food at all times of year consists of insects and rodents.

(5) Carrion is very little used as food.

(6) There is no evidence to show that the Little Owl kills prey in order to store it, returning later to procure carrion beetles from it. The evidence is entirely against such a practice.

(7) The so-called "larders" are not used for the storage of food beyond present needs. They contain wings, bones and partially eaten animals. They might better be called "carving holes" or "refuse dumps".

(8) There is no evidence to show that the Little Owl is in any way a menace to other species of owls. The pellets of the Little Owl found in the same tree holes as those of the Barn and Tawny Owls respectively have shown entirely different food remains.

II.—RODENT FOOD.

(1) Small rodents are used as food throughout the year. During the nesting season large and medium-sized rats and small and medium-sized rabbits are also found frequently in the food remains.

(2) In districts and during seasons where voles and mice are abundant, they appear in regular succession in the food remains. This has been a marked feature of the food in 1937 in most districts.

III.—BIRD FOOD.

(1) Birds take their place with insects and rodents as an important food constituent during the nesting season.

(2) At other times of year they are used sparsely.

(3) The birds most commonly taken are Starlings, House-Sparrows, Blackbirds and Song-Thrushes, in that order of abundance. There is a great numerical drop between these and all others recorded.

(4) The birds used as food are such as often frequent the ground (see Table 7).

(5) Very little evidence of nest-raiding has been recorded. Nests in holes, *e.g.*, walls, trees, boxes, are occasionally raided. No evidence of the destruction of nests and their contents concealed in thick bushes or herbage (*e.g.*, warblers) has been obtained.

(6) No eggs of other birds have been found in the Little Owls' nests or food.

(7) Game chicks are taken rarely. One certain and one doubtful game chick and seven poultry chicks (the latter from one Little Owl's nest during two seasons) is the sum total of the evidence gained by the field workers and analyst during sixteen months. But the reports of other correspondents have shown that locally, individual Little Owls sometimes acquire a tendency to take chicks.

IV.—INSECT FOOD.

(1) The Little Owl feeds largely on insects at all times of year, during all stages of growth and in all localities.

(2) The dominant species used as food are extremely abundant, either seasonally or through the year, *e.g.*, cockchafers, dor beetles, carabid beetles, weevils, earwigs and crane flies. There is a great numerical drop between the dominant species and the rest of the insects recorded.

(3) Any insect that appears in great numbers locally or universally becomes dominant for a time in the food remains, *e.g.*, cockchafers, crane flies, earwigs, devil's coach-horses.

Readers of the Report are reminded once more that the tables of animals, recorded as found in the food remains, refer to the period February, 1936, to July, 1937, only and include only those that have been actually seen by the regular field observers and the analyst.

From the evidence of the 1936-1937 Inquiry, the Little Owl cannot be said to feed habitually on game and poultry chicks. That it takes them in small numbers is certain. That it takes them in large numbers has not been proved during the sixteen months of investigation. The same is equally true of song birds, with the exception of Blackbirds and Song-Thrushes.

The writer has made no attempt to group the animals used as food according to their degree of usefulness or harmfulness. The obvious reason is that, with many species, even those engaged in biological research in agriculture do not yet feel qualified to do so. It is, of course, a known fact that cockchafers, daddy-longlegs, click beetles and millipedes are very harmful to agriculture. On the other hand, the Carabid beetle (*Pterostichus madidus*) (extremely frequent in the food remains) is useful on account of its predatory habits and yet harmful in destroying the fruit of strawberry crops. Earwigs, again, which may be comparatively harmless on ordinary farm land are troublesome under horticultural conditions, as, for instance, by spoiling the petals of pyrethrum and other flowers grown for market. They are regarded as even more objectionable when they invade houses in large numbers as

sometimes occurs. The truth perhaps is, that with many species of insects it is impossible to generalize, and their usefulness or harmfulness can only be estimated by relation to the local circumstances in which they may at the time be occurring. Readers must therefore be left to form their own opinions on species such as these, and all that has been possible in the lists of invertebrates is to indicate by means of an * those species definitely known to be important as pests.

The above summary brings the Report of the Inquiry into the food of the Little Owl to a close.

HELPERS IN THE INVESTIGATION.

Dr. Claud Ticehurst and Mr. Kinnear have given unstinted help with the bird section throughout the investigation. Their advice has been as valuable as their help with the identification of feathers. Dr. Blair provided a basis for the whole of the insect work, when he named the first sets of beetles that were found in the pellets. Mr. Hugh Main procured for the analyst a collection of the most frequently occurring beetles, in order that the fragments could be compared with the entire insects. At the end of the investigation the bits of beetles were sent, in their Families, to Messrs. Coulson and Allen, who named every species that had not been seen by Dr. Blair. This was an extremely lengthy and intensive piece of work. Mr. Fryer gave time and valuable advice whenever called upon. To all these experts the Trust owes its warm thanks and the analyst deep gratitude. To Miss Margaret Perry and Mr. Seth-Smith for their experiments, to Mr. Kenneth Humphries for great help with the practical work of analysis, and to Mrs. Burrows (Girton) and Miss Sturge and Dr. Janet Vaughan (Cambridge) who made the "spade-work" lighter than it would otherwise have been, the analyst offers her warm thanks. The complement to this assistance in the analysis is the co-operation of the field workers, whose efforts have been fully described already. Without them a thorough inquiry would have been impossible.

A FORMER INVESTIGATION OF THE LITTLE OWL'S FOOD.

Dr. Walter E. Collinge made an extensive three-year investigation of the Little Owl's food from 1918, the Report of which was published in his book, *The Food of some British Wild Birds*.

His researches comprised the examination of the gizzards of 194 adults and 18 nestlings, of 267 pellets and many larder holes. When this work was completed he received an offer to supply him with dead Little Owls from estates in

Hampshire. This resulted in a further examination of 96 gizzards, representing 27 estates.

The gist of his conclusions, as the result of both parts of the investigation, was that insects, voles, and mice constitute the chief items of the Little Owl's food throughout the year. He found that birds are not taken in large numbers and that "in comparison with other food items the amount of game birds used is infinitesimal".

Readers of this Report cannot fail to be impressed by its similarity to that of the present Inquiry. Any differences are those of mere details. The same predominating types of food are reported by both. Moreover, the conclusions drawn, in each case from first-hand experience, are alike.

If the opinions, given below, of various Scientific Institutions of Europe are also carefully read, it will be seen that they too correspond with the results recorded in the two Reports.

The conclusions of this Inquiry are, therefore, fully corroborated by those of other workers in this country and in Europe.

OPINIONS OF THE LITTLE OWL FROM OTHER COUNTRIES.

The following reports from Scientific Institutions on the Continent were sent to the writer shortly before the Inquiry began.

SWITZERLAND : A. Schifferli, Station Suisse d'Ornithologie de Sempach :

"In Switzerland the Little Owl (*C. noctua*) is among the birds which are protected by the Government. Among ornithologists this Owl is everywhere appreciated as very useful because it is well known that its food consists chiefly of mice, harmful insects as grasshoppers, cockchafers, crickets, etc. I can confirm that by my own experience. It happens exceptionally that the Owl kills a pigeon in the dove-cot but only when it is bitterly cold and nothing else to get for food. And even then we cannot speak about a damage. The Owl is known as very useful."

HOLLAND : Dr. G. J. Van Oordt, Zoologisch Institut der Rijksuniversiteit : "I have now a long letter from the Phytopathological service at Wageningen by which the investigations about utility of birds are done. This is stated : the Little Owl is a rather common bird all over the country. It is especially a bird of the pollard willows in which it likes to breed. The food after investigations of a number of balls (pellets) consisted of 214 shrews, 79 mice, 18 Sparrows, 7 Starlings, 1 young Blackbird, 3 frogs, many beetles (especially *Geotrupes*). Hunters declare the bird to be harmful and

of course Little Owls will take young Pheasants when there are many available. But the standpoint of the Phytopathological service is that the Little Owl is only harmful in a few cases and must be preserved mostly."

GERMANY: Dr. phil. h.c. Hans Freiherr von Berlepsch, Versuchs und Musterstation für Vogelschutz:

"The small Owl (*C. noctua*) is without doubt of the greatest use in Germany. 90-98 per cent. of its prey are mice, chiefly field-mice (*Arvicolidæ*). It is only during hard winters when there is heavy snowfall that an owl will occasionally get into a Pigeon cot. Its utility is beyond doubt."

HUNGARY: James Schenk, Director of the Royal Hungarian Institute of Ornithology: "The Inquiries in Hungary have given the result that the Little Owl eats chiefly little mammals and insects, also to a small extent little birds. The Little Owl is in Hungary therefore a useful bird and protected by the law of Bird Protection. The birds that it takes are generally Sparrows but sometimes Redstarts and other birds which breed in holes of trees. Keepers and farmers here see first the harmfulness and last the usefulness. I think it is the same also in England."

DENMARK: Ingvald Lieberkind (Mag. Scient.), Copenhagen: "Both farmers and gamekeepers formerly considered the Little Owl as being a great destroyer and many have been killed for that reason. Now this opinion is changed and the Little Owl is considered a harmless bird." Herr Lieberkind sent the letter to Halfaan Lange who had made a special investigation in various parts of Denmark. He sent the following list of contents from pellets and gizzards: Many earthworms (he enclosed a packet of setæ), mice and voles in great numbers, moles, Starlings, House-Sparrows, Chaffinches, Larks, many *Scarabæus* beetles.

It is interesting to note that Aristotle (384-322 B.C.) was probably the first naturalist to describe the feeding habits of the Little Owl. His results coincide very closely with those of the present Report in A.D. 1937.

"The Glaux and the other birds which see imperfectly procure their food by hunting in the night. They do not this all the night, but in twilight and at early dawn. *They hunt mice and lizards and beetles* and such other small animals."

"Glaux and all other birds with crooked claws eat the *Kalaris*." (*i.e.*, White Wagtail, exceedingly frequent on migration in the Mediterranean countries.)

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ERRATA.

- Pages 167 and 169 : Carmarthenshire (Laugharne) (not Abercorran).
 Pages 167 and 182 : *Lancs.* (Warrington) (not Cheshire).
 Page 169 : *Westmorland* (Windermere) (not Cumberland).
 Page 169 : (2). Yorks (Filey, *East Riding*) (not North).
 Page 171 : (7). Essex, *Little Burstead* (not Bursted).
 Page 175 : Cheshire, *Wilmslow* (not Wimslow).
 Page 175 : Shropshire, Apley Castle Estate (much wild game) (delete parentheses).
 Pages 182 and 183 : *Berks* (Newbury) (not Bucks.).
 Page 184 : H. *Britten* (not Britton).
 Page 213 : line 9 from bottom. *Also* one water shrew (not including one water shrew).
 Page 213 : line 2. *Wilmslow* (not Altrincham).
 Page 228, 2nd column : * *Agriotes lineatus* L. (insert sign of frequency—‡).
 Page 228, 2nd column : ‡ *Corymbites pectinicornis* L. (delete sign of frequency).
 Page 228 : *Lepidoptera*, *Smerinthus ocellatus* (not *Sinerinthus*).
 Page 228 : *Lepidoptera*, *Smerinthus populi* (not *Sinerinthus*).
 Page 229 : *Stuart* Boardman (not Stewart Boardman).
 Page 229 : E. M. Nicholson, *Sussex* (not Surrey).

MORNING SONG COMMENCEMENT.

BY

ARNOLD CLARK.

THE following records, which show the times at which certain birds begin to sing in the early morning, were obtained at Hartley, near Gravesend, Kent, in the spring of 1937. An attempt was made to take these records at frequent intervals (two or three times a week) during the song period and this was done, except during the first half of May when I was away from the district.

The records taken during each half of a month are represented in the table by an average figure which gives the time in minutes before sunrise. The last two columns give the earliest and latest times recorded for each species. Except in the case of the Blackcap the records under species do not refer always to the same bird. No attempt was made to take exclusive records of one bird of a species. The times of sunrise were taken from a table giving the times for sunrise in London. The listening period extended from dawn until some minutes after sunrise and the blank spaces in the table indicate that no song was heard during this period.

TABLE SHOWING AVERAGE FIGURES FOR SONG COMMENCEMENT IN MINUTES *before* SUNRISE.

	March		April		May		June		July		Extremes	
	Second half	First half	Second half	First half	Second half	First half	Second half	First half	Second half	First half	Earliest	Latest
Blackbird ... <i>T. m. merula</i>	53	60	56	62	63	57	—	68	50			
Song-Thrush ... <i>T. e. ericetorum</i>	55	53	55	63	67½	63	32	71	43*			
Robin ... <i>E. v. melophilus.</i>	41	47½	50	59	64	50	23	71	23			
Hedge-Sparrow <i>P. m. occidentalis.</i>	—	54	53	36	—	37	33	65	8			
Wren ... <i>T. t. troglodytes.</i>	39½	42½	37	43	40½	32	30	57	22			
Great Tit ... <i>P. m. newtoni.</i>	12	24	27	23½	33	—	—	38	11			
Chaffinch ... <i>F. c. gengleri.</i>	12	9	26	20	14	7	—	33	7†			
Blackcap ... <i>S. a. atricapilla.</i>	—	—	—	24½	30	32½	33½	38	20			
Willow-Warbler... <i>P. t. trochilus.</i>	—	—	18	32	40	—	—	41	11			
Garden-Warbler <i>S. borin.</i>	—	—	—	65	54½	31	22	71	15			

*Apart from July 4th when the first song was heard at one minute *after* sunrise.

† Seven minutes *after* sunrise (April 5th).

The above records show that amongst this group of birds the Blackbird and Song-Thrush were the earliest and most

consistent of dawn singers ; the Robin was a little behind the Blackbird and Thrush in April but just as early at the beginning of June ; the Hedge-Sparrow was a consistently early singer during April but afterwards most unreliable. The Wren shows a fairly consistent average time but the daily records show that he sang at greatly varied times throughout. The Great Tit was inclined to sing a little before the Chaffinch but neither of these birds was heard during those moments which are given to concentrated song from the Blackbirds and Thrushes. The times for the Blackcap and Willow-Warbler did not differ greatly from those for the Great Tit or Chaffinch, if anything they were more consistent. It is interesting to note that on July 4th when the song of the resident birds was deteriorating, the Blackbird was not heard, a Robin sang at 23 minutes before sunrise, a Song-Thrush at one minute after sunrise, whilst the Blackcap sang at 34 minutes before sunrise, a time which I had learnt to expect from him.

The Garden-Warbler was an early singer while in full song but as the song deteriorated the time for starting approached nearer to that of sunrise. This was also true of the Song-Thrush and Robin.

In his article on fluctuations in song (*antea*, Vol. XXVIII., page 364), Mr. J. P. Burkitt gives the following times for the commencement of the song of the Blackbird and Song-Thrush in north-west Ireland: “. . . about 40 minutes before sunrise in February ; 45 minutes before it at mid-March ; 56 minutes at mid-April ; 70 minutes at the end of April, and 84 minutes at the end of May.” The times for mid-March and mid-April compare reasonably well with those given above for north-west Kent. From the end of April onwards, however, Mr. Burkitt's times exceed these by an appreciable amount. It would be interesting to know how much this is due to a difference in the duration of twilight in the two districts. It seems probable that this period of time—the period between dawn and sunrise—is longer from the end of April to the end of May in northern than in southern parts.

Mr. Burkitt also says regarding the song of the Chaffinch: “ His morning song does not begin at earliest till, say, 15 minutes after sunrise in February and 27 minutes before sunrise in June”, and these times agree more closely with the times I have recorded above for the Chaffinch.

The difference in song commencement between some species is wide enough to be of some significance. It is particularly noticeable between the Blackbird and the Chaffinch, the Garden-Warbler and the Blackcap, and it is consistent throughout that period which marks the full song of these birds.

SOME RECORDS OF THE CALLS AND CRIES OF BRITISH "WADERS".

BY

THE REV. F. L. BLATHWAYT, M.A., M.B.O.U.

ATTEMPTS have often been made to put down in writing a rendering of the notes of birds. A difficulty at once presents itself from the fact that few of these renderings really correspond adequately with the original. Yet they have a certain value because they serve to recall for the recorder the notes he has heard and enable him to recognize them when heard again. To other ears they might suggest a sound entirely different from that produced by the bird.

The following is an attempt to represent the usual calls of 28 of the British examples of the order *Limicolæ* or "Waders" jotted down "on the spot" as they have appealed to my ears, not so much at the breeding-stations as by reservoir or on mud-flat marsh or sea-shore. This attempt presents a sequence of sounds as they strike a single listener, and from this fact may be of some interest.

STONE-CURLEW (*Burhinus ædicnemus*).—"Cūr-lee" loud and clear.

OYSTER-CATCHER (*Hæmatopus ostralegus*).—A clear, far-reaching "peep".

RINGED PLOVER (*Charadrius hiaticula*).—A fluty low, clear "too-it".

KENTISH PLOVER (*Ch. alexandrinus*).—"Prrr-ip—prrr-ip" rather low.

GOLDEN PLOVER (*Ch. apricarius*).—A loud, clear "kleē-īp".

GREY PLOVER (*Squatarola squatarola*).—"Kleēē-ěč" shrill, with a downward slur giving a mournful effect. A triple note.

LAPWING (*Vanellus vanellus*).—"Pece-weep" rather harsh.

TURNSTONE (*Arenaria interpres*).—A sharp chattering, "tet-tet-tet".

RUFF (*Philomachus pugnax*).—A very silent bird. Sometimes on rising, an almost inaudible, low "kūt".

SANDERLING (*Crocethia alba*).—A sharp "wick".

KNOT (*Calidris canutus*).—A mellow, soft "tōō-ÿ-üt", and also a low "kurp".

DUNLIN (*C. alpina*).—A drawn-out, rather harsh "dreeē".

CURLEW-SANDPIPER (*C. testacea*).—"Chīrr-ūp", not loud.

LITTLE STINT (*C. minuta*).—A low, sharp "tīt-tīt-tīt".

AMERICAN PECTORAL SANDPIPER (*C. melanotos*).—“ Trīp-trīp ” not loud, but liquid, musical and with little harshness in it. Somewhat reminiscent of the note of Curlew-Sandpiper.

PURPLE SANDPIPER (*C. maritima*).—A squeaky, harsh and low “ chee-you-chi-chi ” or “ āh-chee-chee ” slightly reminiscent of note of Turnstone.

COMMON SANDPIPER (*Tringa hypoleucos*).—A shrill “ chi-chee-chee ”.

WOOD-SANDPIPER (*T. glareola*).—A loud, startled chattering note, “ chee-chee-chee-chee ”.

GREEN SANDPIPER (*T. ochropus*).—Loud and sharp, “ gwi-i-wick ”.

REDSHANK (*T. totanus*).—“ Tiew-too-too ”, mellow and clear. Last two notes shorter and of lower pitch.

SPOTTED REDSHANK (*T. erythropus*).—“ Chèw-èt ”, rather low.

GREENSHANK (*T. nebularia*).—A clear, very loud, “ tew-tew-tew ”, all on one note.

GREY PHALAROPE (*Phalaropus fulicarius*).—A very sharp “ tchick ”.

BAR-TAILED GODWIT (*Limosa lapponica*).—A barking “ terrèk-terrèk ”.

BLACK-TAILED GODWIT (*L. limosa*).—Usually silent. Sometimes a quick barking “ querk-querk-querk ”.

COMMON CURLEW (*Numenius arquata*).—“ Ker-lee ”.

WHIMBREL (*N. phæopus*).—A sharp chattering “ tèt-tèt-tèt ” about seven times.

COMMON SNIPE (*Capella gallinago*).—A harsh “ scaap ”.

NOTES

HAWFINCH IN OUTER HEBRIDES.

As there is apparently no previous record for the Outer Hebrides, it may be of interest to report that a Hawfinch (*Coccothraustes c. coccothraustes*) was killed in North Uist on October 27th, 1937, and that I saw another at Newton Lodge, North Uist, on November 4th, 1937.

JAMES W. CAMPBELL.

DOMESTIC HABITS OF SPOTTED FLYCATCHERS.

REGARDING the note on this subject (*antea*, pp. 194-6), I should like to augment this interesting account in two directions.

I was able to watch a pair building on my house in May, 1935, at a distance of six feet. Shortly after laying commenced the hen disappeared and the nest was deserted, but after ten days, the cock was joined by a second hen and a new nest was immediately begun in a different place.

The two points I would like to make are :

(1) The hen alone did all the building. Sometimes the cock would jump on to the nest and poke about in it for a few moments, but without actually moving anything. Once, however, when he was waiting by the nest, instead of greeting the hen in the usual way on her return, he suddenly pushed in front of her, sat on the nest and scratched the floor of the nest hard with his legs, exactly as the hen bird did in her normal nest-building operations. On no other occasion did he show the slightest inclination to help. But when she disappeared he started two nests on his own account. Both these were the merest beginnings of a nest, soon blown down by the wind.

(2) The cock bird sang but rarely during his brief spell as a widower. I got the impression that a Flycatcher's song carries so short a distance that perhaps it is not used to advertise the presence of a cock in possession of a territory. The bird has a call-note, however, that is loud and clear, and for those ten days my cock called continuously all day long. When the second hen arrived, he stopped calling and began to sing again regularly. The first hen, by the way, sang a delightful little warbling sub-song of short duration just before laying her third egg.

G. B. GOOCH.

OSPREY IN DEVON.

As the bird is seldom observed in the south-west, I desire to record that on October 17th, 1937, Messrs. R. F. Moore and M. G. Palmer and myself watched an Osprey (*Pandion haliaetus*) on the estuary of the Taw. It was flying leisurely over the water and once or twice struck at the surface with outstretched talons, but did not appear to catch anything. After being mobbed by a Great Black-backed Gull it soared to an immense height, but later came lower and flew out to sea.

MICHAEL BLACKMORE.

TWO NEW HERONRIES IN DENBIGH AND FLINT.

It may be of interest to record that in 1936, two new nesting sites of the Heron (*Ardea c. cinerea*) suddenly arose, late in the breeding season, in the Vale of Clwyd. I am of opinion that both these colonizations were the result of the Glan-y-wern heronry, near the village of Llandyrnog, Denbighshire, being partially deserted after nesting had commenced in March, 1936. The new sites are as now detailed.

(1) In a small wood on the Cerrigllwydion property, near Llandyrnog and under 2 miles SSE. of Glan-y-wern. In the first year there were 3 nests and in the following an increase to 7.

(2) In Green bach Wood, near Trefnant and close to the River Clwyd, but on the Flintshire side of that river. This wood is under 4 miles NNW. of Glan-y-wern and there were two nests in the first year and I am informed, the same number in the following year, but as the larches are very high and dense it is not easy to be quite certain, once the trees are in leaf. Glan-y-wern heronry, which one recent year held as many as 20 nests, appears to be suffering badly from the increase of Rooks and certainly one normal nesting tree, which always held 3 or 4 nests, is now completely dead.

W. M. CONGREVE.

REDSHANK MATING IN NOVEMBER.

THE courting of Redshanks (*Tringa totanus*) in December has been noted (*antea*, Vol. XXIX., p. 328) but no mating was seen.

On November 6th, 1937, on the shore at Crosby, Lancs., I was fortunate enough to watch a pair courting for over an hour, during which time they mated once. The weather was cold and it was drizzling slightly.

One bird (A) with feathers puffed out, its beak pointing to

the ground and its head held in, thus giving it a "bunched-up" appearance, was walking round the other bird (B), which stood erect with feathers in the normal position. B moved away from A, which followed, attempting to walk in circles around B. Now and then, A squatted flat on the ground in the "bunched-up" position and then resumed the chase. After a very short time, B flew off over a channel and A straightened up and started to feed normally.

After about 10 minutes, a Redshank (presumably B) flew back across the channel and landed near A, calling vigorously—a rather rippling, shrill version of the ordinary call carried on with no break. B soon stopped calling; A assumed the "bunched-up" attitude, bending forward, and started to parade round B as before. After following B for some time, A hovered above B, which immediately moved away. A persisted, however, and amidst much wing-flapping finally leapt on B's back, where it stayed for 5 to 10 seconds, obtaining its balance by vigorous wing-flapping. B apparently shook A off and walked off with A following in the "bunched-up" attitude. After going a few yards, B, walking quickly in an upright normal attitude, would fly off a few yards with the white rump and wing patches showing up well. A would then stand motionless and "bunched-up" for a few seconds and then fly off to B, assume the "bunched-up" attitude, and the process would continue, but I saw no further actual mating.

J. S. TAYLOR.

RED-BREASTED SNIPE AND YELLOWSHANK SEEN IN CORNWALL.

I HAVE to report the presence of a bird, which I identified as a Red-breasted Snipe (*Limnodromus griseus*), in Cornwall. I first saw the bird on October 19th, 1937, when it was at a small water pool on the moors above Zennor. On November 2nd I saw it again on Marazion Marsh and it was still there on the 7th, after which I did not see it. As the bird is such a rare visitor to this country the following details of my observations appear advisable to establish its identity.

Size : When in the air with Common Redshanks, it was seen to be slightly smaller than them. A fair estimate of its length would be $10\frac{1}{2}$ inches.

Bill long, and bulbous at the tip. Appeared to be curved a little downward at the tip, but I think this may have been due to the enlargement at the tip. It was thick like a Snipe's, and in colour it was reddish in places. The carriage upon the

ground was fairly horizontal. In flight the bill was held lowered, like a Green Sandpiper's; but when the bird was descending to the ground the bill was thrust forward and downward very much in the manner of a Common Snipe.

Upper-parts brown patterned dark brown or black; a dark line passing through eye and a pale superciliary stripe. The forehead noticeably pale. Breast flecked and mottled pale brown—likewise the belly; a brown shading on the flanks was especially noticed. It was noticeable on October 19th that there was really no white on the under-parts at all—the ground colour was buff. I did not notice any white upon the throat. By November 2nd the breast was very much paler.

A pure white area on the back was the most conspicuous feature. This resembled the upper-part of a Common Redshank's white back-patch or a Greenshank's—but the base of the white cone in this bird was higher up than a Greenshank's—due, I think, to the upper tail-coverts and base of the tail being brown in colour.

The tail, as shown when the bird was on the ground, had a very dark tip. In flight it appeared to be coloured brown up to the base; I could not see sufficient detail to make out any bars, but I imagine, by inference from the appearance of other barred species, that the tail of this bird was barred.

The legs were olive brown.

The flight was something between that of a Green Sandpiper and a Common Snipe. The bird associated with Teal and also with Common Redshanks. It probed the mud for food, and I also saw it feed wading in the water. It was rather lethargic and not readily flushed.

I regret that owing to deafness I cannot describe its cry.

I feel that an apology is needed in recording the presence of a Yellowshank (*Tringa flavipes*) at Marazion a year after its appearance. But the fact that another American wader as above recorded has been at Marazion this autumn gives an added interest to the visit of the Yellowshank, and seems to justify its tardy notification.

On September 17th, 1936, I found a bird upon Marazion Marsh that I took at first to be a young Spotted Redshank. Its legs were deep yellow, and long; the bird was obviously a shank, and it had the Redshank's mannerisms in regard to jerking the head and shoulders; it had a white rump, like the Common Redshank's, but its secondaries were of dark grey. I was surprised to find that it allowed me to walk right up to it; curiously enough, although it "jerked" violently at me, it did not otherwise seem to be in the least nervous,

and it was only with difficulty that it could be induced to fly ; when it did so, it uttered a call which I, being deaf, only just heard, but I have a record that it was of four notes, and of a lower pitch than the Common Redshank's. I saw the bird almost daily up till October 11th. Apart from its very atypical behaviour, my suspicions as to its identity were first aroused when I saw the bird in the company of a Common Redshank, and noticed that it was very definitely the smaller, and later with plenty of Common Redshanks for comparison, this was confirmed. A description of other points is as follows :

Bill : about $1\frac{1}{4}$ times the length of the head—quite straight and uniformly black.

Legs : deep yellow, and proportionately of the same length as a Redshank's.

Head, neck and upper breast, dark grey, with stippling : dark longitudinal streaks were noted on the neck and breast. Dark line passing through eye ; pale superciliary streak. Lower breast and belly white.

Back and wings greyish brown, sprinkled with some irregular white blotches. Tail showed distinct barring, and appeared darker in the centre than at the sides. Upper tail-coverts not noticed to be different from a Common Redshank's.

The flight was fairly strong and erratic, but the bird was not easily flushed. The bird as a rule kept to itself, standing feeding upon the grass bank at the edge of the water. It had a slim figure and its carriage was fairly upright.

Mr. A. W. H. Harvey, who has considerable knowledge of the birds of this district, came to the conclusion that the bird was a Yellowshank, and personally I have no doubt whatever that it was. As I have already written, the combination of the shank's nervous jerking and dipping with the inordinate tameness and indifference to human observers was very singular.

R. G. WALMSLEY.

BLACK TERN IN CARMARTHENSHIRE.

ON August 28th, 1937, an immature Black Tern (*Chlidonias n. niger*) appeared over a piece of water near the sea in Carmarthenshire. The bird, which was a dirty brownish colour above, had a black cap with a little white on the forehead. It picked a few insects off the surface of the water without diving.

Mr. G. C. S. Ingram tells me that this appears to be the first reported occurrence of the species in Carmarthenshire.

J. F. THOMAS.

ROSE-COLOURED STARLING IN HEREFORDSHIRE.—Mr. N. M. Collins states (*Field*, November 27th, 1937, p. 1,406) that he observed a Rose-coloured Starling (*Pastor roseus*) from September 2nd to 14th, 1937, while staying at Leintwardine. The bird frequently fed on mulberries.

LATE TREE-PIPITS IN MONTGOMERYSHIRE.—Rear-Admiral H. Lynes informs us that he saw a party of five Tree-Pipits (*Anthus trivialis*) at Cyfronnyd on November 13th, 1937—a very late date.

WATER-PIPIT IN PEMBROKESHIRE.—*A Correction*.—Mr. R. M. Lockley writes from Skokholm Bird Observatory that a Pipit ringed there on July 18th, 1934, and recorded as a Water-Pipit (*Anthus s. spinoletta*) (*antea*, Vol. XXVIII., p. 310) was retrapped on Skokholm on April 16th, 1936. It should then have been in spring plumage, but there was no obvious pink on the underparts, which were lightly streaked. Unfortunately it was accidentally released before being thoroughly examined. Some doubt as to its identity therefore remains, and it is possible that it may have been an aberrant Meadow—or other Pipit—the fact that it was retrapped two years later is rather significant. It was hoped to remove this doubt by retrapping in 1937, but the bird has not been seen since. It has been deemed advisable therefore to publish this note.

BLACK REDSTART IN MIDDLESEX.—Mrs. L. Parker writes that on October 31st, 1937, she saw a Black Redstart (*Phœnicurus o. gibraltariensis*) in a garden at Hendon. From Mrs. Parker's description the bird was a female or young male.

BLACK REDSTARTS IN WINTER IN NORFOLK AND IN CARMARTHENSHIRE.—Mr. J. F. Thomas gives us the following dates of Black Redstarts (*Phœnicurus o. gibraltariensis*) observed by him. At Hunstanton, Norfolk, one on December 29th, 1928; at Laugharne, Carmarthen, single birds on December 21st, 1935, January 1st, 1936, October 21st and November 1st and 3rd, 1937.

STARVING SWALLOWS PICKING UP VEGETABLE MATTER.—Messrs. J. Aspinall and D. Brophy inform us that on October 6th, 1936, at Innsbruck, Austria, they observed a pair of Swallows (*Hirundo r. rustica*) on the edge of the pavement of a main road apparently eating pieces of decayed vegetation, which had fallen from horse-chestnut trees. The birds allowed a very near approach, and appeared to be in a very weak condition and did not seem capable of flying

more than a few yards. Two days later in a different part of the town, the same observers saw some twelve Swallows behaving in exactly the same way. The weather for a week previously had been very cold, and the Brenner Pass was covered with snow over a large area.

ROUGH-LEGGED BUZZARDS IN KENT AND SUSSEX, HAMPSHIRE AND SHROPSHIRE.—Mr. B. T. Brooker informs us that on October 17th, 1937, he and Mr. H. A. R. Cawkell saw near Dungeness on the borders of Kent and Sussex a Buzzard with a pale sandy head contrasting with the brown upper-parts, a white base to the tail and a striking dark patch on the white under-wing at the carpal joint. The bird was seen again a week later and its identification as a Rough-legged Buzzard (*Buteo lagopus*) was confirmed by Dr. N. F. Ticehurst who had a good view of it on November 14th.

Mr. H. Lloyd Wilson also informs us that on October 9th, while on the Long Mynd, Shropshire, he saw a bird he identified as a Rough-legged Buzzard. It was in company with a Common Buzzard and had a white tail with a broad dark bar at the end, and was very much whiter on the under-parts than the other bird.

Mr. B. J. Ringrose also writes that on December 9th he saw a bird, which from the light underparts and black-banded tail, must have belonged to this species, on the western outskirts of the New Forest.

SHELD-DUCK IN SURREY.—Mr. D. G. Pumfrett informs us that he saw a Sheld-Duck (*Tadorna tadorna*) on some flood water at Pyrford on December 5th, 1937.

SPOONBILL IN DEVON.—Mr. Michael Blackmore informs us that Messrs. R. F. Moore and M. G. Palmer observed a Spoonbill (*Platalea leucorodia*) in N. Devon on October 31st, 1937.

STONE-CURLEW ON ISLE OF MAY (FORTH).—Among birds observed on the Isle of May by the Midlothian Ornithological Club in the spring of 1937 the most important was a Stone-Curlew (*Burhinus oedicephalus*) seen on April 23rd (*Scot. Nat.*, 1937, p. 127). There are very few previous records of the bird for Scotland and it had not before been noted in the Forth area.

RAZORBILL INLAND IN ESSEX.—Mr. F. C. Bromley informs us that on September 18th, 1937, he watched a Razorbill (*Alca torda*) in a lake at Knighton, Epping Forest.

REVIEWS.

Studies in the Life History of the Song Sparrow. Vol. I. *A Population Study of the Song Sparrow.* By Margaret M. Nice. *Transactions of the Linnean Society of New York, IV*: April 1937. 247 pp. 3 plates, 18 charts, 33 tables. (American Museum of Natural History, New York City). Obtainable from H. F. & G. Witherby, Ltd., at 6s.

As this modestly presented paper includes at least as much original and significant observation of the essential facts of bird behaviour as almost any dozen ordinary bird books it is by no means easy to review. Ornithologists have known for some time that Mrs. Nice was engaged in an extraordinarily thorough study of a small bird community, but only with the issue of this complete summary of one aspect of her work does its full magnitude and importance become evident. Although she writes of a few hundred individuals of a species (*Melospiza melodia*) unknown to most European ornithologists, located upon some 40 acres of waste land just outside the city of Columbus, Ohio, she deals with problems which concern any bird-watcher in any country, and she has taken great care to present her findings so that they are of interest and value to those who have never seen a Song Sparrow in their lives. In fact, her account is a fundamental and original study of how birds live, worked out in the field in terms of one species, but checked and illuminated by frequent references to work on the same problems with many other species in many countries.

In this volume, after summarizing the life history and environment of the Song Sparrow and the technique of the inquiry, she gives accounts of the weights and measurements of the species, its migrations, territorial habits, relations between the sexes, nests, laying, eggs, incubation and care of young, nesting success and failure, parasitism by Cowbirds, survival of the adults and young, longevity and population problems. These points are handled in such a way as to make our total knowledge of most British species appear a comparative blank. For example, we learn not only the weights and measurements by sexes, but also that weight increases during the day by as much as 4 or 5 per cent., that it is highest in January, falling to a minimum at midsummer, and that females put on weight during incubation, but both sexes lose up to 9 per cent. while feeding the young.

The Song Sparrow is, like several British species, a partial migrant, about half the breeding males, and from 11 to 33 per cent. of females, wintering on or near their territories while the rest go south, to be replaced by some winter residents, and by transients during March and October. Pedigrees based on identifying individuals of successive generations through ringing show that there is no distinct migratory strain. On the contrary, two migratory parents have had a resident son, and the same bird may migrate one winter and not the next, or *vice versa*. High temperatures in late February or early March will bring an early wave of spring immigrants, but high temperatures at earlier dates have no effect in stimulating, nor low temperatures later in deterring, the impulse to migrate.

Song Sparrows have territorial habits similar to our Reed-Bunting's, although Mrs. Nice has worked them out sufficiently to show many new points. She confirms that song is in this case the chief means of proclaiming territory. Winter male residents may range over areas of about 150 by 225 metres, but the breeding territory is only half to one and a half acres. In cold weather small loose flocks are formed, but these are of casual assembly and are not family parties. Song,

like migration, can within certain date limits be brought on earlier by high temperatures. A temperature of 54°F. will start singing on January 7th, and the "threshold" falls by .7° a day, so that 40° is sufficient by the end of January.

Some males keep the same territory year after year, others make slight changes. Well over a third of the females watched two years running also returned to the same territory. Young males settled in 22 cases at distances of 100-1,400 metres from their birthplace. The choice of mates by females, apart from their homing preference, seems to be haphazard. Remating a second year was unusual, and there were four cases of bigamy. The nest is built by the female and she makes her first one as expertly as her last. It does not appear that the colour, size and shape of eggs are inherited. A Song Sparrow probably eats from 10 to 15 per cent. of its weight each day, and feeds from 30 to 50 times, taking 2½ hours to empty completely its stomach and intestines after food, which is mainly weed seeds and insects.

The average number of eggs per nest was 4.2. During the first two years 70 per cent. of eggs were hatched and 44 per cent. got as far as fledged young. In the next four years these figures dropped to 52 per cent. and 29 per cent., largely owing to wholesale disturbance and destruction of cover. Mrs. Nice shows by comparison with other North American and British work that about 62 per cent. of eggs hatched and 43 per cent. fledged appear normal for open passerine nests in temperate conditions, while hole-nesting species are frequently about 50 per cent. more successful.

Song Sparrows are heavily parasitized by Cowbirds (*Molothrus ater ater*) and these did not decline as rapidly as Song Sparrows and the other suitable hosts after the clearance of cover, so that the proportion of female Cowbirds to pairs of possible hosts rose with disastrous results from about 1:15 to about 1:8. The percentage of Song Sparrow nests parasitized actually rose from one-quarter to three-quarters on this account. Mrs. Nice concludes with an important survey of population composition and survival, which cannot be summarized but brings out many interesting points, including the fact that for adult birds the breeding season is the period of greatest mortality.

These few examples must suffice to show to what an extent Mrs. Nice has supplied facts on points where there has hitherto been little beyond guesswork to go upon. Although a model of clarity and excellently summarized her account is inevitably rather full of statistics, but this bias will be offset by the second volume, on behaviour, which we eagerly await. Meanwhile we have here enough stimulating ideas and information to keep us busy for years in trying to follow up some of the points raised, and it is to be hoped that all ornithologists who take any interest in intensive research upon wild birds will lose no time in getting this admirable study. E.M.N.

Der Brutparasitismus der Kuckucksvögel. By Wolfgang Makatsch. 8vo. One coloured and 8 monochrome plates (Quelle & Meyer, Leipzig.)

In this little work of 152 pages we have a careful summary of all the evidence up to 1937 on the breeding biology of the European Cuckoo (*Cuculus c. canorus*), with special reference to its German fosterers. There are also chapters on the development of "breeding" parasitism: resemblance of Cuckoos' eggs to those of fosterers and a

list of the literature bearing on the subject, which extends to twenty closely printed pages! The life-history of the Cuckoo has proved extremely difficult to elucidate, but with the exception of the method of deposition, most of the problems have one by one been definitely solved. The author has studied most of the English contributions on these questions and reviews them impartially, but it is somewhat unfortunate that the book was written before the recently published observations on the laying of the egg directly into the nest in India were accessible, as the greater part of the older evidence was based on the assumption that insertion by means of the bill was the normal method, and it has now been proved that this is not the case.

We notice that while Mr. Marples's note on a Cuckoo's egg in the nest of a Reeve (*Br. Birds*, Vol. XXV., p. 34) occurs in the list of literature, there is no mention of it among the casual fosterers of which a list is given on p. 95. Such accidental cases have little value and in many instances are not satisfactorily authenticated. It would be better to relegate all species in whose nests the Cuckoo's egg has only been found once or twice, to a separate list. The plates illustrating the growth of the young Cuckoo are excellent; the coloured plate of eggs is, however, less satisfactory.

LETTERS.

THE LITTLE OWL INQUIRY AND THE SKOKHOLM STORM-PETRELS.

To the Editors of BRITISH BIRDS.

SIRS,—Miss Hibbert-Ware (Little Owl Inquiry, *antea*, pp. 215-216) prefaces her remarks on Little Owls on Skokholm Island, Pembrokeshire, with the words: "The following incident seems, however, to contradict these conclusions [that the Little Owl does not appear to feed on birds in such large numbers as to be harmful to the species that form its prey]. It must, therefore, be examined with care."

In view of the latter statement it might have been anticipated that Miss Hibbert-Ware would have prepared this particular evidence with the greatest impartiality and care, from all available material. But reading through the relevant paragraphs which follow I find that she *infers*, but offers *no direct* evidence, that Little Owls were responsible for the "large number of wings and tails of Storm-Petrels found in a hole in a wall", and for the large caches again found in 1936 and 1937. She does not refer to the all-important evidence, of which she had possession, of Little Owl castings found with the carcasses in the same caches, that these caches were in the nest-hole, and even formed the immediate environment of the nest, and that each pellet examined was found to consist wholly of the feathers and bones of Storm-Petrels, with, in some cases, a small percentage of beetle and ground-up insect remains. Yet in a letter to me dated July 18th, 1936, Miss Hibbert-Ware acknowledges receipt of such a "charnel house" (in her words) cleared from a Little Owl cache on Skokholm, and containing several pellets and, by her own counting subsequently, 174 wings of the Storm-Petrel. Nor, in Table I (*antea*, p. 167), is there reference to Pembrokeshire as a county from which food material was sent.

I trust that in my anxiety to make the Skokholm Little Owl-Storm-Petrel situation perfectly clear, I shall not appear too critical. I may be myself in default in having failed to explain the situation more fully

to Miss Hibbert-Ware at the time of the Inquiry. At least we are fully agreed on one point—that “it is obvious that it is altogether unsuitable that the Little Owl should be allowed to breed on Skokholm”. But the rest of Miss Hibbert-Ware’s observations under the same heading on page 216 call for some correction.

Storm-Petrels on Skokholm breed under stones and in wall and rock-crevices, usually far apart; few breed in turf burrows or close together. There is an abundance of natural food, other than Storm-Petrels, for Little Owls. In any case, Storm-Petrels are absent from November to the end of April, and yet during this winter period Little Owls are much more numerous on the island, due to a westward movement from the mainland, and it is during this period that we receive a fresh colonization to replace the residents which we endeavour to exterminate each summer. So it is obvious that Little Owls can thrive on Skokholm without feeding on Storm-Petrels. And probably for the following reasons:

In addition to rabbits, large and small, there are plenty of common house-mice (*Mus musculus*), (which for lack of other shelter, live freely out in the pastures all the year round), frogs, newts, and slow worms. There have always been horses, sheep and goats, which with the rabbits provide dung on every square yard of the island. Burying and carrion beetles are very numerous owing to the enormous number of dead sea-birds and rabbits which litter the island as a result of work by predatory gulls and Raptors. As these beetles are most numerous during the summer, coinciding with the presence of the Storm-Petrels, the Owls’ opportunities for feeding must not be classed arbitrarily as “abnormal”, in the sense conveyed by Miss Hibbert-Ware, *i.e.*, “restricted”.

It will be of interest to add that in 1937 a pair of Little Owls was taken from a hole on Skokholm, which contained 3 chicks and 4 eggs, and a large cache of decapitated Storm-Petrels. One of the adults was found to be wearing a ring put on its leg (as a fledgling captured on Skokholm) in July, 1934, at which time it had been deported and released on the mainland opposite the island. Both adults in 1937 were taken farther afield, and released near Bath, Somerset. They did not return, but subsequently a bird of the year arrived on Skokholm towards the end of the summer. This young Little Owl may well have been blown over from the neighbouring island of Skomer by a strong north wind which prevailed at the time. Several pairs breed on Skomer, where they are not controlled, and where of late years Storm-Petrels have grown steadily scarcer (a member of the staff of The National Museum of Wales failed to locate the Storm-Petrel at all on Skomer in 1937). The new arrival was captured in a rock-crevice littered with the fresh remains of Storm-Petrels.

An interesting point which has not been mentioned under the heading “Storage of Food” (*antea*, p. 205), has been the large number of headless but otherwise untouched carcasses of Storm-Petrels which have been found in Little Owl nest-caches on Skokholm. These have always been tucked away in the burrow close to the nest. Obviously, from the dried-up state of the “back” layers of carcasses, much is left unconsumed for long periods, and perhaps altogether, but having destroyed the Owls or deported them whenever possible, it is not for us to do more than surmise what would have happened to this food store if the Owls had been undisturbed.

R. M. LOCKLEY.

Skokholm Bird Observatory.

KITTIWAKES AS SHORE-BIRDS.

To the Editors of BRITISH BIRDS.

SIRS,—Though from Mr. H. G. Alexander's article (*antea*, pp. 202-204) it is clear that Kittiwakes (*Rissa t. tridactyla*) are not often observed to settle on a sandy or muddy shore, I think that this must occur more frequently than is believed. In *British Birds*, Vol. XXI., p. 194, Messrs. F. W. Holder and R. Wagstaffe record "the appearance of small parties of adult Kittiwakes on Ainsdale Beach [Lancashire] in late spring". On July 11th, 1937, I saw about twenty on Ainsdale Beach, some fully adult and some evidently in their second year. Again I find I have a note of several score adults on the banks at the harbour mouth at Blakeney, Norfolk, on June 30th, 1928. A. W. BOYD.

To the Editors of BRITISH BIRDS.

SIRS,—Mr. Alexander's paper on the Kittiwake as a land bird is interesting to me, as on the island of Colonsay I have seen large numbers of Kittiwakes standing close together on the golden sands of Killoran. In Unst, most northerly of the Shetland Islands, is a long fresh-water loch, the Loch of Cliff. Here, during any hour of daylight during summer, large numbers of Kittiwakes may be seen bathing. A continuous stream of these birds is always coming in from sea to bathe in the loch, and another stream is returning to sea, and sometimes the flight-line is over high moors. In Orkney, too, the Kittiwake flies in each day to bathe in fresh water. SETON GORDON.

THE "BRIDLED" GUILLEMOT.

To the Editors of BRITISH BIRDS.

SIRS,—I have for some time been collecting information concerning the proportion of the "ringed" or bridled form of the Common Guillemot (*Uria aalge*) at British colonies and abroad. The results show such an interesting increase in the percentages with latitude, that it is proposed under the auspices of the British Trust for Ornithology to ask help in obtaining as complete figures as possible during the coming year. I should be very much indebted to readers of *British Birds*, who may already have counts taken during previous years in their notebooks, or who will be in the neighbourhood of a Guillemot colony during the coming breeding season and could undertake to make a representative count, if they would get in touch with me.

H. N. SOUTHERN.

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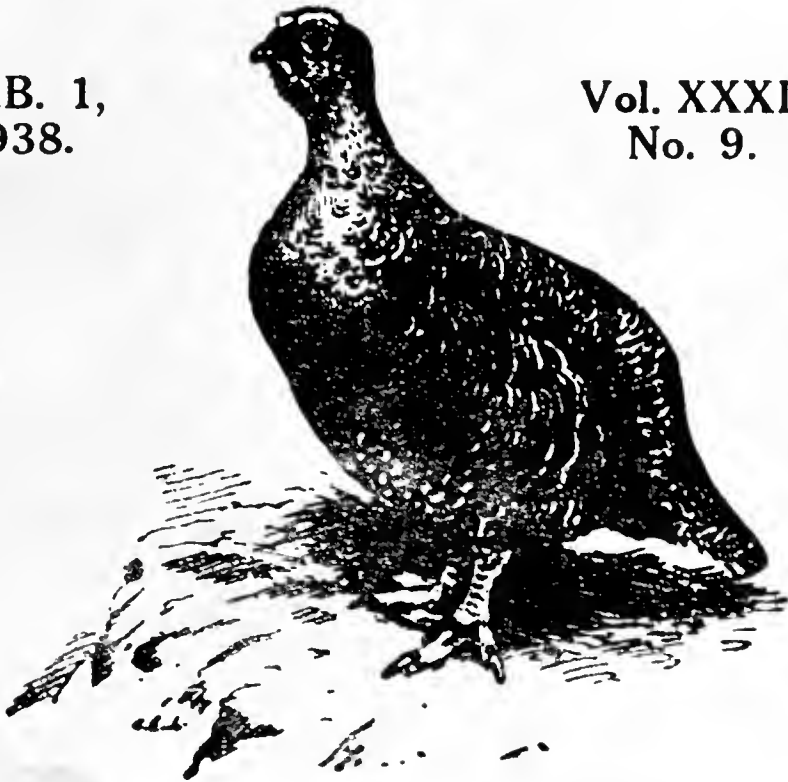
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NOTES ON THE GANNETRIES OF SULE STACK AND SULA SGEIR.

BY
MALCOLM STEWART.

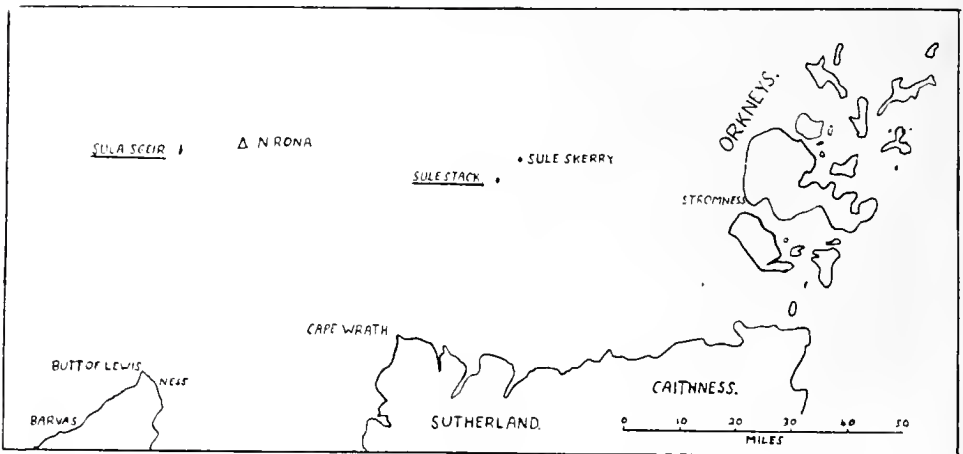
(Plate II.)

It may be safely said that in a quarter of a century no new information has been added to our previous knowledge of the gannetry of Sule Stack, and with the exception of my notes on Sula Sgeir [10]* these same remarks apply to this latter gannetry. The reason for this is obvious when the geographical position of these two islands is considered.

There are four islands and rocks lying to the north of the Scottish mainland and the Isle of Lewis and to the west of the Orkneys, but owing to a similarity in the names of three of them a dreadful confusion has arisen. It has been stated that the late J. A. Harvie-Brown did much to straighten the position, but even in his own works it is easy to find the same place referred to under two different names, and the late Duchess of Bedford made the same type of mistake.

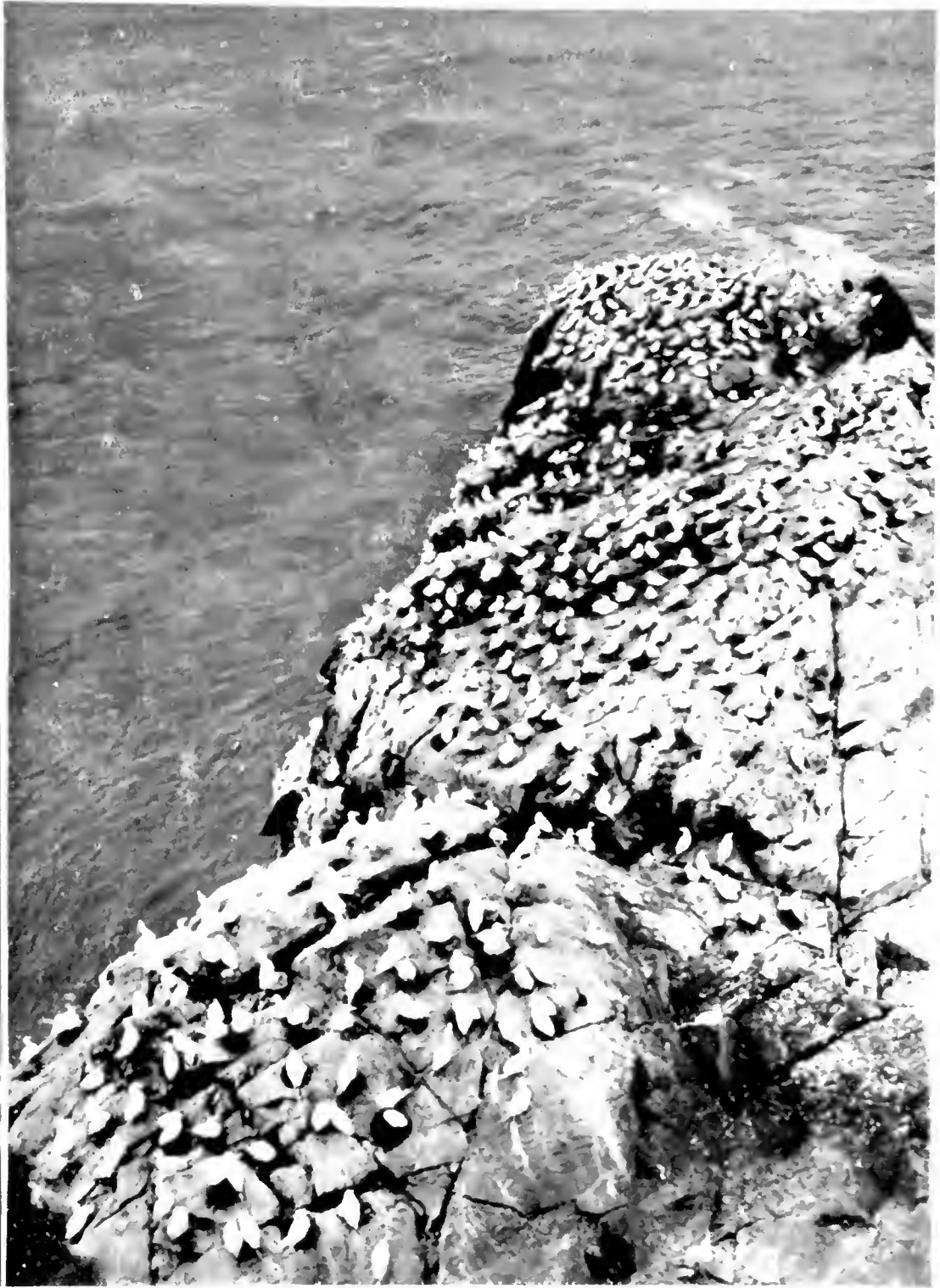
The names of the four islands and rocks, together with their positions, are :—

SULE SKERRY	...	...	Lat. 59°4'N.	Long. 4°24'W.
SULE STACK	...	...	Lat. 59°2'N.	Long. 4°30'W.
NORTH RONA	...	...	Lat. 59°7'N.	Long. 5°49'W.
SULA SGEIR	...	...	Lat. 59°6'N.	Long. 6° 9'W.



It will be seen from the sketch map that Sule Skerry and Sule Stack are approximately 35 miles north of the mainland of Sutherland and some 40 miles west-north-west of Stromness in Orkney to which latter point they are said to pertain. North Rona and Sula Sgeir are some 45 miles north-west of

*Figures in brackets refer to list of references at end of article.



Sron na Lice or Solan's Rock, Sula Sgeir, August 5th, 1937.

(Photographed by Malcolm Stewart.)



Cape Wrath and a like distance north-east of the Butt of Lewis, and form part of the parish of Barvas in Lewis. North Rona is a fair-sized island, but Sule Skerry, Sule Stack and Sula Sgeir are little more than barren rocks.

The etymology of the words *Sule* (*Sula*), *Skerry*, *Stack* and *Sgeir* presents no difficulty. *Sule*, or *Sula*, is from the Gaelic *Sulair*, a Gannet (*cf. Sula bassana*). *Skerry* is of Scandinavian origin, denoting a reef or rock whose base area is considerable relative to its height. *Stack*, also Scandinavian, is the opposite—a pillar of rock whose height is great compared with its base. *Sgeir* is a Gaelic word meaning a sea rock in general. Such nomenclature as *Stack of Stack and Skerry* or *Stack-Skerry* is, of course, meaningless.

Of the four places discussed, Sule Stack and Sula Sgeir are gannetries, and the object of this present paper is to review our previous information on them, and to add further notes as the result of a short visit to both in the summer of 1937. These visits were made possible by the fact that my father, Sir P. Malcolm Stewart, Bart., had chartered the steam yacht "Golden Eagle" for cruising among the Western Isles.

METHODS OF ESTIMATING GANNET POPULATIONS.

It is here necessary to discuss briefly the different methods that have been adopted for estimating Gannet populations.

In the first place the reason for counting birds is to form some idea of their relative rates of increase or decrease, and it would appear that Lockley, and others [4, 9], are correct when they state that Gannet populations should be estimated in numbers of breeding pairs. This is the factor which has the first bearing on population.

Of the methods themselves there are only two which can be described as accurate. The Direct method of physically counting the nests in the field by eye, and the Photographic method of taking a series of overlapping exposures so as to cover the whole ground, and then of counting up the nests from enlarged prints. The ingenious method of Vevers and Fisher [13] of estimating from the numbers of birds alighting in a given time, while useful, is, of course, a computation, not a count, while estimates of numbers of breeding birds from the number of nestlings known to have been taken in any one year cannot be accurate, though they may be helpful.

Is it, therefore, possible to estimate accurately pairs of breeding Gannets except under extremely favourable circumstances? The answer is that it is impossible.

On the Bass Rock [8] and Ailsa Craig [13] the Direct method has been adopted successfully. Both these places are easily accessible and time is therefore of no object. The Bass Rock is also small, and though Ailsa Craig is larger the Gannets nest entirely on ledges in the vertical columnar cliffs of the western side and all the nests can be seen from the shore or off-shore in a boat. At Grassholm [9] the Photographic method has been employed, and this island, too, is more or less accessible.

The cases of Sule Stack and Sula Sgeir, and indeed also Borreray and Stacs Lii and Armin of St. Kilda, are entirely different. These islands are situated in the middle of the open western ocean, tens of miles from civilization, and subjected to the full force of the Atlantic swell. The chartering of a suitable boat is a great expense, and even then the chance of a landing is only possible in the very finest of weather, and in the case of Sule Stack extremely remote. Time, therefore, is the essential factor and rules out any question of Direct counting. As for the Photographic method, this is also hard to operate as the Gannets are not only confined to the steep cliffs but nest also on the flattish top of the rocks. When ashore it is often impossible to take the cliff sections, while it is likewise difficult to photograph the top of the rock from the sea as it may be dead ground. Difficulties also arise in taking the cliffs from the sea as the swell not only unduly moves the camera but also prevents a small boat being rowed within a suitable distance. In addition the most suitable time to attempt to visit these places is in July or August when the swell is likely to be lowest, but by then the nestlings are easily conspicuous and confuse the issue.

From these general remarks it will be seen that it is impossible to obtain any direct count of pairs of breeding Gannets at Sule Stack and Sula Sgeir, and extremely difficult even to obtain a rough estimate. The figures mentioned in the following pages may possibly be of some help in solving the question, but at the most they can be little more than very rough estimates.

SULE STACK.

Topographically Sule Stack is nothing more than a high rounded lump of hornblende gneiss [12], 120 to 130 feet in height and of perhaps six acres in area. It is entirely devoid of any form of vegetation, but covered with white guano. It is oval in shape, orientated approximately north-north-east and south-south-west, and is divided into two portions by a narrow gully. It is this gully that makes landing so difficult,

as the swell, which is always severe round Sule Stack, rushes through between the two portions of the rock with the result that even on the east side there is little shelter. It was this gully that prevented the Duchess of Bedford from landing [2]. Of the two portions the northern is the higher as well as the larger. With the exception of the west side, which is precipitous, the whole rock is rounded so as to permit climbing in most places. The two photographs reproduced here, by kind permission of Canon J. V. Bullard, were taken while I was on the island. Other good photographs of Sule Stack have been published by the Duchess of Bedford [2].

Gurney's book [5] is so well known that I have no intention of repeating the early history of this gannetry that is contained therein. A few remarks are, however, necessary on the visits of Harvie-Brown and the Duchess of Bedford.

Harvie-Brown, who considered Sule Stack to be "certainly one of the most inaccessible of all our Scottish islets", made three unsuccessful attempts to land, in July, 1887, on June 29th, 1889, and on a further occasion. He cautiously abstained from making an estimate, but remarked on the very large number of immature birds, due possibly to the fact that this gannetry was less robbed of eggs and nestlings than others [3, 5].

This feature of the numbers of immature birds was also noticed by Professor Newton and Mr. A. H. Evans when they were near the rock, but did not land, on June 28th, 1890 [5].

The Duchess of Bedford also paid three visits to Sule Stack on May 17th, June 19th and 22nd, 1914, but could not land [2, 6]. She likewise remarked on the large number of immature birds and stated that in places they amounted to one bird in six. As to numbers, she "counted the birds before many of them rose on a portion of the rock which was most thickly occupied", and in her opinion there were from 5,000 to 6,000 at the time of her visit. She considered also that the birds nested only on the upper third of the northern portion of Sule Stack, and on a small point of rock on the southern portion.

From the foregoing it would seem that my landing on the eastern side of the northern portion of Sule Stack on the morning of July 31st, 1937, was no mean feat. Indeed, it would appear that it was many years since anyone had actually landed, save perhaps a few fishermen. This landing was possible only because of the exceptional fine weather.

Immediately on landing a very large number of Gannets left the rock and did not return until an hour or so later



UPPER--Sule Stack (east side). July 31st, 1937.

LOWER--Sule Stack (from the north-west).

July 31st, 1937. The arrow indicates the writer.

(Photographed by J. V. Bullard.)

when I left. An enlarged photograph taken while I was actually on the rock shows at least 1,200 Gannets in the air and in the immediate vicinity of the rock. As it is most unusual for more than one adult to be in attendance on the nestling at any one time, it seems probable that many of these were the immature birds so frequently mentioned by previous writers. The reason why the large number of immature birds was not so obvious to me as to others is no doubt due to the fact that previous recorders did not actually land on Sule Stack. It is my experience that it is considerably easier to approach and observe a bird on an island from the water. Directly a landing is made, birds will leave the island even though the observer is farther away.

One of the points that struck me most was the big variation in age of the different nestlings. At the date of my visit there were nestlings still without down, while the wing-feathers of only a third had begun to shoot. It would seem, therefore, that nesting had begun very late this year.

As to the area of Sule Stack covered by nesting Gannets, I am in general agreement with the Duchess of Bedford [2, 6], though perhaps it is more correct to state that the Gannets nest on the upper half, rather than the upper third, of the northern portion. All the available nesting sites on this portion are occupied, as it is inconceivable that the Gannets could nest lower down for fear of the sea, and the western cliffs provide no ledges suitable. As for the southern portion, there are, indeed, few nests. As mentioned later, 118 pairs are estimated for this portion—probably an over-estimate.

The actual method attempted in estimating the number of breeding pairs was to obtain photographs of all the Gannets visible by means of overlapping exposures, so that afterwards prints could be joined up and correlated. The difficulties, however, were enormous and some of the major ones are worth recording.

1. Owing to the lack of distinctive physical features, it was impossible to join up any two photographs not actually taken from the same point.

2. As the whole rock was covered by Gannets it was impossible to get both the birds in the foreground and also those in the background in focus.

3. Owing to the roundness of Sule Stack, any photograph gave an almost infinite number of birds in the background.

4. The rock being covered with excreta, distant birds did not stand out well against the white background.

5. It is only possible to distinguish between adults and nestlings in the foreground of the photographs, where indeed the adults have often been frightened away.

Actually from 28 photographs it was possible to count 3,645 Gannets, of which number only 804 were definitely distinguished as nestlings. There can be little doubt but that some of the birds appeared in more than one photograph, but where this could be definitely ascertained they were only counted once.

The first problem is to estimate how many of the 3,645 birds were nestlings. 804 are known to have been but there must, of course, have been many others. On careful consideration I do not think that more than a third of the nestlings would be likely to appear in the photographs. The nestlings are smaller than the adult—it will be remembered that some had not yet grown their down, and are inclined to be hidden in a cleft in the rock, and also by the parent. A large number of the birds in the background of the photographs could only be counted by their necks; the nestlings sitting less upright would not be visible. If then this assumption that only a third of the nestlings appear in the photographs is correct, the original number of birds counted, 3,645, can be resolved into 2,734 adults and 911 nestlings.

It is obvious that it was impossible to photograph all the nests on Sule Stack, and the second problem is to estimate the number of nests that have not been accounted for. On Grassholm in 1924 Acland and Salmon [1] estimated the breeding pairs of Gannets from only four of the five photographs they took of the colony. They considered that an addition of only 20 per cent. was necessary to account for the nests now shown on their photographs. At Sule Stack I took 28 photographs, but decided to add 25 per cent. to allow for the nests not shown. This should be on the safe side. The total of breeding pairs is now brought up to 3,418 or roughly 3,500.

This figure of 3,418 pairs includes 118 pairs (125 birds counted=94 adults and 31 nestlings: add 24 for hidden birds=118) estimated for the southern portion—probably an over-estimate. The Duchess of Bedford also noticed the small number of Gannets here, and this is no doubt accounted for by the fact that the southern portion is by no means as high or as large as the northern.

I am by no means satisfied with these results, which owing to the two unknown factors—the number of nestlings in the photographs, and the proportion that the total number of nesting pairs photographed bears to the whole breeding population—cannot be considered in any way trustworthy.

It might appear that this figure of approximately 3,500

breeding pairs means a decrease in the Gannet population of Sule Stack, but there is no reason to assume this. Gannets generally seem to be on the increase, and it is not thought that any nestlings have been taken for food for many years. There is a general tendency to over-estimate large numbers of birds and it is difficult to make out whether previous writers included immature birds in their figures.

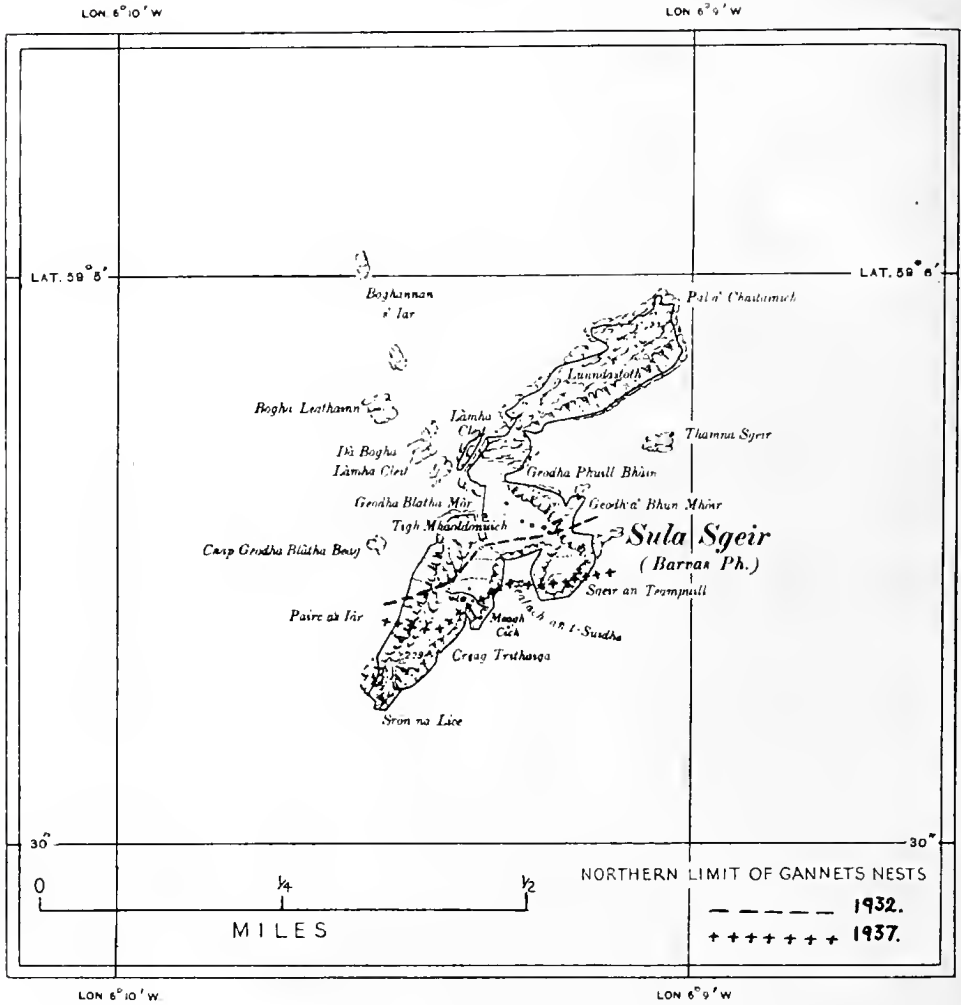
The Duchess of Bedford [2] referred to the large number of Kittiwakes and Guillemots that confused the issue, but the present writer saw only a few Guillemots and no Kittiwakes at all. Possibly the Kittiwakes have abandoned Sule Stack for North Rona and Sula Sgeir where there is a large increase [11].

SULA SGEIR.

I landed on Sula Sgeir on the morning of August 5th, 1937. This was my second visit as I stayed on the rock for some 36 hours on July 23rd to 24th, 1932 [10]. The ground was not therefore new to me. Sula Sgeir is a much larger island, or rock, than Sule Stack and extends to some 30 acres. The fact that it has been surveyed on the six-inch scale is a considerable advantage and much facilitates the counting and marking of the nesting sites occupied by the Gannets. The cliffs of Sula Sgeir are much steeper than those of Sule Stack, indeed, it is only possible to climb the rocks at the central narrow neck of rock where the landing was made. The Gannets which occupy only the most southern portion nest both on ledges in the cliffs and on the top of the rock.

When at Sula Sgeir in 1932 I did not attempt any accurate estimate of the Gannet population, but stated that I considered there to be about 6,500 adults which Lockley construed as about 5,000 breeding pairs [4]. I did, however, draw a line on the map to indicate the northern limit of the nesting area. This map is reproduced here with a further line drawn to show the area occupied in 1937. It is not easy to draw these lines accurately, but every care was taken to obtain as correct a drawing as possible. A feature that is marked on the map and which may help other observers is the broken down dry-stone dyke that runs across the top of the island. It will at once be seen from the map that the area occupied has greatly diminished, and is now only some four or five acres as compared with nine or ten in 1932. The reasons for this apparent decrease will be discussed later.

The same procedure was adopted at Sula Sgeir as at Sule Stack, and from a series of 28 photographs the following results were obtained.



MAP OF SULA SGEIR.

(Reproduced from the Ordnance Survey with the sanction of the Controller of H.M. Stationery Office.)

AREA (See Map).	Total number of Gannets counted.	Nestlings. (Included in Total).
Sgeir an Teampuill	542	50
Meagh Cich and Creag Trithaiga	2,163	201
Pairc as Iar	1,090	291
(South end near summit)	92	36
Sron na Lice, or Solan's Rock	826	22
Total Area	4,713	600

Concerning these figures a word of caution is needed. The varying percentage of Gannets ascertained as nestlings to the total number of birds counted, bears no relation to the numbers of immature or non-breeding birds. It is due entirely

to the varying distance at which the photographs were taken. The number of immature birds was extremely small. Very few Gannets were disturbed, and only a small number were flying over the colony.

Again working on the assumption that only a third of the nestlings were visible, the total number of breeding pairs would be 3,535.

For Sule Stack I have considered that an addition of 25 per cent. would account for the nests not shown on the photographs. At Sula Sgeir there were more cliff sections than at Sule Stack and it was possible to take more cross-bearing photographs by reason of the number of projecting spurs of rock. The result is that I feel much more confident of the photographic results, and think that it will be on the generous side to add the same figure of 25 per cent. This, then, brings the total number of breeding pairs to 4,418, or roughly 4,500, divided as under.

Sgeir an Teampuill	508	(South end near summit)	86
Meagh Cich and		Sron na Lice, or	..
Creag Trithaiga	... 2,028	Solan's Rock	.. 774
Pairc as Iar	... 1,022		

Before proceeding to discuss this apparent decrease in the numbers of Sula Sgeir Gannets, there is one point worth noting. When Harvie-Brown was at Sula Sgeir on June 20th, 1887, Mr. Norrie took a photograph that was reproduced in Gurney's book under the title "Solan's Rock, Sulisgeir". This rock is marked on the map as Sron na Lice. From Norrie's photograph I was able to count only some 100 Gannets, a very small number, due no doubt to the fact that the Lewismen had taken a large number of Gannets and eggs just prior to his visit. A similar photograph taken by me in 1932 showed some 452 Gannets, while of the 826 in the photograph of 1937 about 541 cover the identical area of the other two photographs.

Gurney [5] put the Gannet population of Sula Sgeir at 8,000. In 1932 I mentioned 6,500 subsequently altered by Lockley [4] to 5,000. Now the figure appears to be lower still, about 4,500. It is obvious therefore that there has been a big decrease in numbers. This is evidenced by the fact that the breeding ground has been reduced nearly 50 per cent. in the last five years, though possibly this is partly due to the birds packing tighter on some of the more inaccessible places such as Sron na Lice (Solan's Rock). One does not have to look far for the reason. Sula Sgeir is now probably the only

British gannetry where a large number of nestlings are taken each year as they have a supposed food value.

Most years in the early days of September—the Wild Birds Protection Acts unfortunately only protect the Gannets till August 1st—a party of men from the district of Ness in the Island of Lewis have nothing better to do than to undertake the unpleasant voyage to Sula Sgeir and stay there a few days, taking all the gugas, or nestling Gannets, they can. These are taken back with them and eaten. Not even the most grumbling Lewisman can complain of a food shortage, and this annual venture is nothing short of an unnecessary destruction of bird-life. The following is a list of the numbers of Gannets taken annually in recent years, and I am pleased to have this chance to publish the figures so that the public interested in bird-life can know what goes on in this remote part of Scotland.

GANNETS TAKEN AT SULA SGEIR.

<i>Date.</i>		<i>Number.</i>	<i>Remarks.</i>
1884	... ..	2,800	Taken in 3 days.
1898	... ..	2,500	
1915	... ..	1,100	
(During the war shell-fire practice by warships made a large number of Gannets desert Sula Sgeir.)			
1931	... ..	2,000	
1933	... ..	2,000	
1934	... ..	1,400	Illness curtailed visit !
1935	... ..	—	No visit owing to bad weather.
1936	... ..	2,060	Work of 9 men in 14 days.
1937	... ..	c. 2,000	Exact figures not forthcoming.

It would seem that an average year's taking is about 2,000 ; small wonder then that this gannetry, at one time one of the largest, is gradually being exterminated. Unfortunately there seems little one can do to stop this destruction. The proprietor has been appealed to, and it is hoped that he will have sufficient interest in the matter to intervene. The only action that could really be relied on to put an end to the slaughter would be to speed up the passage through Parliament of the Wild Birds Protection (Scotland) Bill. Once this Bill is on the Statute Book it will be illegal to take wild birds at any time during the year. No doubt with a maximum fine of five pounds per bird the Lewismen will think Gannet an extravagant luxury.

COMPARISON OF THE TWO GANNETRIES AND CONCLUDING REMARKS.

It is almost impossible to compare directly the two ganneries of Sule Stack and Sula Sgeir. Their differences are

great. Sule Stack is just a small sea rock and generally speaking the whole of it provides nesting sites. Sula Sgeir on the other hand is considerably larger and here the Gannets only nest on the extreme southernmost parts. At Sule Stack the Gannets nest in a concentrated area, while at Sula Sgeir the area, though complete as a whole, can be split up into different portions owing to the nature of the ground.

On first considerations one might be tempted to consider Sule Stack as the larger of the two gannetries, as if one lands there it is impossible to move a yard without displacing a nestling or frightening away an adult. One is surrounded by Gannets. On Sula Sgeir there is little need to walk among the Gannets as they can be approached and photographed from the non-nesting part of the island. The cliffs, too, are sheer, and a considerable number nest on ledges that are inaccessible except to an experienced climber with ropes. There can, however, be no doubt that Sula Sgeir is the larger gannetry of the two. This has been the opinion of all authorities and is amply borne out by my photographs.

Before concluding I wish to state that for the various reasons mentioned in this article I am far from satisfied with my figures, which, of course, can only be accepted as rough estimates. I would, however, like to state that in my opinion the results obtained for Sula Sgeir are likely to be the more accurate of the two. Without being unduly pessimistic I see little chance of better results being obtained for Sule Stack owing to the enormous difficulties of approach and landing. While the prospect of obtaining an accurate *count* at Sula Sgeir is possibly a little more hopeful, there are probably not many who will have the opportunities of landing and also sufficient time and good weather at their disposal to examine minutely the cliffs from a small boat.

SUMMARY.

The geographical position of Sule Stack and Sula Sgeir is explained, and certain points concerning their nomenclature are elucidated. A description of Sule Stack is given together with the observations of certain naturalists on this gannetry. The difficulties of the writer in estimating the number of Gannets as the result of his visit on July 31st, 1937, are mentioned, together with his methods of arriving at an estimate of approximately 3,500 breeding pairs. The decrease in area occupied by nesting Gannets at Sula Sgeir is recorded, and an estimate of approximately 4,500 breeding pairs, divided into five groups, is given as the result of the writer's visit on

August 5th, 1937. Notes are made on the photographs of Sron na Lice or Solan's Rock taken in 1887, 1932 and 1937.

The decrease in Gannets at Sula Sgeir is accounted for by the annual practice of taking the nestlings. In this connexion figures are given and show that about 2,000 nestlings are taken each year. This practice is condemned, and a plea is made for the Wild Birds Protection (Scotland) Bill. Reasons are given for the difficulties of a direct comparison of the numbers of Gannets at Sule Stack and Sula Sgeir. The writer's concluding remarks and the prospects of obtaining a more satisfactory census at a later date.

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BIRDS SEEN IN TWO WINTER TRANSECTS OF THE NORTH ATLANTIC.

BY

L. S. V. VENABLES.

VARIOUS bird-counts of the North Atlantic crossing have already appeared, and in these the significance of the figures has been fully discussed. The most comprehensive is by V. C. Wynne-Edwards (*Proc. Boston Soc. Nat. Hist.*, Vol. XL., No. 4, pp. 233-346. January, 1935), who crossed eight times between May and September, 1933, and published the results in great detail. It is not proposed, therefore, in this note to discuss the figures at all, but merely to record them for the benefit of the workers in this field.

Both the crossings were made in the "Europa" (Nord-deutscher Lloyd Bremen). Owing to the cold winds and flying spray, it was not found practicable to make the counts from the bows or even from the sides of the ship. At the stern, however, one is well sheltered and commands a wide-angle view on both sides; the upper deck of the steerage quarters being the best. The vast majority of the birds flew to the wake, thus rendering identification particularly easy. Some merely inspected it, momentarily, from the air; others swooped down and picked up some invisible object and some alighted on or followed it for a minute or more. The first table shows how many birds came to the wake.

I counted only the "deep-sea" days; *i.e.*, not the first and last days of each crossing. On January 18th, the day with most birds, I was, unfortunately, able to watch for one hour only—a NW. blizzard for the rest of the time giving a visibility of a few yards.

In these winter transects the increase of Kittiwakes and the decrease of Fulmars and Great Shearwaters should be noted when compared with the summer months.

TABLE I.

	Number seen.	Number that came to Wake.
Kittiwake	224	201
Herring-Gull	17	17
Great Black-Backed Gull	2	2
Gannet	1	—
Great Skua	1	—
Fulmar	2	2
" Auks "	6	—
" Storm-Petrels " ...	9	1
" Great Shearwaters "	15	3
Total	277	226

BIRDS IN MIDDLESEX.

BY

WILLIAM E. GLEGG.

IN addition to the construction of houses, which proceeds apace, two other types of alteration are taking place which will have considerable influence on the avifauna. By reason of the centralization of the sewage disposal works the local sewage-farms are disappearing, which means that many birds, particularly waders, will be deprived of their feeding grounds. The second change is that another large reservoir is now in course of construction on the ground between the existing reservoir and Staines Moor. Although this will eventually be of advantage to birds yet it will mean the loss of some. This was the only locality where the Corn-Bunting was strongly represented and it seems certain that it will be driven out.

Unless otherwise stated the present writer is responsible for the records included in these notes. I take the opportunity to thank Mr. C. S. Bayne for his very interesting account of the Cormorants in St. James's Park.

CARRION-CROW (*Corvus c. corone*). There have appeared occasionally in *British Birds* notes on birds having taken rubber objects. A remarkable instance of this has come to my notice. I found at Littleton Reservoir on October 26th, 1937, an extraordinary pellet or casting. It contained the following rubber objects: a washer, diam. 27 mm. by 3 mm. thick; a ring, diam. 39 mm. by 5 mm. wide by 3 mm. thick; and a complete baby's dummy or comforter, length 46 mm. by width 16 mm. by diam. of guard 39 mm. As to the colours the washer is red, the ring grey, the nipple of the dummy is red and the remainder of it horn-colour. The constituent parts of the pellet are matted together with feathers. I have no proofs that this pellet was cast by a Carrion-Crow—it may have been one of several other species—but my knowledge of the locality suggests that it is the most likely.

WHITE WAGTAIL (*Motacilla a. alba*). Staines Reservoir, one, April 18th, 1937.

BLACK REDSTART (*Phœnicurus o. gibraltariensis*). A male on the concrete parapet at Littleton Reservoir on December 11th, 1936.

PEREGRINE FALCON (*Falco p. peregrinus*). While making my way round Littleton Reservoir on July 8th, 1937, I observed four large birds perched on the posts of the cattle-fence and just beneath them at the edge of the water a party of Common Herons. A gradual approach with halts for examination proved them to be Peregrines. A loud hissing sound, apparently coming from the nearest bird, was heard as I advanced and one of the falcons, probably that farthest from me, flew down the bank and disappeared before it could be fully examined. A closer view showed that the nearest bird was seemingly in adult plumage and when I got within a hundred yards it flew away from the water in a circle, the completion of which would have brought it back to the other birds but it dropped into the grass behind me. The two remaining birds had very brown heads and moustachial stripes and were, no doubt, birds of the year. The one farthest from me flew

first, following the line of the first bird to fly, and then the fourth bird flew out over the water in a semi-circle and landed on the concrete facing not far from where the adult had disappeared. This bird called almost incessantly during its flight. The feet, projecting below the body when the falcons were flying, were very conspicuous. I had had the good fortune to meet a migrating family party.

SHELD-DUCK (*Tadorna tadorna*). Seven seen on Staines Reservoir on May 4th, 1937. This number included the permanent bird, which was still in residence on November 7th, thus having entered its sixth year.

PINTAIL (*Anas a. acuta*). A male and female, Littleton Reservoir, April 30th, 1937.

SHOVELER (*Spatula clypeata*). One or two were seen at both Littleton and Staines Reservoirs to about the middle of June, 1937, and probably remained through the nesting season but no evidence of breeding has been obtained. After the close of the nesting season considerable numbers were present at both the reservoirs mentioned, thirty to forty having been seen at Littleton Reservoir on September 30th.

TUFTED DUCK (*Nyroca fuligula*). A nest with seven eggs was found in a clump of tall grass at the end of the baffle at Littleton Reservoir on July 26th, 1937. The female was flushed from the nest and she vigorously feigned injury as she went across the water. These eggs disappeared and I am afraid the nest was robbed.

SCAUP-DUCK (*Nyroca m. marila*). Staines Reservoir; two, October 25th; one adult male, December 27th, 1936; two (one adult male), January 10th; three (two adult males), March 21st; four (three adult males), March 28th; one adult male, April 4th; one, October 3rd to November 14th, 1937.

LONG-TAILED DUCK (*Clangula hyemalis*). One was seen by Mr. A. Holte Macpherson at Staines Reservoir on September 25th, 1937. This is the earliest appearance of this species. Since that date to November 14th from one to three have been seen on various occasions.

COMMON SCOTER (*Oidemia n. nigra*). Staines Reservoir: two adult males and five others, July 18th; eight females, November 7th, 1937.

VELVET-SCOTER (*Oidemia f. fusca*). A female at Staines Reservoir on April 18th, 1937. There are only two previous occurrences for the county, the last in November, 1929.

GOOSANDER (*Mergus m. merganser*). On May 30th, 1937, some weeks after all the wintering birds had disappeared, I identified a brown-headed bird at Staines Reservoir and it was seen again on June 1st. It was unusually tame and had a crest similarly imperfect to that possessed by the bird, which spent the summer of 1936 on a pond on Clapham Common. On May 31st I visited Clapham Common where I was informed that no Goosanders had been seen since the previous September. This was probably the bird which was seen a few days later at Barn Elms Reservoir. The best explanation of these unusual occurrences is that the bird is physically abnormal. An adult male, obviously incapacitated, remained on the River Colne at Staines Moor to July 18th when it was seen resting on the grass. It probably died soon after.

CORMORANT (*Phalacrocorax c. carbo*). There must be some fatal fascination about Syon Park for last year I had to disprove a story of a heronry and this year it is the turn of the Cormorant. In the report for 1936 of the Committee on Bird Sanctuaries in Royal Parks (England), Kew Gardens, p. 34, will be found the following: "In the summer a pair of Cormorants nested in Sion House marsh, opposite Isleworth

Gate of the Gardens, and produced three young which could fly by September 13th. All disappeared about four days after but one of the old ones was seen several times flying to and fro over the Gardens as late as November. This is the first record for their nesting here". I have written to the recorder, Mr. H. N. Ridley, inviting him to give proofs of this nesting. In his reply he informs me that "the nest was in a very inaccessible part of the marsh, in a very swampy place only approachable by boat so that it was not actually seen by anyone". This story has arisen through Cormorants having been seen in the vicinity and all that remains to do is to say that it is quite unacceptable. If these reports (Bird Sanctuaries in Royal Parks) are to be accepted ornithologically they must be edited with greater severity.

In my *A History of the Birds of Middlesex* I described this species as "an unusual and irregular visitor". In view of the position in St. James's Park and at Littleton Reservoir this calls for reconsideration. Mr. C. S. Bayne, in a letter to *British Birds*, Vol. XXVI., p. 283, dealt with the breeding of this species in the former locality to the end of 1932 and he has given me the following account to bring the matter up to date. "They were eleven years in the park before they nested. They completed their first nest in the summer of 1931 and hatched two chicks in September of that year. One of these died but the other was reared. The old pair, which by the way were pinioned, nested again in 1932 and hatched another chick on May 10th, and reared it successfully. They made two more attempts that same year and on both occasions hatched a chick but failed to rear it. There were now four Cormorants in the Park, the original pair and their two youngsters, which were allowed to retain their wings and flew about freely. During the autumn of that year (1932) a fifth Cormorant was observed on several occasions on the lake. In 1933 the original pair nested again and reared one youngster. Their first chick (hatched 1931) paired with a stranger and built a nest close by theirs and brooded all through the summer without success. There were now six Cormorants in the Park and during the autumn a seventh was seen there several times. In 1934 these two pairs nested again. The young pair failed to produce a chick but the old pair reared four youngsters, one in April, one in June and two in September, so in October there were nine full-grown birds in the Park. In 1935 the results were, young pair two, old pair nil. The largest number seen at one time in the Park was ten. In 1936 the old original pair nested again, the second pair also nested and a third pair, which cannot be accurately placed but presumably it consisted of at least one of the offspring of the original pair, also nested. This time the old pair failed to rear any young, but each of the other pairs reared one chick. This gives a total of seven reared by the pinioned pair and four reared by the full-winged birds. These full-winged birds are, of course, free to fly where they please and no doubt they go off to the river and most probably to the reservoirs. We know that they fish in the Serpentine. At the annual cleaning of the lake most of the full-winged birds disappear, but when the lake is refilled a number return. Whether all those that come back are birds that were reared in the Park, it is impossible to say but the total has increased year by year until at the end of last year (1936) there were thirteen Cormorants in the Park. We know definitely that No. 5 was a stranger and we also know that No. 13 which was a ringed bird, was a stranger, but we cannot say definitely that any of the others were. But as the original pair plus seven offspring plus four chicks of the two younger pairs, plus the two strangers make altogether fifteen, there is more than a

possibility that none were strangers but 5 and 13. The non-breeding birds are all more or less in juvenile plumage. This year (1937) only two pairs have nested so far, and since the lake was cleaned I have not seen more than nine Cormorants on the lake, but two chicks have been reared, one by pair No. 2 (presumably: I say this because the nest of No. 2 has been in the same position each year: the original pair invariably built their nest on the site which they used in 1931 but since the old hen died the old cock has adopted a new site), and the other by the old cock, which this year has paired with a young hen. The old pinioned hen died at the end of last year or the beginning of this year. The old cock is probably about twenty years old now, perhaps more, as he may have been kept by his donor for some time before he was handed over to the Park."

During the past three years I have been permitted to visit Littleton Reservoir—previously I could not obtain a permit—and have seen this species, from 1 to 6, in every month of the year although not in any one year. If the behaviour of these birds is of any value, then they do not come from St. James's Park as they do not permit a close approach. The reason of the preference for Littleton to the neighbouring Staines Reservoir, where six flew over on May 9th, 1937, and where it is very unusual, is the concrete baffle which projects about halfway across the reservoir and provides the Cormorants with seclusion similar to their natural haunts.

BLACK-NECKED GREBE (*Podiceps n. nigricollis*). One, Littleton Reservoir, January 19th and 29th. One, Staines Reservoir, November 7th, 1937. The latter was probably a bird seen by Mr. A. Holte Macpherson on November 2nd.

GOLDEN PLOVER (*Charadrius aprivarius subsp. ?*). A party of fifteen flew past, low down, at Staines Reservoir on February 28th, 1937.

RUFF (*Philomachus pugnax*). One, sex undetermined, Brent Reservoir, from September 29th to October 29th. It was not seen on October 5th but was probably present.

GREENSHANK (*Tringa nebularia*). Staines Reservoir: one flew over, calling, May 16th. There are only two previous spring records for the county; one, September 12th and 19th; Staines Moor, one, September 12th, 1937.

COMMON CURLEW (*Numenius a. arquata*). Littleton Reservoir: one, April 23rd; 3 July 16th. Staines Reservoir: one, July 4th; 2, July 18th, 1937.

BLACK TERN (*Chlidonias n. niger*). Littleton Reservoir: three, April 25th; one, May 21st. Staines Reservoir: one, May 2nd; two, September 26th, 1937.

ARCTIC TERN (*Sterna macrura*). One, with other terns, seen and heard, Staines Reservoir, October 10th, 1937.

LITTLE TERN (*Sterna a. albifrons*). One, Littleton Reservoir, May 21st, 1937.

LITTLE GULL (*Larus minutus*). One, Littleton Reservoir, January 29th and February 1st, 1937.

BLACK-HEADED GULL (*Larus r. ridibundus*). On October 10th, 1937, Staines Reservoir presented a scene of unusual animation. Many Black-headed Gulls, accompanied by a few terns, were dashing about close to the surface of the water. They seemed to be feeding on some small object too small to be detected by the human eye, even aided by a telescope and it was obvious that the birds were also eating a similar object in the water. It was noticed that the wind, which was blowing from a northerly direction, had carried a great mass of small

greyish objects to the south bank. A closer examination showed that these objects were the pupa cases of some insect. Several were taken as specimens and identified at the British Museum (N.H.) as belonging to the harlequin fly (*Chironomus plumosus*). I have no doubt that the Gulls were devouring this insect. As Mr. A. Holte Macpherson had seen the Gulls behaving in this manner several days previously and when I returned on October 12th they were still at work although in much reduced numbers, I am able to say that this had lasted for a week. A remarkable feature of this incident is that the emergence of this insect was apparently confined to the northern and higher part of the reservoir. No Gulls were seen feeding over the southern part and no pupa cases were found there, although a thorough examination was made of the banks. It may be well to explain that the two parts really form a single reservoir, separated by a baffle which carries a footpath. Syphons permit water to flow from the northern to the southern section. A view of the reservoir will be found in *A History of the Birds of Middlesex*. It may be well to add that the Black-headed was the only Gull seen feeding and that the terns did not seem to be taking the insect.

GREAT BLACK-BACKED GULL (*Larus marinus*). Staines Reservoir : One adult and one immature, March 21st ; one adult, November 7th, 1937.

RECOVERY OF MARKED BIRDS.

COMMUNICATED BY

E. P. LEACH.

Hon. Sec., Bird-Ringing Committee, British Trust for Ornithology.

No.	Ringed.	Recovered.
Carrion-Crow (<i>Corvus c. corone</i>).		
RR.7784	Blagdon (Som), 16.6.28, young, by J. D'eath.	Winterbourne (Glos), 15.10.37.
Rook (<i>Corvus f. frugilegus</i>).		
RINGED AS NESTLINGS.		
RX.4396	Rawdon (Yorks), 24.4.37, by C. Wontner-Smith.	Bramhope (Yorks), 15.7.37.
RX.7428	Ditto	4.5.37. Allerton (Yorks), 13.8.37.
RS.5250	Stodmarsh (Kent), 16.4.33, by Oxford Orn. Soc.	Where ringed, —.9.37.
RINGED AS FULL-GROWN.		
AG.531	Gt. Budworth (Ches), 17.7.35, by A. W. Boyd.	Acton Bridge (Ches), —.6.37.
RX.2494	Whipsnade (Beds), 18.10.36, by Zool. Soc.	Where ringed, 9.7.37.
RX.5504	Ditto	6.12.36. Ditto, 16.6.37.
Jackdaw (<i>Colæus m. spermologus</i>).		
RINGED AS FULL-GROWN.		
RV.2009	ShipleY (Yorks), 26.5.34, by C. Wontner-Smith.	Where ringed, 20.5.36 ; 23.5.37.
RW.9475	Whipsnade (Beds), 17.7.36, by Zool. Soc.	Markyate (Herts), 19.7.37.
CA.1130	Ditto	19.12.36. Where ringed, 18.6.37.
Magpie (<i>Pica p. pica</i>).		
RW.7070	ShipleY (Yorks), 27.5.36, young by C. Wontner-Smith.	Where ringed, 4.4.37.
RW.7076	Ditto	27.5.36. Ditto, 18.4.37.
Starling (<i>Sturnus v. vulgaris</i>).		
RINGED AS NESTLINGS.		
OF.472	Penrith (Cumb), 21.5.36, by H. J. Moon.	Carlisle (Cumb), 14.12.37.
ON.561	Wolsingham (Durham), 26.5.37, by R. Martinson.	Crook (Durham), 4.10.37.
OM.346	Glenridding (Westmor), 30.5.36, by H. J. Moon.	Ferryhill (Durham), 13.12.37.
YM.479	ShipleY (Yorks), 23.5.37, by C. Wontner-Smith.	Blackpool (Lancs), 19.9.37.
YM.512	Ditto	5.6.37. Garstang (Lancs), 28.11.37.
YK.114	Whipsnade (Beds), 13.6.37, by Zool. Soc.	Down Hatherley (Glos), 3.1.38.
YH.609	W. Lavington (Wilts), 18.5.37, by B. Coulson.	E. Knoyle (Wilts), 6.12.37.
YV.115	Netheravon (Wilts), 28.7.37, by A. G. B. Wainwright.	Ipplepen (Devon), 20.10.37.

No. Ringed. Recovered.

Starling (continued).

RINGED AS FULL-GROWN.

OV.668	Outskerries, Shetland, 24.10.37, by Skokholm Bird Obs.	Whalsay, Shetland, 13.12.37.
YH.266	Preston (Lancs), 12.9.37, by H. Martin.	Waterford, 1.1.38.
OA.479	York, 17.2.36, by Bootham Sch.	Odense, Fyen, Denmark, 1.9.37.
FB.691	Ditto	^{34.} 27.2.37 Kexby (Yorks), 29.12.37.
GS.416	Alderley Edge (Ches), 18.11.34, by E. Cohen.	Macclesfield (Ches), 17.9.37.
ZR.87	Wilmslow (Ches), 23.12.35, by E. Cohen.	Stockport (Ches), 3.11.37.
YF.638	Gt. Budworth (Ches), 15.12.33, by A. W. Boyd.	Widnes (Lancs), 27.11.37.
GK.552	Ditto	9.1.35. Helsby (Ches), 4.11.37.
ZT.942	Ditto	16.1.36. Wilmslow (Ches), 22.11.37.
ZV.463	Ditto	10.12.36. Northampton, 22.8.37.
ZV.418	Ditto	6.12.36. Dagenham (Essex), 16.11.37.
ZT.985	Ditto	17.1.36. Bremen, Germany, 7.7.37.
ZT.825	Ditto	16.1.36. Hamburg, Germany, 13.9.37.
S.4542	Ditto	19.2.30. Lopik (Utrecht), Holland, 21.8.37.
OP.979	Carlton (Notts), 2.11.36, by J. Staton.	Southwell (Notts), 1.7.37.
OX.790	Malvern (Worcs), 10.12.36, by P. Morshead.	Clifton-on-Teme (Worcs), 8.10.37.
GX.977	Ditto	10.11.35. Warwick, 3.11.37.
FP.448	Ditto	23.2.34. Lichfield (Staffs), —.8.37.
OX.683	Ditto	29.11.36. Tamworth (Staffs), 24.10.37.
OA.50	Ditto	25.10.36. Thornbury (Glos), 13.11.37.
GX.873	Ditto	26.10.35. Utena, Lithuania, 18.8.37.
OX.598	Ditto	23.11.36. Botilsäter (Värmland), Sweden, —.7.37.
GX.963	Ditto	9.11.35. Jordlose, Sjælland, Den- mark, 7.9.37.
ZX.228	Ditto	1.3.36. Avnede, Laaland, Denmark, 3.9.37.
OX.831	Ditto	12.12.36. Hoevelaken (Guelderland), Holland, 10.9.37.
AN.7350	Birmingham, 22.3.32, by F. R. Barlow.	Purmerend, Noord Holland, 21.12.37.
OC.210	Moreton - in - Marsh (Glos), 21.2.36, by G. Charteris.	Brailes (Warwick), 14.10.37.
YA.81	Ascott-u.-Wychwood (Oxon), 11.12.36, by Oxford Orn. Soc.	Grootebroek, Noord Hol- land, —.7.37.
GB.392	Oxford, 5.1.35, by Oxford Orn. Soc.	Brodnica, N. Poland, 10.10.37.
FH.678	Ditto	28.11.33. Blankenberge, Belgium, —.11.37.
ZX.87	St. Neot's (Hunts), 10.2.36, by C. F. Tebbutt.	Hertford, 12.11.37.
YB.588	West Lavington (Wilts), 6.12.36, by B. Coulson.	Hereford, 2.1.38.

No.

Ringed.

Recovered.

Starling (*continued*).

- OT.791 Dymchurch (Kent), 27.12.36, Headcorn (Kent), 18.11.37.
by A. H. Bishop.
- AS.8577 Dungeness Lighthouse (Kent), Kidderminster (Worcs),
6.10.37, by N. H. Joy. 18.10.37.
- ZM.911 Alton (Hants), 6.1.36, by M. H. Lekkerkerk, Zuid Holland,
Williams. 2.10.37.
- ZE.928 Brent Knoll (Som), 22.12.35, Aylesbury (Bucks), 17.11.37.
by E. G. Holt.
- YD.386 Redruth (Cornwall), 31.1.37, by Sherborne (Dorset), 7.10.37.
H. B. Smith.

Greenfinch (*Chloris ch. chloris*).

- ZF.13 Cressage (Salop), 18.4.35, ad., Atcham (Salop), 26.3.37.
by G. Pollitt.
- OE.614 Ditto 18.4.36. Ditto, 26.3.37.

Chaffinch (*Fringilla cœlebs*).

- LK.385 Evesham (Worcs), 4.2.35, ad., Pitea, Norrbotten, Sweden,
by A. J. Harthan. 1936.
- LJ.508 Stanway (Glos), 27.1.35, ad., Antwerp, Belgium, 15.10.37.
by G. Charteris.

Brambling (*Fringilla montifringilla*).

- GV.790 Newbold-on-Stour (Worcs), Sauveterre (Gironde), France,
14.2.37, ad., by P. Carr. —.12.37.
- MW.224 Moreton - in - Marsh (Glos), Montaubon (Tarn-et-Gar-
29.12.34, by G. Charteris. onne), France, 5.1.38.

Reed-Bunting (*Emberiza s. schœniclus*).

- KL.505 Wilmslow (Ches), 2.2.36, ad., Where ringed, 1.4.37.
by E. Cohen.
- KH.651 Oxford, 26.3.36, ad., by Oxford Ditto, 13.2.37.
Orn. Soc.

Meadow-Pipit (*Anthus pratensis*).

RINGED AS FULL-GROWN.

RECOVERED AWAY FROM WHERE RINGED.

- HE.851 Skokholm Bird Obs., 19.8.37. Capbreton (Landes), France,
25.10.37.
- HM.468 Malvern (Worcs), 5.10.37, by Droitwich (Worcs), 16.12.37.
P. Morshead.

RECOVERED WHERE RINGED.

- LE.35 Oxford, 29.1.35, by Oxford 2.3.36 ; 27.11.36.
Orn. Soc.
- LL.770 Skokholm Bird Obs., 29.8.35. 27.4.36 ; 9.5.37.
- LL.915 Ditto, 8.4.36. 14.4.37.
- 4 Birds Ditto, July and August, 1936. —.4.37.
- JA.164 Ditto, 17.8.36. 6.9.37.

Rock-Pipit (*Anthus s. petrosus*).

- KE.657 I. of May Bird Obs., 19.4.36, ad. Where ringed, 9.4.37.
- MR.444 Skokholm Bird Obs., 12.7.34, Ditto, 10.5.37.
ad.

Pied Wagtail (*Motacilla a. yarrellii*).

- KE.658 I. of May Bird Obs., 22.4.36, ad. Where ringed, 14.5.37.

No. Ringed. Recovered.

Blue Tit (*Parus c. obscurus*).

H.6566 Arnside (Westmor), 14.12.30, Where ringed, 18.12.37.
ad., by J. Barnes.

Whitethroat (*Sylvia c. communis*).

RINGED AS MIGRANT IN MOULT.

HE.764 Skokholm Bird Obs., 2.8.37. Where ringed, 4.9.37.

Song-Thrush (*Turdus e. ericetorum*).

RINGED AS NESTLINGS.

ZE.379 Penrith (Cumb), 12.5.35, by Newmarket (Cork), 8.12.37.
H. J. Moon.
OW.547 Wetherby (Yorks), 30.4.37, by Thornaby-on-Tees, 29.12.37.
"A.G.M. Wippletree".
OR.875 Stanway (Glos), 18.4.37, by Cheltenham (Glos), —.7.37.
G. Charteris.
RF.989 Woodstock (Oxon), 27.4.34, by Waterloo, Belgium, 17.10.37.
W. A. Cadman.
YM.17 Bealings (Suffolk), 10.5.37, by Coimbra, Portugal, 14.11.37.
A. Mayall.
YN.99 Rye (Sussex), 19.4.37, by R. G. Amou (Landes), France,
Williams. 26.11.37.

RINGED AS FULL-GROWN.

OH.611 Arnside (Westmor), 18.1.37, by Beverley (Yorks), 16.9.37.
J. Barnes.
YV.131 Figheledean (Wilts), 17.8.37, by Shipton Bellinger (Wilts),
A. Wainwright. —.12.37.

Ring-Ouzel (*Turdus t. torquatus*).

ZR.758 I. of May Bird Obs., 14.4.36, Nages (Tarn), France,
ad. —.10.37.
FE.884 Pendle (Lancs), 26.5.34, young, Lourdes (Htes. Pyrénées),
by Oakes & Battersby. France, 28.3.35.

Blackbird (*Turdus m. merula*).

RINGED AS NESTLINGS.

YJ.446 Clifton (Westmor), 16.5.37, by Ballygowan (Down),
H. J. Moon. —.12.37.
YJ.432 Hackthorpe (Westmor).—5.37, Blackrock Lighthouse
by H. J. Moon. (Mayo), 9.11.37.
OR.987 Stanway (Glos), 4.5.37, by Winchcomb (Glos), 3.8.37.
G. Charteris.
ZK.282 Brede (Sussex), 24.5.35, by Peasmarsh (Sussex), 20.8.37.
P. Allen.

RINGED AS FULL-GROWN.

OV.736 North Ronaldshay, Orkney, Inchigeelagh (Cork), 25.11.37.
30.10.37, migrant, by Skok-
holm Bird Obs.
OD.343 I. of May Bird Obs., 8.4.37. Farsund, S. Norway, 4.11.37.
U.2768 Malvern (Wores), 11.7.28, by Where ringed, 30.11.37.
P. Morshead.

Wheatear (*Enanthe α . α enanthe*).

LL.849 Skokholm Bird Obs., 6.4.36, ad. Where ringed, 20.8.37.

No. Ringed. Recovered.

Robin (*Erithacus r. melophilus*).

- G.5987 Kelling (Norfolk), 23.5.29, Where ringed, 10.9.37.
young by R. M. Garnett.
JA.225 Skokholm Bird Obs., 4.9.36, Ditto, —.9.37.
migrant.

Hedge-Sparrow (*Prunella m. occidentalis*).

RECOVERED WHERE RINGED.

- KW.356 Skokholm Bird Obs., 11.6.36, nestling 7.9.36; 5.5.37.
MR.549 Ditto, 23.8.34, juv. 22.4.36; 13.4.37.
LL.731 Ditto, 6.8.35. 22.4.36; 6.5.37.

Wren (*Troglodytes t. troglodytes*).

- JA.385 Skokholm Bird Obs., 1.10.36, Where ringed, 12.4.37.
migrant.

Swallow (*Hirundo r. rustica*).

RINGED AS NESTLINGS.

RECOVERED AWAY FROM WHERE RINGED.

- LM.840 Stanway (Glos), 6.7.35, by G. Charteris. Notgrove (Glos), 5.6.37.
LW.226 Weybourne (Norfolk), 3.7.35, Salthouse (Norfolk), 7.8.37.
by R. M. Garnett.

RECOVERED WHERE RINGED.

- LC.131 Glenorchard (Stirling), 21.8.34, by J. Bartholomew. —.8.37.
MV.527 Ditto, 29.6.35. 11.5.37.
LN.956 Laugharne (Carms), 4.8.36, by J. F. Thomas. 31.7.37.

RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

Laugharne (J. F. Thomas).

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
LN.715	14.8.35.	2.9.37.	LN.960	5.8.36.	30.7.37.
LN.765	19.8.35.	3.8.36 ;	LN.968	7.8.36.	30.8.37.
		31.8.37.	LP.103	12.8.36.	30.8.37.
LN.906	30.7.36	31.7.37.	LP.121	15.8.36.	21.8.37.
LN.907	31.7.36.	28.7.37.	LP.127	17.8.36.	25.8.37.

No. Ringed. Recovered.

Martin (*Delichon u. urbica*).

- JH.435 Arundel (Sussex), 26.7.36, Where ringed, 25.7.37.
young, by A. Mayall.
KR.772 Ascott-u.-Wychwood (Oxon), Ditto, 24.5.37.
30.7.36, young, by Oxford
Orn. Soc.
4 Birds Ditto, Summer 1936, ad. Ditto, Summer 1937.

Swift (*Apus a. apus*).

- ZW.531 Charlbury (Oxon), 24.6.36, ad., Where ringed, 24.6.37.
by Oxford Orn. Soc.

Cuckoo (*Cuculus c. canorus*).

- 208906 Reading (Berks), 19.7.37, Strée (Hainaut), Belgium,
young, by Leighton Pk. Sch. 24.8.37.
AR.2852 Skokholm Bird Obs., 16.7.37, Where ringed, 11.8.37.
juv. migrant.

No.	Ringed.	Recovered.
Tawny Owl (<i>Strix a. sylvatica</i>).		
AB.8460	Hastings (Sussex), 20.5.37, young, by Brooker & Cawkell.	Where ringed, 3.11.37.
Barn-Owl (<i>Tyto a. alba</i>).		
AB.7042	Stocksfield (Northumb), 27.7.37, young, by Mrs. Hodgkin.	Winlaton (Northumb), —.11.37.
AB.7043	Ditto, 27.7.37.	Stockton-on-Tees (Durham), 15.11.37.
Kestrel (<i>Falco t. tinnunculus</i>).		
RINGED AS NESTLINGS.		
RX.4063	Lothianburn (Midlothian), 10.7.37, by Midlothian Orn. Club.	Carluke (Lanark), 14.8.37.
RX.8142	Kirkandrews-on-Eden (Cumb), 21.6.37, by E. Blezard.	Skinburness (Cumb), 9.9.37.
RX.8154	Ditto, 21.6.37.	Penrith (Cumb), —.11.37.
RX.8564	Canterbury (Kent), 19.6.37, by St. Edmund's Sch.	Doddington (Kent), —12.37.
RINGED AS MIGRANT.		
RW.8085	Skokholm Bird Obs., 11.4.36.	Where ringed, 17.8.36; 5.7.37.
Sparrow-Hawk (<i>Accipiter n. nisus</i>).		
RX.3348	Nether Welton (Cumb), 27.6.36, young, by R. H. Brown.	Where ringed, 14.7.37.
RX.9210	Dalston (Cumb), 5.7.37, young, by R. H. Brown.	Thursby (Cumb), 14.9.37.
RW.6422	Cumdivock (Cumb), 14.7.35, young, by R. H. Brown.	Westward (Cumb), 24.12.37.
Heron (<i>Ardea c. cinerea</i>).		
RINGED AS NESTLINGS.		
121056	N. Uist, Hebrides, 7.7.37, by J. W. Campbell.	Kingussie (Inverness), 2.10.37.
121042	Ditto, 7.7.37.	Stornoway, Hebrides, 12.11.37.
119110	Ely (Cambs), 25.5.37, by C. S. Clarke.	Cirencester (Glos), 6.8.37.
119105	Ditto, 24.5.37.	Deerhurst (Glos), 29.9.37.
113136	Ditto, 12.5.37.	Lydbury North (Salop), 9.12.37.
119127	Ditto, 1.7.37.	Chelmsford (Essex), 2.1.38.
119133	Ditto, 1.7.37.	Barking (Essex), —.11.37.
119120	Ditto, 4.6.37.	Moissac (Tarn-et-Garonne), France, 21.11.37.
114911	High Halstow (Kent), 23.5.35, by P. Hollom.	Vange (Essex), —.11.37.
Mallard (<i>Anas p. platyrhyncha</i>).		
RINGED AS FULL-GROWN.		
RECOVERED AWAY FROM WHERE RINGED.		
401653	Leswalt (Wigtown), 14.3.36, by J. Law.	Ardwell (Wigtown), 17.8.37.
401649	Ditto, 2.3.36.	Dunragit (Wigtown), 7.9.37.

No. Ringed. Recovered.

Mallard (*continued*).

402952	Ludham (Norfolk), 29.9.37, by M. Boardman.	Horsey (Norfolk), 19.11.37.
402996	Ditto, 21.10.37.	Belton (Suffolk), 3.1.38.
401922	Ditto, 30.1.37.	Hook of Holland, 24.12.37.
7 Birds	Ditto, —.9.37.	Dilham (Norfolk), Sept. and Oct., 1937.
AB.4765	Essex, 9.9.36, by G. Fane.	Rye (Sussex), —.8.37.
401603	Hamptworth (Wilts), 5.9.36, for H. A. Gilbert.	Charlton-All-Saints (Wilts), 30.11.37.
401601	Ditto, 24.9.36.	Makkum (Friesland), Holland, 17.9.37.

RECOVERED WHERE RINGED.

3 Birds	Ludham (Norfolk), Sept., 1936, by M. Boardman.	Sept. and Oct., 1937.
2 Birds	Orielton (Pem), March and July, 1936, by S. Greenslade.	Oct. and Nov., 1937.

Wigeon (*Anas penelope*).

RINGED AS FULL-GROWN.

RINGS OF THE ORIELTON DECOY, PEMBROKE.

1938	Orielton,	1.1.37.	Vashka River, N. Russia, 11.5.37.
1545	Ditto	29.11.36.	Nordstrand, N. Frisian Is., 26.10.37.
902	Orielton, released (Hants), 26.1.36, wings clipped.	Petersfield	Petersfield, 8.12.37.

Shoveler (*Spatula clypeata*).

RINGED AS FULL-GROWN.

RINGS OF THE ORIELTON DECOY, PEMBROKE.

1702	Orielton,	12.12.36.	Ludham (Norfolk), 25.9.37.
1675	Ditto	11.12.36.	Ysselmeer (Overijssel), Holland, 28.8.37.
1621	Ditto	4.12.36.	Dordrecht, Zuid Holland, 6.10.37.

Tufted Duck (*Nyroca fuligula*).

RINGED AS FULL-GROWN.

AA.8308	Molesey (Surrey), 5.1.34, by P. Hollom.	Wonersh (Surrey), 9.12.37.
401461	Ditto	21.11.35. Walthamstow (Essex), 11.10.37.

Eider (*Somateria m. mollissima*).

113394	Slains (Aberdeen), 7.6.34, ad., by M. Portal.	Berwick-on-Tweed, 20.12.37.
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(To be continued.)

NOTES

NORTHERN BULLFINCH IN NORTHUMBERLAND.

ON April 15th, 1937, a male Bullfinch which appeared to be much larger than the British Bullfinch (*Pyrrhula p. pileata*) was seen moving about in some trees on Holy Island. Later in the day this bird was shot by a resident on the island and was sent in to the Hancock Museum, Newcastle upon Tyne. Upon arrival it was carefully examined and measured and found to be the Northern Bullfinch (*Pyrrhula p. pyrrhula*). The wing measurement was 93 mm. and the tail 69 mm. The bird was made up into a cabinet skin and this has been examined by Mr. H. F. Witherby who has confirmed the identification. This is the first record of the Northern Bullfinch for Northumberland.

T. RUSSELL GODDARD.

WATER-PIPIT IN CARMARTHENSHIRE.

ON December 7th, 1937, a Pipit was caught by Mrs. Tregoning in her house at Ferryside. She took it to Professor J. W. W. Stephens, who, recognizing it was something out of the ordinary, sent it to us for identification. It had seemed to be vigorous, but died during the night.

After carefully comparing it with plumage details given in the *Practical Handbook* and with skins of Rock and Meadow-Pipits in the National Museum of Wales, we had no doubt that the bird was a Water-Pipit (*Anthus spinoletta*). It was dissected by the taxidermist at the Museum and proved to be a female.

The skin has been submitted to Mr. H. F. Witherby who has kindly confirmed our identification, and states it is a specimen of the typical race *Anthus s. spinoletta*.

This is the second occurrence of this species in South Wales, and the first for Carmarthenshire.

GEOFFREY C. S. INGRAM.

H. MORREY SALMON.

NORTHERN TREE-CREEPER IN BERWICKSHIRE.

DURING a recent overhaul of the exhibited series of British birds in the Hancock Museum, Newcastle upon Tyne, my assistant, Mr. S. E. Cook, called my attention to a bird which was labelled "Tree Creeper (*Certhia familiaris*) Duns, Berwickshire, 1899". As soon as I saw this specimen I realized

that it was markedly different from the normal British form (*Certhia familiaris britannica*). The much paler upper-parts, especially the pale rufous rump, and the pure *silvery* white under-parts were striking. There is no doubt that this specimen is the Northern Tree-Creeper (*Certhia familiaris familiaris*). The paler upper-parts cannot be attributed to fading for they are very markedly paler than the same parts of a specimen which was killed in 1832 and which has been on exhibition in the Museum at least from 1884. The most striking difference between this bird and all other specimens of the typical British form in the Museum, apart from the more silvery-white under-parts, was the pale rufous rump.

The Museum Accession Book for 1899 reads: "7th Sept.—A specimen of the Creeper (*Certhia familiaris*) from Duns, Berwickshire. R. Mitford, Esq., Duns, N.B." There is nothing to say whether the bird was received in the flesh or mounted but as various members of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne and their friends were shooting birds in various parts of the north of England and sending them in to the Hancock Museum in the flesh during that year this specimen is extremely likely to have been received in the flesh also. If that is so it was probably killed on September 5th or 6th, 1899, for the specimen is in perfect condition and is beautifully mounted. It was probably set up by J. Jackson, of Newcastle upon Tyne, who was doing most of the taxidermy for the Museum at that time. At any rate the form of the entry in the Museum Accession Book makes it obvious that the bird was obtained at Duns, Berwickshire. T. RUSSELL GODDARD.

MALE SPOTTED FLYCATCHER'S RAPID REPLACEMENT OF LOST MATE.—Mr. H. T. Gosnell writes that on May 18th, 1936, at Bordon, Hampshire, a pair of Spotted Flycatchers (*Muscicapa s. striata*) arrived in his garden and were busy inspecting a nesting-site. On the same evening the hen was killed by a cat. The cock then called continuously and in the evening of the following day a new mate was found. On the next day a fresh nesting-site was chosen, and two broods were eventually reared in that year.

SHAGS IN INNER LONDON AND ESSEX.—Mr. E. G. Pedler informs us that he identified a Shag (*Phalacrocorax a. aristotelis*) which was in company with a Cormorant on the Serpentine on December 17th, 1937. The bird's comparatively small size and its characteristic leap out of the water when diving were specially noted.

Mr. I. Steuart writes that he found a Shag in an exhausted and emaciated condition about 12 miles from the sea at North Farnbridge, Essex, on December 19th.

FLUCTUATIONS IN NUMBERS OF BLACK GROUSE IN GERMANY. —In connexion with the indictment of the Pheasant as an important factor in the decrease of the Black Grouse (*Tetrao tetrix*) in Dumfriesshire by Mr. H. S. Gladstone (*antea*, pp. 188-93), Dr. Heck of the Berlin Zoological Gardens writes to us that in the neighbourhood of Berlin Black Grouse were numerous in former days, but old reports showed that their numbers fluctuated considerably. In the last few years the number of Black Grouse has become very much smaller owing to increased drainage and intensive development of agriculture. But at the present time it is noticeable that Black Grouse on extensive meadowland (its primary habitat in this area) appear in certain districts, increase in number, then decrease and often disappear, only to reappear after a further lapse of time. In these meadow districts Pheasants are by no means plentiful. "That the Pheasant exercises an influence over Black Grouse cannot therefore be accepted here."

LETTERS.

THE LITTLE OWL INQUIRY AND THE SKOKHOLM STORM-PETRELS.

To the Editors of BRITISH BIRDS.

SIRS,—In reply to Mr. Lockley's letter under this heading (*antea*, pp. 278-9), I had two main points to make in my report on Skokholm Island, namely:—

1. That owing to its depredations on Storm-Petrels, the Little Owl should, if possible, be prevented from nesting on the island.

2. That Storm-Petrels being unprocurable on the mainland, the Skokholm incidents have little relevance to the Inquiry into the nature of the habitual food of the Little Owl as a species. With the first point Mr. Lockley states in his letter to you that he agrees unreservedly. With the second he agrees at least partly, for he wrote to me in July, 1935, that though "there was overwhelming evidence that the Little Owl was the culprit, surely *no one* is using this incident as a prime reason for its extermination elsewhere".

It is, therefore, on the details of my report that he offers criticisms. These apparently fall under two headings.

1. He considers that I *only infer* damage done by the Little Owl whereas he maintains (correctly) that I actually *know* it to have been done. Lest anyone else should read inference rather than certainty into my report, I will give the details of the consignment (alluded to by Mr. Lockley) from a Little Owl's nest hole, received from Skokholm on July 18th, 1936. This consisted of: (1) A highly fly-blown Little Owl, (2) a mass of Storm-Petrel remains in an advanced state of putrefaction (doubtless due to contact with the Owl in transit).

From this mass I picked out 163 separate wings, 5 headless, otherwise complete, bodies and 3 pellets, all composed of Storm-Petrel.

As Mr. Lockley wrote that he was sending "about half of the contents of the hole," I recorded in the report "some 200 Storm-Petrels," allowing a margin on account of the special difficulties in exact counting. As this was the only consignment I received, it was the only numerical record I could give.

2. Mr. Lockley considers that the word "abnormal" is not applicable to the general food conditions for Little Owls on Skokholm. Here I definitely disagree. A main result of the whole Inquiry has been to show that Little Owls feed on what is easily obtained on or near the ground chiefly by night. This accounts for Storm-Petrels as a dominant, abnormal food during the nesting season. The absence of cow dung which, on the mainland, is by far the largest source of insect food for the Little Owl is another abnormal feature of great importance. Goat and sheep dung have produced no insect pellets during the Inquiry and rabbit dung only from autumn to spring, in connexion with the black dor beetle (*Geotrupes typhæus*). It would also require a constant large relay of carrion to yield insects on a scale approximating to the number derived from cow dung. This subject could be dealt with more fully did space allow.

With regard to the possible storage of headless Petrels, I can offer no definite opinion since we have found no certain example of storage on the mainland. It seems likely that in its night-hunting the Little Owl may sometimes collect (without intention) more Petrels than it uses for present needs and that they accumulate mechanically during the nesting season. This is merely a surmise.

HILARY, GIRTON, CAMBRIDGE.

ALICE HIBBERT-WARE.

KITTIWAKES AS SHORE BIRDS.

To the Editors of BRITISH BIRDS.

SIRS,—I am interested to see the additional information supplied by Messrs. Boyd and Gordon on this subject. Although I asked several people about their experiences before I wrote my original note, by some mental aberration I failed to ask my brother, W. B. Alexander. He sends me the following notes: June 26th, 1927.—Many at the mouth of the Tees with other gulls on the mud-flats and the water; June 19th, 1932: A number of adults and first-year birds on the beach at Tayport; September 6th, 1936: Over 100 on the rocks at Hoylake, Cheshire, at high tide, probably driven in by stormy weather; September 1st-8th, 1937: Flocks of adults and young always sitting about with terns on the North Ness, Isle of May.

Mr. H. E. Forrest also tells me that on his most recent visit to Llandudno, for the first time he saw Kittiwakes on the shore with other gulls, but he has no record of the date.

It is evident that Kittiwakes rest on flat shores much more regularly than I had realized, but apparently only in the summer months, from June (or perhaps May) till September.

It is perhaps worth while to add that, on January 2nd, 1938, I saw four Kittiwakes resting with other gulls on the beach at Dungeness. Three of the four were very badly oiled, and the other seemed to have a little oil on it. One of the badly oiled birds tried again and again to settle on the sea, but as soon as it tried to close its wings it seemed to lose its balance and it had to fly up again. After many vain attempts, it was finally obliged to settle again on the shore, from which I had unintentionally driven it.

H. G. ALEXANDER.

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THE BREEDING BEHAVIOUR OF TEMMINCK'S STINT.

BY

H. N. SOUTHERN AND W. A. S. LEWIS.

(Plate 12.)

IN view of the recent attempt of Temminck's Stint (*Calidris temminckii*) to breed in Scotland (*antea* Vol. XXVIII, p. 97) and of the general paucity of information in regard to the breeding biology of this species, some notes which the authors took concerning courtship, habitat, etc. (though unfortunately incomplete) in Swedish Lapland during June and July, 1937, may be of interest to British ornithologists.

The district in which the observations were made lies about 150 miles north of the Arctic Circle, and is close to the frontier between Sweden and Norway. The general topography is dictated by the vast extent of Lake Torne Träsk, which stretches in a direction roughly east and west for a distance of about 50 miles. The altitude of the lake above sea-level is 1,000 ft. The country to the south consists of a number of large river basins, all emptying into the lake. The particular basin, which was the centre of observations, is that of the Abiskojokk river, and is about 50 square miles in extent, being bounded by a semicircular line of mountains running up to about 5,000 ft. The vegetation consists of silver birch forest from the river banks up to about the 2,000 ft. contour, and open fell from there to the mountains.

The description of the neighbourhood is given in some detail, since the bird seems most often to nest on lower ground fairly near the coast. This would naturally be so farther east in Finland and Russia, where there are no mountains on the scale of the Scandinavian ones, but even in such circumstances they seem to avoid the higher ground as a general rule; Blair [1] found that on the Varanger peninsula the majority of Temminck's Stints nested from sea-level up to 300 ft., while only a few went up as high as 700 ft. This is supported by Hortling and Stuart Baker [2], who found it commonest on grass meadows near farm houses in Finnish Lapland.

For Scandinavia there are records of birds breeding at high altitudes. Gyldenstolpe [3] mentions the species as nesting fairly commonly at Vassijaure not far from Abisko, which is about 1,900 ft. above sea-level, and says that he found small colonies on the fells as well as on the lower swamps and deltas around the river there. In Norway, Chaworth Musters [4]



Temminck's Stint Incubating.
(Photographed by H. N. Southern.)



found Temminck's Stints breeding at "considerable altitudes" near Røros, and Collett [5] in his book mentions breeding at the same place and also at Jonset. The opinion of the last author is, however, that the species is exceptional and rare at any considerable distance from the sea. It appears for the most part to be confined to the coastal districts and to holms and islands in the larger fjords.

In this case it is interesting to note that the highest colony discovered by the authors during 1937 was at 3,000 ft. by the shores of a lake at Lapporten about 12 miles to the SE. of Abisko.

It is possible that there is some correlation with the earliness of the spring, for if the migrants arrive at a fairly regular date, it seems likely that they will nest at once in the areas that are free from snow at the time. Thus, in an early year, such as 1937, it will be possible for them to nest at higher altitudes than in a late year, when the fells are still under snow on their arrival.

HABITAT.

This appears to be somewhat variable. Haviland [6] found that at Golchika, on the estuary of the Yenesei, Temminck's Stint nested only in dwarf willow by running water. This is interesting because on the delta of the Abiskojokk there was a great deal of this type of vegetation, but every scrape that was found was on the shore in fairly short grass growing little more than 9 inches in height, while another small focus of birds occupied a subsidiary island of the delta, which was covered only by this type of vegetation with two small patches of *Salix*. Collett records the commonest Norway habitat as flat ground, either dry with *Empetrum* and sparse grass, or damp with sedge and a few small willow bushes. Hortling and Stuart Baker (*loc. cit.*) mention the bird as nesting in grass fields, while Blair found it in the same kind of situation and also in sallow scrub. The particular point is that in dense scrub, such as Haviland describes, it would seem difficult for a courtship of the kind mentioned below to take place. It would be interesting to know whether in circumstances, such as she relates, the courtship is carried on away from the future nesting site, and whether scrapes are similarly removed from it.

The habitat of the nesting colony found on the fells was surprising enough. Some of the birds were nesting by the lake side, but at least one nest was situated quite 200 yards up the hillside in a dry and comparatively unsheltered patch

of grasses. This was a late nest too, for it contained eggs, while some of the birds farther down had already hatched their young. Thus it could not have been lack of a suitable habitat that had dictated the site.

A further anomaly encountered by the authors may perhaps be mentioned here, and that is the curious desertion of the colony on the Abiskojokk delta, which incidentally prevented the complete working out of the courtship. Trilling flights were going on with great vehemence in the third week of June, scrapes were made and birds were clearly attached to their own particular areas. Then came three days of rain and high winds at the solstice, and no bird was seen afterwards. It is well known that birds in the Arctic are particularly susceptible to weather conditions in their breeding, and the failure of many Arctic birds to breed in some seasons may be due to the restraining influence of weather conditions continuing beyond the normal term. The above case of the Temminck's Stint forms an extension, where breeding was not only inhibited, but was even inhibited after it had commenced.

COURTSHIP ACTIVITIES.

The courtship flight and trill of Temminck's Stint have been mentioned and admired by many authors, but there seems to be little reference in the literature to the ground display. Collett remarks that when the male has alighted after the courtship flight upon a stone or sallow bush it often remains there trilling with wings stretched up. A brief mention of ground display in the Little Stint (*Calidris minuta*) is given in a summary by Grote [7] of some Russian literature on the subject, where it is said that in the less frequent ground display the wings are held up and flickered, and apparently the same actions attend copulation. Unfortunately, as explained above, observations at the colony on the delta were cut short at a very critical period, and it was not possible to come to any conclusions as to the meanings of the various courtship actions. The authors give their observations, therefore, rather baldly and in the hope that others will be able to complete the objective record. Until this is achieved it is useless to indulge in speculation.

(a) *The Courtship Flight.* This may last for a long while (1 to 2 minutes), and as far as could be seen was performed by the male only, though this is not absolutely certain. Collett records that hens, subsequently sexed by dissection, have been heard to utter a "fine twittering". It may be performed

the whole time over one small patch of ground (the "territory", *vide infra*), the bird hanging in the air and turning and twisting in complicated spirals, or it may on occasions be performed some distance from the island, when the bird rises and falls in the air in long sweeps, rather like a Snipe during its drumming flight. The whole impression of the flight might be more aptly compared, however, to the roding of the Woodcock, for there is just the same effect of the progress being retarded in some way and of the wings beating frantically to make way against some inhibition. In the flight over the "territory" the quick twists and turns are accompanied by an expansion of the tail, no doubt for mechanical rather than display reasons.

The trill that accompanies this flight is compared by Haviland to a chorus of natterjacks. It is best compared to the Grasshopper-Warbler, however, though it is not, as she remarks, so reminiscent of a mechanical source. In timbre it is just that faint ticking sort of noise. It may perhaps be rendered by "wee . . . trrrr . . . er . . . trrrr", the falling "er" creating a drop in tone somewhat similar to what occurs in the Nightjar's churring. This note is not only limited to the flight, but is given also from the ground when the tail seems to vibrate in unison. Sometimes a low "churr" was heard at the same time as the trill, but it could not be determined whether this was produced by the same bird. If it was, it was a remarkable achievement.

A variation which is interspersed here and there in the trill is a long-drawn-out "cheer, cheer".

The only other note that was heard was a sharp "chit, chit" rather like the "chip-er" of the Snipe, but fainter.

(b) *The Ground Display.* This may occur on the branch of a sallow, but more often on a favourite stone or tussock. On the smaller island at the delta, each of the four males had a particular perching place, which was used almost to the exclusion of any other, as the amount of droppings collected round each of them testified. Generally the performance would follow a courtship flight: the male would alight either directly upon the stone, or close by, in which case he would run to it at once. As soon as he was settled upon this perch he would begin to trill, and then gradually to flick his wings in an excited way. The emotional tone of the performance would then rise by stages, the wings being fluttered in a more and more pronounced way, until at last they were being fanned up and down rapidly. Since they were lifted each time to their utmost extent, the effect produced was one of quickly

alternating flashes, as the light axillaries and under-wing coverts were momentarily exposed to view.

The presence of other birds going through the same display always seemed to provide mutual encouragement, and the trills and wing-fanning were of longer duration and greater vehemence under such circumstances.

(c) *Scrape-making*. This was a regular habit with the birds at the delta, and they seemed to increase in number as courtship progressed, though more than two were never found for each "territory". They consisted of small circular depressions evidently excavated by the bird with a rotatory movement, though actual scrape-making was never witnessed. They were generally situated in a fairly thick tuft of grasses about 4-6 ins. in height, and were lined with bents and in one case a feather.

(d) *Relations of these Activities*. It is impossible to do more than relate these activities chronologically, since observations were not sufficient to allow casual connection to be established between all or any of them.

The delta colony consisted of two sections, as already mentioned; on the larger island, which formed the main part of the delta, and where the Stints were confined to the shore, activities were clearly the most advanced, but this was an awkward place for observation. Courtship flights were in full swing on June 18th, and some ground display was noticed; on the 19th the ground was examined and numbers of scrapes were found.

On the other hand, on the smaller island, which was little more than a bank, which had been captured by rough grass and a patch or two of sallow, the birds had not settled in so soon. On the 19th there was some courtship flight, but no ground display and no scrapes were found in spite of a careful search. Only one of the four males that occupied this island, seemed to have a female with him, and her reactions to his trilling were inevitably to put her head under her wing and doze.

By the 22nd, however, ground display was frequent and scrapes were made. The courtship of the same pair was watched and the male was evidently exerting his utmost fascinations. Continual trilling and wing-fanning from his stone combined with occasional walks to the scrape seemed as if he was trying to entice the female to it. However, she remained apart and betrayed little interest beyond an occasional flick of the tail or dip of the head.

The final result of watching on this day was the departure

of the two females (the other two males apparently had no mates as yet), and the four males were left trilling and wing-fanning away at each other from their various vantage points. It may be worth noting here that possibly the failure of some Arctic birds to breed in some seasons may have another contributory factor, the failure of the female to come into the receptive phase immediately conditions are suitable for breeding. This would aggravate the inimical effect of weather conditions, if the chance of breeding could not be taken immediately it was offered.

After this date no more birds were seen at the colony at all.

It seems from this that the flight forms the preliminary of the courtship, while ground display and scrape-making follow almost at the same time. The observations suggest that the courtship is conducted largely by the male, but the possibility of mutual activities cannot be excluded since the females were clearly not in breeding condition.

“ TERRITORY.”

Even the ascription of this name must be considered as tentative, since further observations are needed upon this aspect of behaviour. On the small island, perhaps half an acre in extent, the four males seemed to keep very fixedly to their own corners, dominated in each case by the stone or tussock from which the ground display was conducted. This circumscription, as mentioned above, also applied in some degree to the courtship flight, each bird hovering and diving largely over its own area, any more extended flights being conducted over the lake. No actual aggression was witnessed, though if one male in his flight came near another's ground, the latter would rise and join in, and an extended flight, in which one followed the other, would take place over the lake.

That such areas may represent true breeding territories may be indicated by the strong focal point of the vantage ground, around which the scrapes were always made. There is no question of food value involved, for the island was often deserted, the birds being presumably elsewhere for feeding, and also no resentment was shown to birds feeding round the shore.

OTHER BIOLOGICAL POINTS.

The time of breeding varies greatly according to the wide range of climatic conditions in the bird's breeding area and also from year to year. Hortling and Stuart Baker and Blair found that the second or third week of June was the usual

time in Finland, and Haviland in mid-Siberia the early part of July.

“Injury-feigning” was noted by Haviland only in one instance though this behaviour was common with the Little Stint. It is recorded by other observers, *e.g.*, Hall [8] and Collett, who found that it was more usually evinced if the bird was surprised on the nest. The experience of the authors in regard to Temminck’s Stint was similar to that of Haviland. The incubating bird that was found up on the fells did an elaborate performance the first time it was flushed, tumbling about with the white feathers at the side of the tail expanded and the wings drooped. Then it flew away some distance (*c.* 30 yards) and stood in the same sort of attitude, doing a sort of shuffle with its feet and sometimes moving backwards. The contour feathers were at the same time erected, giving the bird a larger appearance.

However, the response soon died out, and the second time the bird was flushed, it was much weaker. After that no reaction at all could be elicited.

With all other birds, even with chicks, no such response was shown. Instead the parents hovered over one’s head calling continuously with a short annoyed version of the trill. Haviland mentions a sharp alarm note, when the young are hatched, which she distinguishes from the trill, but to the authors it seemed a clear derivative of it.

It would be very interesting to know more clearly the details of courtship in this species, and it is to be hoped that other ornithologists will be more fortunate in their observations than the authors were.

SUMMARY.

Temminck’s Stint was found breeding in small numbers between 1,000 and 3,000 ft. in Swedish Lapland. Such an altitude is not very usual according to observations of other authors, but this may be correlated with the exceptionally early spring.

The habitat was on open grassy ground with stones and sallow bushes as “song posts”. The potency of climatic factors in the breeding of Arctic birds was shown in the desertion of a colony after it had reached the scrape-making stage.

The courtship flight and trill is the chief form of courtship activity, but there is also a distinct ground display, which is conducted by a flickering of the wings gradually increasing in vigour, and accompanied by trilling.

About two scrapes were found to each pair, and a sort of

"territory" was evidently claimed, since four pairs on one small island kept to their particular parts for most of the time. No actual aggression was seen, but trespassing was usually for feeding.

"Injury-feigning" was not common, and the response of the one bird that exhibited it well died away quickly, when it was subsequently flushed.

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[8] HALL, R. (1904), *Ibis.*, p. 422.

RECOVERY OF MARKED BIRDS.

COMMUNICATED BY

E. P. LEACH.

Hon. Sec., Bird-Ringing Committee, British Trust for Ornithology.

(Concluded from page 308).

No.	Ringed.	Recovered.
Teal (<i>Anas c. crecca</i>).		
RINGED AS FULL-GROWN.		
73149	Longtown (Cumb), 1.3.33, by W. Bell.	Stamford Bridge (Yorks), 27.12.37.
RINGS OF THE ORIELTON DECOY, PEMBROKE.		
1480	Orielton,	25.11.36. Tenby (Pem), 8.11.37.
1957	Ditto	5.1.37. Penybont (Radnor), —.9.37.
1863	Ditto	26.12.36. Glencaple (Dumfries), 18.11.37.
1591	Ditto	30.11.36. Solway Firth (Cumb), 4.11.37.
1736	Ditto	13.12.36. Darlington (Durham), 18.10.37.
180	Ditto	26.10.35. Altrincham (Ches), 22.9.37.
1516	Ditto	27.11.36. Atherstone (Warwick), 21.9.37.
1917	Ditto	30.12.36. Hickling (Norfolk), 28.10.37.
1307	Ditto	9.11.36. Quy (Cambs), 18.9.37.
557	Ditto	14.12.35. Pitsea (Essex), 9.9.37.
1744	Ditto	14.12.36. Faversham (Kent), 29.11.37.
772	Ditto	28.12.35. Taunton (Som), 2.12.37.
1524	Ditto	28.11.36. Braunton (Devon), 13.10.37.
2453	Ditto	19.11.37. Gunwalloe (Cornwall), 1.12.37.
299	Ditto	18.11.35. Downpatrick, 19.10.37.
1355	Ditto	19.11.36. Coolaney (Sligo), 28.11.37.
1670	Ditto	10.12.36. Athlone (Westmeath), 28.11.37.
748	Ditto	27.12.35. L. Corrib (Galway), 21.11.37.
524	Ditto	13.12.35. Ditto, 27.11.37.
1028	Ditto	24.9.36. Youghal Bay (Tipperary), 8.11.37.
1015	Ditto	24.9.36. Tallow (Waterford), 15.12.37.
2067	Ditto	23.1.37. Kittilä, N. Finland, 21.8.37.
1814	Ditto	21.12.36. Salla, N. Finland, 20.8.37.
1522	Ditto	27.11.36. Vesanka, Central Finland, 26.5.37.
1239	Ditto	2.11.36. Leningrad, Russia, 29.4.37.
1464	Ditto	24.11.36. Tuksum, Latvia, 25.7.37.
460	Ditto	7.12.35. Deutsch-Krone, West Prussia, 3.8.37.
2098	Ditto	30.1.37. Arvidsjaur, Norrbotten, Sweden, 1.9.37.
2096	Ditto	30.1.37. Sävar, Vesterbotten, Sweden, 6.5.37.
1332	Ditto	14.11.36. Låstringe, Södermanland, Sweden, 4.8.37.

No.	Ringed.	Recovered.
Teal (continued).		
2031	Orielton,	15.1.37. Nesbyen, Hallingdal, Norway, —.9.37.
594	Ditto	20.12.35. Roskilde Fjord, Sjælland, Denmark, —.8.37.
855	Ditto	17.1.36. Quickborn, Schles.-Holstein, 5.8.37.
1145	Ditto	17.10.36. Lunden, Schles.-Holstein, 18.10.37.
641	Ditto	23.12.35. Pellworm, N. Frisian Is., 19.9.37.
776	Ditto	29.12.35. Holland, —.11.37.
880	Ditto	22.1.36. Ditto, —.11.37.
1005	Ditto	11.9.36. Makkum (Friesland), Holland, 24.9.37.
1445	Ditto	24.11.36. Ditto, —.9.37.
1889	Ditto	29.12.36. Ditto, 4.9.37.
1187	Ditto	24.10.36. Ysselmeer (Overijssel), Holland, 16.9.37.
2108	Ditto	4.2.37. Moerdyk (Brabant), Holland, 3.9.37.
1743	Ditto	14.12.36. Antwerp, Belgium, 28.3.37.
1129	Ditto	14.10.36. Dunkirk (Nord), France, 15.8.37.
1998	Ditto	11.1.37. Merlimont (Pas-de-Calais), France, 27.9.37.
1271	Ditto	5.11.36. St. Etienne d'Orthe (Landes) France, 10.9.37.
922	Orielton, released Castle (Salop), 8.2.36.	Bishop's Wigmore (Hereford), 15.11.37.

RECOVERED WHERE RINGED.

1398 [66]	30.1.35	Winter 1935, '36, '37.
4 Birds	Winter, 1935-36.	—.11.37.
16 Birds	Oct.-Dec., 1936.	—.11.37.

Cormorant (*Phalacrocorax c. carbo*).

RINGED AS NESTLINGS.

119565	Mochrum (Wigtown), by Lord Dumfries.	15.7.37. Loch of Strathbeg (Aberdeen), 9.11.37.
119442	Ditto	15.7.37. Tay Estuary, 3.12.37.
2 birds	Ditto	15.7.37. Alloa (Clackmannan), —.9.37.
3 birds	Ditto	15.7.37. East Lothian, Autumn, 1937.
119330	Ditto	15.7.37. Horse I. (Ayr), 25.9.37.
119704	Ditto	15.7.37. Troon (Ayr), 3.1.38.
119524	Ditto	15.7.37. Dalry (Kirkcudbr.), 22.12.37.
113930	Ditto	30.6.35. Eastriggs (Dumfries), 10.9.37.
119540	Ditto	15.7.37. Newbiggin (Northumb), 28.10.37.
119539	Ditto	15.7.37. Skeffling (Yorks), 28.11.37.
119911	Ditto	15.7.37. St. Clear's (Carms), 30.12.37.
119446	Ditto	15.7.37. Weymouth (Dorset), 25.9.37.
113989	Ditto	1935. Belfast Lough, —.12.37.

No.	Ringed.	Recovered.
Cormorant (<i>continued</i>).		
119913	Mochrum (Wigtown), 15.7.37. by Lord Dumfries.	Cranfield Point (Down), 22.12.37.
119908	Ditto 15.7.37.	Penvenan (Côtes-du-Nord), France, 11.12.37.
119571	Ditto 15.7.37.	Paimpol (Côtes-du-Nord), France, 10.12.37.
101819	Ditto, 14.6.19, by J. Gordon.	Loch Lomond, Scotland, 28.8.37.
112078	Farne Is. (Northumb), 7.7.35, by Bootham Sch.	Leith (Midlothian), 14.10.37.
119207	Ditto 28.6.36.	Blyth (Northumb), 16.10.37.
107332	Puffin I., N. Wales, 18.7.37, by T. Tallis.	Montford Bridge (Salop), 18.12.37.
107330	Ditto 18.7.37.	Weston-super-Mare (Som), 10.11.37.
107325	Ditto 18.7.37.	Bovey Tracey (Devon), —.9.37.
112143	Skomer (Pem), 29.6.33, by R. M. Lockley.	Belle Ile (Morbihan), France, 3.11.37.
119161	Roundstone (Galway), 28.6.36, by S. Marchant.	Clifden (Galway), —.8.37.
119168	Ditto 28.6.36.	Portumna (Galway), —.11.37.

Shag (*Phalacrocorax a. aristotelis*).

119240	Bass Rock, Scotland, 4.7.36, young, by Midlothian O.C.	St. Osyth (Essex), 12.10.37.
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Gannet (*Sula bassana*).

RINGED AS NESTLINGS.

118525	Ailsa Craig, Scotland, 29.7.35, by Lord Dumfries.	Skegness (Lincs), 28.8.37.
118421	Ditto 29.7.35.	Off C. Blanco, Rio de Oro, 13.2.36.
120455	Ditto, 31.7.37, by Rugby Sch.	Loch Gilp (Argyll), 9.10.37.
120396	Ditto 31.7.37.	Kilcoole (Wicklow), 26.9.37.
120391	Ditto 31.7.37.	Safi, Morocco, 14.11.37.
120879	Bass Rock, Scotland, —.7.37, by H. W. Robinson.	Off Dunkirk (Nord.), France, —.11.37.
4 birds	Grassholm, 1.8.37, by Skok- holm Bird Obs.	Pembrokeshire, Aug. and Sept., 1937.
117151	Ditto 1.8.37.	Atlantic Ocean, 47°20'N, 11°5'W, 10.10.37.
114795	Ditto 22.8.37.	Lacanau (Gironde), France, 18.9.37.
117710	Ditto 1.8.37.	Capbreton (Landes), France, 9.9.37.
117344	Ditto 1.8.37.	St. Jean de Luz (B. Pyrénées), France, 10.9.37.

RINGED AS FULL-GROWN.

3 birds	Grassholm, 1934, by Skokholm Bird Obs.	Where ringed, 1.8.37.
117810	Ditto 29.6.35.	Torquay (Devon), 28.12.37.

No. Ringed. Recovered.

Storm-Petrel (*Hydrobates pelagicus*).

RINGED AS FULL-GROWN.

- ZA.538 Skokholm Bird Obs., 16.7.33. Where ringed, 10.8.35.
 [ZA.362] 19.7.36; 1.7.37.
 ZA.350 Ditto 7.7.35. Where ringed, 9.8.37.
 6 birds Ditto 1936. Where ringed, 1937.

Manx Shearwater (*Puffinus p. puffinus*).

RINGED AS NESTLINGS.

- 300653 Skokholm Bird Obs., 1.9.37. Rhondda Valley (Glam),
 10.9.37.
 RW.7748 Ditto 25.8.35. Where ringed, 10.4.37.

RINGED AS FULL-GROWN.

RECOVERED AWAY FROM WHERE RINGED.

- SAT.181 Skokholm Bird Obs., 9.5.37. Trevone (Cornwall), 30.6.37.
 300998 Skokholm, 3.8.37, by S. Mar- Ile de Groix (Morbihan),
 chant. France, 4.8.37.

RECOVERED ON BREEDING-GROUND WHERE RINGED.

Skokholm Bird Observatory.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
1 Bird	1931	1932, '33, '34, '35, '36, '37	1 Bird	1933	1935, '36, '37
1 Bird	1931	1933, '34, '35, '36, '37	1 Bird	1933	1936, '37
5 Birds	1933	1934, '35, '36, '37	3 Birds	1934	1936, '37
			4 Birds	1935	1936, '37
			2 Birds	1935	1937
			51 Birds	1936	1937
	Skokholm (E. Cohen).			Skokholm (R. Pollard).	
18 Birds	1936	1937	3 Birds	1935	1937
	Skokholm (Oxford Orn. Soc.).			Skokholm (E. M. Nicholson).	
5 Birds	1936	1937	1 Bird	1936	1937
	Skokholm (T. Tallis).				
3 Birds	1936	1937			

REMOVED TO A DISTANCE FROM SKOKHOLM BIRD OBSERVATORY AND
 RELEASED EXPERIMENTALLY.

No.	Ringed.	Recovered.
SAT.341	Nesting adult. Released Fren- sham (Surrey), 8.6.37.	Skokholm, 9.6.37.
EXP.306	Ditto 8.6.37.	Ditto, 9.6.37.
SAT.341	Nesting adult. Released Venice, Italy, 10.7.37.	Ditto, 24.7.37.
300240	Adult with young. Released Limerick, Ireland, 27.7.37.	Ditto, 3.8.37.
SAT.488	Adult not nesting. Released Evesham (Worcs), 13.7.37.	Ditto, 18.7.37.
SAT.487	Adult not nesting. Released Birmingham, 13.7.37.	Ditto, 1.8.37.
SAT.421	Nesting adult. Released R. Mersey (Lancs), 23.5.37.	Ditto, 6.6.37.
RW.9918	Adult. Released off C. Finis- terre, Spain, 20.7.36.	Ditto, 8.5.37.
RW.9882	Adult not nesting. Released Evesham (Worcs), 14.7.36.	Ditto, 2.5.37.

No. Ringed. Recovered.

Wood-Pigeon (*Columba p. palumbus*).

RT.7368 Penrith (Cumb), 14.5.34, young, Goostrey (Ches), 29.1.38.
by H. J. Moon.

Stock-Dove (*Columba aenas*).

RT.5711 Yeadon (Yorks), 30.4.33, Where ringed, 18.9.37.
young, by C. Wontner-Smith.

RS.2099 Gt. Budworth (Ches), 30.6.35, Ditto, 22.7.37.
ad., by A. W. Boyd.

Lapwing (*Vanellus vanellus*).

RINGED AS NESTLINGS.

RECOVERED AWAY FROM WHERE RINGED.

X.7264	Glenorchard (Stirling), 20.5.26, by J. Bartholomew.	Pallasgreen (Limerick), 5.12.37.
AP.9508	Ditto 24.5.34.	Glenarm (Antrim), 9.12.37.
213241	Ditto 15.6.37.	Chateau d'Oléron (Charente Inf.), France, 13.12.37.
P.8490	Ayr, 16.5.35, by Rugby Sch.	Tarnos (Landes), France, 12.12.37.
AS.7143	Newton Stewart (Wigtown), 8.6.36, by H. J. Moon.	Kirkcinner(Wigtown),29.7.37.
AS.4649	Plumpton (Cumb), 7.5.36, by H. J. Moon.	Carne (Wexford), 12.12.37.
205391	Langwathby (Cumb), 24.5.36, by H. J. Moon.	Barrow-in-Furness (Lancs), 15.12.37.
AS.7240	Pooley Bridge (Cumb), 9.5.36, by H. J. Moon.	Penruddock (Cumb), 13.9.37
205297	Calthwaite (Cumb), 26.5.36, by H. J. Moon.	Bayonne (B. Pyrénées), France, 17.12.37.
205402	Greystoke (Cumb), 25.6.36, by H. J. Moon.	Two Mile Borris (Tipperary), —.11.37.
AP.8555	Penrith (Cumb), —.5.33, by H. J. Moon.	Kinsale (Cork), 10.12.37.
AP.7326	Ditto —.5.33.	Baldoyle (Dublin), 23.1.38.
AS.4497	Tebay (Westmor), 19.6.35, by H. J. Moon.	Texel, Holland, 20.9.37.
AP.9261	Mytton (Lancs), 6.5.33, by Oakes and Battersby.	Kildimo (Limerick),12.12.37.
203239	Ribblehead (Yorks), 16.5.36, by H. J. Moon.	Arnside (Westmor), 22.1.38.
AP.8645	Clapham (Yorks), —.5.33, by H. J. Moon.	Carnforth (Lancs), 13.11.37.
205136	Settle (Yorks), 17.5.36, by H. J. Moon.	Hesketh Bank (Lancs), 7.10.37.
AS.3605	Mobberley (Ches), 12.5.35, by E. Cohen.	Carentan (Manche), France, 18.12.37.
203698	Dymchurch (Kent), 16.5.37, by A. H. Bishop.	Sherborne (Dorset), 13.9.37.

RECOVERED WHERE RINGED.

AP.7328	Penrith (Cumb), —.5.33, by H. J. Moon	26.10.37.
AS.4885	Bashall Eaves(Yorks),23.5.37,by	Oakes and Battersby 28.11.37.
AP.8173	Salthouse (Norfolk), 30.4.36, by R. M. Garnett	30.11.37
212385	Coombe (Berks), 29.5.37, by G. Brown	—.12.37.

No.	Ringed.	Recovered.
Redshank (<i>Tringa t. britannica</i>).		
RINGED AS NESTLINGS.		
AN.6184	Aberlady (E. Lothian), 26.7.31, by the late A. Jameson.	Where ringed, 25.12.37.
ZM.152	Ditto, 19.5.37, by Mrs. Greenlees.	Ditto, 24.9.37.
212160	Rockcliffe (Cumb), 19.5.37, by R. H. Brown.	Powfoot (Dumfries), 29.7.37
YS.81	Uldale (Cumb), 15.5.37, by R. H. Brown.	Saltash (Cornwall), 25.1.38.

Curlew (*Numenius a. arquata*).

RINGED AS NESTLINGS.

RR.1260	Witton - le - Wear (Durham), 23.6.28, by Col. Pollitt.	Srah (Mayo), —.11.37.
RT.9645	Tebay (Westmor), 22.5.37, by Sedbergh Sch.	Johnstown (Kilkenny), —.12.37.
AB.3222	Cliburn (Westmor), 7.6.36, by H. J. Moon.	Where ringed, —.1.38.
65623	Halton (Lancs), 30.5.37, by H. S. Greg.	Cockerham (Lancs), 11.9.37.

Snipe (*Capella g. gallinago*).

ZM.148	Aberlady (E. Lothian), 19.5.37, young, by Mrs. Greenlees.	Campbeltown (Argyll), 9.9.37.
OL.601	Dunmore (Galway), 11.6.36, young, by J. Blake.	Where ringed, 1.10.37.

Woodcock (*Scolopax r. rusticola*).

RINGED AS NESTLINGS.

RECOVERED AWAY FROM WHERE RINGED.

RT.8257	Logiealmond (Perths), 8.7.35, by Lord Mansfield.	Amulree (Perths), 18.8.37.
W.7149	Dupplin, Perth, 20.4.27, by Lord Mansfield.	Clough (Antrim), 17.12.37.
AR.5530	Aberlady (E. Lothian), 19.4.35, by G. Charteris.	Ford (Midlothian), 18.12.37.
AR.6825	Wolsingham (Durham), 12.6.35, by R. Martinson.	Colby, I. of Man, 8.12.37.
RINGS ISSUED FOR WOODCOCK INQUIRY, 1934-35.		
201738	Altyre (Moray), 6.6.35.	Broom of Moy (Moray), 14.12.37.
202426	Ballindalloch (Banff), 25.6.37.	Deskie (Banff), 14.9.37.
202344	Forglen (Banff), 26.6.36.	Fyvie (Aberdeen), 19.11.37.
201554	Fasque (Kincardine), 26.7.35.	Gannochy (Angus), 28.8.37.
AS.1425	Glen (Peebles), 1935 or 1936.	Dunblane (Perths), 17.11.37.

RECOVERED WHERE RINGED.

X.6953	Meigle (Perths), 10.6.26, by C. Walker	2.10.37.
203169	Blair Drummond (Perths), 23.4.35, by J. Bartholomew	27.11.37.
S.8311	Buchlyvie (Stirling), 29.5.34, by Sir S. Bilsland	6.12.37.
AS.1869	Beaulieu (Hants), 22.4.37, by E. Crispin	4.12.37.
RINGS ISSUED FOR WOODCOCK INQUIRY, 1934-35.		
200108	Clunas (Nairn), 3.5.34	8.9.37.
201202	Kirriemuir (Angus), 1936	13.11.37.
2 birds	Ditto, 1937	—.12.37.

No.

Ringed.

Recovered.

Woodcock (*continued*).

202767	Brechin (Angus), 9.5.37	8.12.37.
201971	Blair Drummond (Perths), 28.5.35	18.11.37.
AS.1435	Glen (Peebles), 5.5.37	29.11.37.
202495	Dalswinton (Dumfries), —.6.37	15.11.37.
200523	Edencrannon (Tyrone), 30.6.34	21.9.37.
202102	Ditto, 12.6.37	24.11.37.

Sandwich Tern (*Sterna s. sandvicensis*).

RINGED AS NESTLINGS.

211950	Ravenglass (Cumb), 1.7.37, by S. Marchant.	Llanfairfechan (Carnarvon), 15.8.37.
AS.9526	Walney I. (Lancs), 10.6.36, by H. W. Robinson.	Temma, Gold Coast, March or April, 1937.
AP.441	Scolt Head (Norfolk), 17.7.37, by Lond. Nat. Hist. Soc.	Palling (Norfolk), 21.9.37.
AP.7777	Salthouse (Norfolk), 8.6.33, by R. M. Garnett.	Mossel Bay, Cape Province, 15.4.37.
213916	Ditto, 27.6.37, by E. Cohen.	Skegness (Lincs), —.8.37.

Common Tern (*Sterna h. hirundo*).

RINGED AS NESTLINGS.

KT.899	Walney I. (Lancs), 13.6.37, by H. W. Robinson.	Whalley (Lancs), 15.8.37.
KV.145	Ditto 26.6.37.	Coxwold (Yorks), 16.9.37.
YP.658	Blakeney (Norfolk), 11.7.37, by E. Arnold.	Gisors (Eure), France, 23.8.37.
YV.38	Scolt Head (Norfolk), 20.7.37, by Lond. Nat. Hist. Soc.	Ambleteuse (Pas-de-Calais), —.8.37.

Black-headed Gull (*Larus r. ridibundus*).

RT.9624	Tebay (Westmor), 11.6.34, young, by Sedbergh Sch.	Bretherton (Lancs), 25.12.37.
RW.8222	Littleton (Middx), 11.2.36, ad., by P. Hollom.	Southampton, 16.12.37.
AR.8810	Ditto 2.1.35.	Thames Embankment, London, 24.1.38.

Common Gull (*Larus c. canus*).

RINGED AS NESTLINGS.

RT.6773	Eynhallow, Orkney, 6.6.35, by D. Robertson.	Rousay, Orkney, 21.7.37.
300159	Islay (Argyll), —.6.37, by H. W. Robinson.	Gleneely (Donegal), 6.9.37.

Herring-Gull (*Larus a. argentatus*).

RINGED AS NESTLINGS.

AC.1054	Cruden Bay (Aberdeen), 6.7.37, by C. S. Clarke.	Fraserburgh (Aberdeen), 2.8.37.
AC.1082	Ditto 6.7.37.	Campbeltown (Argyll), 19.9.37.
AB.7811	I. of May Bird Obs., 11.7.36.	Newbiggin (Northumb), —.8.37.
AC.1276	Puffin I., N. Wales, 16.7.37, by L. Monks.	Baschurch (Salop), 20.12.37.

No. Ringed. Recovered.

Herring-Gull (*continued*).

AB.9442	Puffin I., N. Wales, 18.7.37, by T. Tallis.	Kinmel Bay (Denbigh), 28.7.37.
AB.9474	Ditto	18.7.37. Penketh (Lancs), 1.1.38.
AB.9450	Ditto	18.7.37. Manchester (Lancs), 4.1.38.
AB.9470	Ditto	18.7.37. Dublin, 30.11.37.
402166	Skokholm Birds Obs., 11.7.35.	Pembroke Dock, 3.1.38.
400349	Dungeness (Kent), 26.6.34, by P. Hollom.	Camber (Sussex), —.12.37.
AB.6527	Ditto, 14.6.36, by R. G. Williams.	Boulogne, France, 15.11.37.
AB.3129	Ballintoy (Antrim), 29.6.35, by T. Kerr.	Barrow-in-Furness (Lancs), 7.11.37.
400276	Ditto	29.6.35. Cloyfin (Londonderry), 20.9.37.

Lesser Black-backed Gull (*Larus f. graellsii*).

RINGED AS NESTLINGS.

AB.3938	Foulshaw (Westmor), 26.7.35, by H. W. Robinson.	Settle (Yorks), 31.8.37.
AB.5849	Ditto	23.7.37. Skipton (Yorks), 15.9.37.
AB.5822	Ditto	23.7.37. Oporto, Portugal, —.11.37.

Razorbill (*Alca t. britannica*).

RINGED AS NESTLINGS.

RECOVERED AWAY FROM WHERE RINGED.

AC.1570	Skokholm Bird Obs., 22.7.37.	Appledore (Devon), 11.9.37.
TSA.336	Ditto	2.7.37. Falmouth (Cornwall), 2.9.37.

RECOVERED WHERE RINGED.

RV.5094	Skokholm Bird Obs., 15.7.34.	18.7.37.
AB.2022	Ditto, 9.7.35.	3.7.37.
AB.2034	Ditto, 9.7.35.	11.7.37.
AB.6644	Ditto, 8.7.36.	9.7.37.

RINGED AS FULL-GROWN.

4 birds	Skokholm Bird Obs., —.7.35	—.7.37.
4 birds	Ditto, —.7.36	—.7.37.

Northern Guillemot (*Uria a. aalge*).

RW.9194	I. of May Bird Obs., 27.6.36, young.	St. Valéry (Somme), France, 14.11.37.
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Southern Guillemot (*Uria a. albionis*).

AC.1406	Skokholm Bird Obs., 11.7.37, young.	Porth Nigel (Carnarvon), 3.10.37.
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Moor-Hen (*Gallinula ch. chloropus*).

Or.149	Orielton (Pem), 4.10.35, by S. Greenslade, released 7 miles SW.	Milford (Pem), 1.9.37.
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Coot (*Fulica a. atra*).

RINGED AS FULL-GROWN.

Or.1014	Orielton (Pem), 24.9.36, by S. Greenslade.	Barrow Gurney (Som), 19.9.37.
Or.1655	Ditto	8.12.36. Where ringed, 3.1.38.

STARLING—*correction*.—FB.691 (*antea*, p. 303) date of ringing should be 27.2.34, not 27.2.24.

NOTES

THE SONG OF THE CROSSBILL.

I HAVE paid particular attention to the singing of Crossbills (*Loxia c. curvirostra*) for some years, on and off, and I find that the song can be divided into four main varieties. In attempting to describe these songs below, I use the two sound descriptions *squeeze* and *whit*. The first is a prolonged harsh wheezing, very reminiscent of a note frequently used by the Greenfinch (*Chloris c. chloris*). The second is loud and clear, and is well-known as the typical Crossbill call-note.

(1) *The musical "Greenfinch" song.* Short groups of the *squeeze* note and the *whit* note stand well out. On a calm frosty day they are just audible at a quarter of a mile with hands cupped over the ears. On getting close, however, it will be heard that these loud note-groups are bridged by subdued ripples and trilling whistles, joining the whole into a long varied "ramble", both pleasing and musical. Sung by adult males only.

(2) *The unmusical "Greenfinch" song.* As above but without the subdued notes. The *squeeze* is very frequently not repeated: *whit-whit-whit squeeze whit-whit-whit squeeze*, etc. Sung by adult males only.

(3) *Short song.* This is the least usual song and is sung for only a short while. (The other songs frequently go on for long periods.) *Burrr-burrr-burrr-whit-whit-whit*, etc., hurried over and curtailed. The *burrr* is a full, rising note but apparently is merely a variation of the harsh *squeeze*. Probably sung by adult males only.

(4) *Sub-song.* I call this the sub-song for no better reasons than that it is the quietest song, that it is sung by both adult males and females and occasionally by grey birds, and that it is frequently sung from a concealed position inside the canopy, whereas the above three songs are practically always sung from the very top. Short groups of a somewhat softer *whit-whit* than the call (though still of much carrying power), joined up by subdued twitterings and murmurings.

All these songs show variation but to my ear the grouping seems satisfactory and constant. Crossbills are spasmodic in Surrey and, when present, erratic in singing so I have made no attempt to assign songs to different seasons.

The two main calls are the loud, clear *whit whit* and the rather harsh, chattering *chack-chack-chack*. These, too, seem

to be used somewhat as songs ; for a bird will sit on the top of a tree and call one or the other for minutes at a time. In the case of the former, two tones will sometimes be used with quite a fixed, definite rhythm.

As these notes were all taken in S.W. Surrey, it would be interesting to see whether there is much geographical variation—with *Loxia c. scotica*, for example. L. S. V. VENABLES.

NOTES ON SOME BIRDS FROM SKYE.

EXAMINATION of some material from Skye as a result of a visit in December, 1937, makes it possible to amplify my previous note on Hebridean birds (*antea*, pp. 230-2).

ROCK-PIPIT (*Anthus s. petrosus*). I stated that birds from Skye were not the Hebridean race. This was based on two spring birds in the Natural History Museum. A winter series shows that Skye Rock-Pipits are on the whole darker olive above with heavier streaks. They are, however, much nearer to *A. s. petrosus* than to *A. s. meinertzhageni* with the exception of one bird. Thus, in a sense they are perhaps slightly intermediate.

HEBRIDEAN SONG-THRUSH (*Turdus e. hebridensis*). Birds from Skye seem not to be separable from Hebridean Song-Thrushes unless in series the spots are sometimes rather smaller. Miss Baxter has kindly drawn my attention to a statement of Mr. Seton Gordon that in November hundreds of Thrushes come to Skye, remaining until February or March. I find difficulty in believing that Outer Hebridean birds winter in Skye in such numbers and that this explains my birds. A single breeding bird in the Natural History Museum agrees also with Hebridean specimens. Further comparison with Thrushes from S.W. Scotland shows that these are more like Hebridean on the back, but like *ericetorum* below. Some very worn birds from Islay (in the Royal Scottish Museum) are like *T. e. ericetorum* below. A winter bird from Gairloch is like *T. e. hebridensis*. In any case even if it can be shown later that these very dark Thrushes are not the breeding form of Skye, it is an important discovery that Hebridean birds occur here in large numbers in winter.

BRITISH SONG-THRUSH (*Turdus e. ericetorum*). One bird from Skye is a very typical *ericetorum*.

HEBRIDEAN WREN (*Troglodytes t. hebridensis*). A series from Skye is referable to this race with a slight indication of intergradation. Birds from S.W. Scotland are nearest typical *T. t. troglodytes* with sometimes a tendency towards *hebridensis* in being browner below.

C. M. N. WHITE.

ROOSTING OF BLUE TIT.

NOTICING early in December, 1937, a Blue Tit (*Parus c. obscurus*) entering about dusk a nesting box within 6 inches of my study window at St. Leonards, Bucks, I began watching, with the following results:

December, 1937, Average roosting time on 13 evenings, 1.1 minute after 4 p.m.

Earliest time, 3.45 p.m. ; latest, 4.16 p.m.

January, 1938: Average roosting time on 15 evenings, 17.6 minutes after 4 p.m.

Earliest time, 4.4 p.m. ; latest 4.46 p.m.

Of 13 occasions when I noted the time of sunset, the earliest time of roosting was 12 minutes before sunset, the latest 17 minutes after sunset. Average of 13 times 4.3 minutes after sunset.

Unfortunately, after January 22nd, the Blue Tit ceased roosting in the box, perhaps because of pairing, for the local birds soon after were noticed about in pairs.

On 5 occasions during my observations the bird came out after entering the box, but returned later. Once in the interval it was noticed on a nearby tree, preening.

A clear sky made the roosting time 4 to 12 minutes later.

On 5 occasions a second bird appeared on the scene, twice perching on the lid, once going in and out again, and twice staying in altogether. On three evenings when watched, no bird entered the box. These facts suggest a certain irregularity in the roosting place of the species.

CYRIL E. MARTIN.

GREAT SPOTTED WOODPECKER EATING PHEASANT'S EGGS.

IN April, 1937, R. Gibbons, the ex-keeper for Gunton, Norfolk, whom I know personally to be reliable, seeing a bird at a Pheasant's nest actually in the act of eating one of the eggs outside the nest, shot the bird and not knowing what it was took it to the Rev. Canon Wilson W. White. Canon White, who is well acquainted with the species, identified it as a Great Spotted Woodpecker (*Dryobates m. anglicus*). The bill of the Woodpecker still had some remains of the egg upon it.

M. BARCLAY.

MONTAGU'S AND HEN-HARRIERS IN DENBIGHSHIRE.

THE following occurrences of Harriers, which have unfortunately been killed, have come to my notice and should, I think, be put on record. Several Montagu's Harriers (*Circus pygargus*) have been killed on one of the Denbighshire moors in recent years: an adult male, May 27th, 1933; an immature male, dark variety, August 9th, 1935, and a female nearly adult, with ovaries well matured, on May 18th, 1936.

The Hen-Harrier (*Circus cyaneus*) occasionally occurs. I have seen four in a gamekeeper's house, trapped or shot soon after the war—three females and an immature male.

Of three others of more recent date one occurred on April 9th, 1934, another on February 5th, 1936, and a third was shot on November 5th, 1937, and brought to me in a fresh state. All were females. This last was apparently an adult. The iris was dark, not yellow. A recent meal consisted of much flesh with some feathers of a Grouse but no bones. There were also traces of heather and bilberry.

W. H. DOBIE

SHEARWATERS IN THE THAMES ESTUARY.

THE following records of Shearwaters in the Thames Estuary may be of interest.

On September 4th, 1932, Mr. E. H. Gillham had several views of a Manx Shearwater (*Puffinus puffinus*) on the Swale, between Sheppey and the mainland.

On September 4th, 1937, a fine, warm day, Mr. G. D. Elcome saw a Great Shearwater (*P. gravis* or *kuhlii*?) off Southend Pier. After approaching quite close to his boat it flew off towards the Kentish shore, but owing to the light Mr. Elcome was unable to observe exact details of colouring.

On September 26th, 1937, a party of the London Natural History Society saw a Shearwater flying strongly upstream between Egypt and St. Mary's Bays on the Kentish shore of the estuary. The weather was fine, and the river quite calm, but the bird was careening from side to side as though there were waves. It was probably a Manx Shearwater (*P. puffinus*), but might possibly have been the Western Mediterranean form (*P. p. mauretanicus*).

R. S. R. FITTER.

LITTLE STINTS IN SUSSEX IN WINTER.

IN Vol. XXVIII., p. 54, I recorded the occurrence of a Little Stint (*Calidris minuta*) at Bulverhythe, St. Leonards, on January 9th and 10th, 1934. On January 11th, 1935, my son, R. N. Ticehurst, found another at the same spot. This bird was feeding alone, but Dunlin and Ringed Plover were both in the vicinity to serve as a comparison of size. On January 8th, 1938, we found a pair in the same place again, this time in company with a wintering party of Turnstones and a Grey Plover. The latter were still there on the 22nd, but I failed to find the Stints. It seems a remarkable coincidence meeting with Little Stints at the same place in January in three years out of five.

N. F. TICEHURST.

ICELAND REDSHANK IN WIGTOWNSHIRE.

THE skin of an Iceland Redshank (*Tringa t. robusta*) from Wigtown Bay, Solway, is in the Bristol Museum and Art

Gallery collections. The bird is a juvenile female, taken on August 10th, 1937, and has wing 172, bill 43 and tarsus 46 mm.

H. TETLEY.

WESTERN LITTLE BUSTARD IN YORKSHIRE.
A NEW BRITISH BIRD.

It is now well known that two races of the Little Bustard are distinguishable. The Eastern race (*Otis tetrax orientalis*) inhabiting W. Siberia, Turkestan, Afghanistan, the Russian Steppes, south at least to Macedonia and Yugo-slavia and apparently in eastern Germany, periodically migrates westwards and to this race the British-taken birds, hitherto critically examined, have belonged. Only some twenty of the numerous examples obtained in this country have, however, been so examined.

Recently Mr. A. Hazelwood informed me of a Little Bustard in the possession of Capt. E. W. S. Foljambe of Osberton, Notts. On being applied to Capt. Foljambe very kindly sent me the bird for examination and comparison at the Natural History Museum.

Capt. Foljambe informs me that this was one of two birds shot during a Partridge drive on December 9th, 1922, on his Wadworth estate just south of Doncaster in Yorkshire. It was given to him by Mr. E. J. Noble, his shooting tenant, who shot this bird and the other cannot be traced. The bird was stuffed by Spicer of Leamington, who sexed it as a female.

This bird is clearly an example of the Western Little Bustard (*Otis tetrax tetrax*) and is the first British specimen of this race to be identified.

The Western Little Bustard differs from the Eastern in having the upper-parts and wing-coverts of a considerably more sandy (warmer) shade of buff, while the black markings are usually less pronounced and the vermiculations rather finer.

This race inhabits Spain, Portugal and France as well as N.W. Africa. It is taken as the typical race as in describing *Otis tetrax*, Linnæus gave its range as "*Habitat in Europa, imprimis in Gallia*" so that the typical locality is France.

H. F. WITHERBY.

GARDEN-WARBLER AND HOUSE-MARTIN IN OUTER HEBRIDES.—Dr. James W. Campbell among some notes on birds in Scotland (*Scot. Nat.*, 1937, p. 175) states that a Garden-Warbler (*Sylvia borin*) was singing at Tarbert, Harris, on June 27th, 1937, and he saw a House-Martin (*Delichon u. urbica*) at Newton, N. Uist, on June 5th, 1937. Both species have been rarely observed in the Outer Hebrides.

GADWALL IN MERIONETHSHIRE.—Mr. E. U. T. Bible informs us that he and Mr. L. Rees identified a Gadwall (*Anas strepera*) amongst some Mallards in the estuary of the River Dovey on December 12th and 13th, 1937.

LONG-TAILED DUCKS IN SURREY, MIDDLESEX AND SUSSEX.—Mr. D. A. T. Morgan writes that he and Miss M. Butterworth watched a female or immature male Long-tailed Duck (*Clangula hyemalis*) on January 29th, 1938, on one of the Molesey (Surrey) reservoirs. Three others which had been present at Staines (Middlesex) since last September were seen there by Messrs. H. H. Davis and R. C. Homes on the following day, when the bird was still at Molesey, so this must have been a new arrival.

Mr. F. W. Blake informs us that he identified a Long-tailed Duck, of which he sends a description, in a brackish pool near Selsey, Sussex, on December 12th, 1937.

SHAG IN SURREY AND ESSEX (*Correction*).—Mr. E. G. Pedler informs us that he watched a Shag (*Phalacrocorax a. aristotelis*) at Barn Elms Reservoirs on February 4th, 1938 (*cf. antea*, p. 310). In the second paragraph of this note on p. 311, the observer was Mrs. (not Mr.) I. Steuart and the locality Farnbridge, (not Farnbridge).

SPOTTED REDSHANK IN NORFOLK IN JANUARY.—Miss M. Barclay informs us that she identified a Spotted Redshank (*Tringa erythropus*) at Gunton, Norfolk, on January 24th, 1938—an unusual date.

GREENSHANKS IN WINTER IN CUMBERLAND.—Mr. S. Marchant writes that he saw a Greenshank (*Tringa nebularia*) on the estuary of the River Irt near Ravenglass on January 2nd, 1938, and on several occasions between January 1st and 10th, 1937, one was also present in the same locality. A good many Greenshanks have been noticed in various parts in winter during recent mild years.

BLACK-HEADED GULLS NESTING IN DEVONSHIRE.—With reference to Mr. D. Munro-Smith's note (*antea*, p. 90), Mr. H. J. Harrison writes that he has personally known of two colonies of the Black-headed Gull (*Larus r. ridibundus*) in North Devon for at least twelve years and states that they have probably been in existence much longer.

KITTIWAKES AS SHORE BIRDS.—Mr. G. H. Clegg informs us that he has seen hundreds of Kittiwakes (*Rissa t. tridactyla*) standing on the stony shore of the Isle of Arran in August (*cf. antea*, pp. 202-4 and 280).

REVIEWS.

LOCAL REPORTS.

Report on the Birds of Warwickshire, Worcestershire and S. Staffordshire, 1936. Prepared under the direction of the Birmingham Bird Club. 1s. 6d. (H. G. Alexander, 144, Oak Tree Lane, Birmingham, 29.)

THIS, the third annual, Report is an advance on its predecessors, and has much matter of interest. It contains an account of birds on Rotton Park Reservoir, migrant dates, special accounts for each county on the Grey Wagtail, Lesser Redpoll and Little Owl, lists (with a map) of movements of ringed birds to and from the counties and a number of classified notes. There were no startling events to record during the year, but the Report shows that much solid work was done. The classified list contains interesting items especially among the water birds—an Oystercatcher, a Bar-tailed Godwit, two Red-throated Divers, two Long-tailed Ducks, two Grey Lag-Geese and three Skuas (probably Pomatorhine) being among the more interesting species noted.

Transactions of the Cardiff Naturalists' Society, 1935.

THESE contain a few ornithological notes selected by G. C. S. Ingram and H. M. Salmon. Among these we note that an Avocet, a very rare visitor to Glamorgan, was seen at Aberthaw on April 28th, 1935, and a party of seven Black Grouse, which had become extinct in the county, was satisfactorily identified in the same year near Llangynwyd.

Observations on Birds in the Bournemouth District, October, 1936 to 1937.
By Rev. F. C. R. Jourdain.

THIS is a very condensed report on the birds observed in rather an indefinite area. As in other parts, the Dartford Warbler, benefiting by several favourable years has greatly increased in numbers. Six Whooper Swans wintered (1936-7) at Beaulieu. The Raven is still spreading slowly eastwards. Montagu's Harriers had an unfortunate year and no young were reared. Several Garganey bred on the Avon.

Skokholm Bird Observatory Report for 1937.

THIS Report has many points of interest. In 1937 one hundred and eleven observers stayed on the island and there were other day visitors, and observational and ringing work was carried on daily. Over six thousand birds were ringed on the island during the year. Mr. Lockley's efforts to control the rabbits with the hope of making the island a sheep farm have failed. A serious attempt is to be made to control the bracken which is steadily encroaching. Mr. Lockley considers that bracken encourages Lesser Black-backed Gull, Hedge-Sparrow, Blackbird and Whitethroat and discourages Manx Shearwater, Storm-Petrel, Oystercatcher, Lapwing, Wheatear, Meadow-Pipit and Sky-Lark. A very interesting ten-year census of the nesting birds only partly supports this suggestion, Lapwings and Oystercatchers having decreased and Lesser Black-backed Gulls having increased. But the Herring-Gull has also increased, while the Great Black-backed shows a much larger proportionate increase. It also appears that Manx Shearwaters are not decreasing and that Storm-Petrels are increasing as are Guillemots and Razorbills. We note with interest that Mr. M. C. Harman is now owner of Grassholm and has put it under the guardianship of Mr. Lockley. The Report ends with a number of valuable notes in a classified list. It is observed that Fulmar Petrels now haunt the island coast in some numbers in summer though none as yet breed there. Razorbills have been ringed and caught intensively and birds ringed as nestlings were caught as adults at nesting places a year later.

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**BLACK REDSTART BREEDING IN AN EASTERN
COUNTY OF ENGLAND.**

BY

S. MARCHANT.

(Plate 13.)

It is only comparatively recently that the breeding of the Black Redstart (*Phœnicurus o. gibraltariensis*) in the British Isles has been authentically recorded. During the spring and summer of 1937 a number of observers had the good fortune to watch a pair breeding in one of the eastern counties of England, an occurrence which is of interest both because the nest has never before been recorded so far north in this country, and because previously the bird has only been observed in the district on three occasions, two of which were in October and November, and the third not known.

The male bird first attracted attention while feeding during the evening of April 25th. Its identity was immediately obvious by its reddish-brown tail, by its otherwise black plumage of various shades, by the whitish patches on its wings, and by the absence of white on the forehead. Until May 14th nothing further was seen of the bird or its mate, but for the next five days from that date the male visited a bakehouse area for cockroaches so regularly that there seemed a distinct possibility that it had a nest. The hen bird was first definitely noted on May 19th, and the same morning J. G. Appleyard and the writer found the nest. Later in the day Miss E. L. Turner, K. B. Rooke and others had good views of both birds as they brought food to their young. An inspection of the nest on the next day showed that there were only two young birds, fully fledged and almost ready to leave the nest; they were probably nearly a fortnight old. This is an abnormally small brood but both on that day and on a later occasion no trace could be found of other young birds or of unfertile eggs. The nest was built chiefly of cotton waste and placed in a cavity in a wall beside a drain-pipe. One of the young birds was seen outside the nest on May 24th, the other probably having left the previous day, when no observations could be made.

From that date it became more difficult to watch the birds. It is doubtful whether the young birds were ever seen again, and it seems certain that one of them died the next day (25th) by falling down a drain-pipe. Until June 11th the old birds were seen regularly, the male attracting most attention by his song. From July 5th to 20th R. N. Ticehurst



UPPER—Cock Black Redstart with food for young.
LOWER—Hen Black Redstart perched above nest.
(*Photographed by R. N. Ticehurst.*)



constantly saw and heard the male, and during that time an attempt was made to build a second nest in a similar place not far from the original site. Dr. Billington and Canon Raven tell me that about July 9th the birds were seen to bring materials on one day; on the next, however, they were disturbed and did not return. Whether another more successful attempt was made elsewhere is not known. At the beginning of October Black Redstarts were still present in the town, being recorded from various parts. The hen was last seen on October 25th by J. L. R. Baiss, and fine views of the cock in much brighter plumage than during the spring and with most conspicuous white patches on the wings, noticeable even in flight, were obtained up to October 23rd. (During the breeding season and after, the white wing-patches could only be detected when the bird was at rest.)

Evidence can be produced that the birds bred in the same place in 1936, though, while breeding, they escaped the notice of ornithologists.

One or two points of interest arise in connexion with this record. Mr. Nicholson (*antea*, Vol. XXX., p. 320) suggested that the occurrence of Black Redstarts during the summer in Inner London might be much more regular than is supposed owing to the ease with which the bird is overlooked. The story of these birds amply bears this out, for not only were they completely overlooked in 1936 while breeding, but even in 1937 although their presence had been recognized they were not seen for over a fortnight at a critical period. Admittedly in the light of future knowledge, it was realized that the song was heard once during that period, and had this happened to anyone with a previous acquaintance with the birds, it would no doubt have led to an intensified search and the original occurrence would not have been regarded as a chance.

Owing to the difficulties of making continued observations little could be found out about the habits of the birds. Only a vague idea of their territory was obtained, but certainly after the young had flown, the cock was seen and heard much more regularly at places some distance from the breeding site, suggesting that different territories were adopted in turn. Perhaps there was some connexion with the attempt to build a second nest. During nest-building and incubation their behaviour can only be conjectured, but shortly after the young were hatched, the cock apparently extended his range somewhat, or altered it. The hen bird either remained much closer to the nest or else went to other areas until the young

birds were nearly ready to fly, that is if she ever visited one place so regularly as the cock. The song was first recognized on May 20th. The fact that afterwards it became a common occurrence to hear the song or at least the first few, loud, warbling notes (the bird being perched in the most conspicuous positions), even when the observer was a considerable distance away, makes one wonder why the song was not heard earlier, that is, omitting the one unrecognized occasion mentioned above. Even though originally unfamiliar with it, I feel it would have been difficult to overlook the characteristic opening notes, especially so since I later found that they could be heard at considerable distances, even above the interference from jangling church bells and such-like noises.

It soon became possible to recognize the bird by its actions and behaviour. Its weak, dipping flight was very noticeable over a fairly long distance, recalling that of a tit, and while feeding it behaved so as to remind one in part of a Robin, when it flew down to the ground to seize an insect and then returned to its perch, and in part of a flycatcher, as pointed out by R. N. Ticehurst, from its habit of fluttering off a higher perch, chasing insects and returning. Perhaps most characteristic of all was the slight oscillation of the tail during the short periods of rest between these excursions. It is worth while recording that on one occasion R. N. Ticehurst saw the hen bird bring a white Pierid butterfly to the young. Apparently a very favourite food was Orthoptera but other insects, probably Diptera, were collected for the young.

I am indebted to R. N. Ticehurst for the accompanying photographs.

PUBLICATION OF THE BRITISH TRUST FOR ORNITHOLOGY
THE INDEX OF HERON POPULATION, 1937

BY

E. M. NICHOLSON.

FOR the fourth year in succession* we were able in 1937 to keep accurate record of the fortunes of a large part of the breeding population of Herons (*Ardea c. cinerea*). It can hardly be said that the results have been dramatic. In England and Wales as a whole the Heron does not appear, over this period, to have been markedly increasing or decreasing, or to have been spreading or contracting its range. Nor are there appreciable year-to-year fluctuations, although certain regions, and, above all, certain heronries undergo striking changes of numbers.

The number of counties covered was slightly fewer in 1937 than in 1936, those omitted in England and Wales being London, Middlesex and Rutland (where there are no heronries) and Hampshire, Herefordshire, Breconshire and Monmouthshire. From the remaining 46 counties the sample has, however, been greatly increased, and the total number of nests now counted in the 82 heronries for which we have both 1928 and 1937 figures is almost two thousand—about a fifty per cent. sample.

In Scotland 23 heronries were counted in 1937 compared with 14 in 1936, and in Ireland 10 compared with 7. Altogether in the British Isles we have reports of breeding numbers in 1937 from no less than 154 sites in 64 counties. One result of so greatly extending the sample has been to confront us with a number of statistical problems, because several of the 1928 heronries have lapsed, while new ones have come into existence, and a few are now known which were extant in 1928 but were not counted in that year. After taking authoritative advice we are meeting this difficulty by starting a fresh index based on 1936, which will for the present be given in addition to, and not in substitution for, the index based on 1928. As the Scottish and Irish samples are so much smaller the main index figures will continue to be given for England and Wales, but supplementary figures will be supplied for other areas.

It will be observed that while the original 1928 index yields a slight increase of some 2 per cent. for England and Wales for 1937 as compared with 1936, the new 1936 index shows no change in the same period. This is an interesting indication

*See *British Birds*, Vol. XXVIII., pp. 332-341; Vol. XXIX., pp. 98-101, and Vol. XXX., pp. 202-205.

of the margin of error inherent in the sampling method, and will come as no surprise to those who recall the warning given when the index started (*antea*, Vol. XXVIII., p. 336) that "the index certainly does not reliably mirror minute changes of, say, one or two per cent., and certainly does mirror substantial changes of the order of say, forty or fifty per cent.".

The national status of the breeding Heron population in 1937 may therefore be summed up by saying that for England and Wales it was probably about the same as, and perhaps even a little higher than, in 1936 and in 1928. In Scotland the figures for both Highlands and Lowlands agree in indicating an increase of rather more than ten per cent. between 1928 and 1937 in spite of a drop of rather less than ten per cent. between 1936 and 1937. The inference that Scottish heronries in 1936 were some twenty per cent. above 1928 strength should, however, not be relied on, as the sample even for 1936 included only 147 nests. On the even smaller Irish sample of less than 80 nests the movement between 1936 and 1937 was very similar, but material for comparison with 1928 is lacking.

The usual table of percentage changes can, therefore, be brought up to date as follows :

PROVISIONAL INDEX OF HERON BREEDING POPULATION
(1928=100) (ENGLAND AND WALES).

<i>Year.</i>	<i>Index.</i>	<i>Number of nests in Sample.</i>	<i>Year.</i>	<i>Index.</i>	<i>Number of nests in Sample.</i>
1928	100	1,032	1933	104	360
1929	85	487	1934	102	1,196
1930	92	566	1935	99	1,235
1931	111	277	1936	101	1,264
1932	100	223	1937	103	1,999

Owing to further material which has come to light the index can, however, now be revised as follows :

<i>Year.</i>	<i>Revised Index.</i>	<i>Number of nests on which revised index is based.</i>
1928	100	3,949
1929	87	605
1930	94 (94)	511 (521)
1931	98	362
1932	96 (99)	321 (339)
1933	97 (99)	413 (478)
1934	98 (100)	1,422 (1,547)
1935	105 (104)	1,624 (1,771)
1936	101 (102)	1,824 (1,985)
1937	103	1,999

The extra figures given in parentheses show the effect of adding in figures of heronries for which no 1928 return is available, each being adjusted by the index figure of the year for which earlier figures are known. Scottish and Irish returns are excluded. Finally we can obtain a further check by taking 1936 as 100 and starting an entirely new index which gives the following results :

1936	100 (England and Wales)	1,982
1937	100 " " "	1,974
1936	100 (Great Britain)	2,129
1937	99 " "	2,111
1936	100 (British Isles)	2,208
1937	99 " "	2,183

As might be expected the material now available suggests that the Heron population is even more stable than had previously been supposed, as the set-back in 1929 and the recovery during 1930-31 were both rather exaggerated by the smallness of the earlier sample. The need for special caution in using the 1929-33 figures has repeatedly been emphasized in previous papers. The new index figures for Great Britain (that is England, Wales and Scotland) and for the British Isles (including Ireland) are still heavily dominated by England and Wales returns, but it is interesting that in spite of this there should be some indication that Heron population may move differently in the different countries. We now have the basis for a very interesting record of the effects of any sudden blow such as a really severe winter.

During 1937 a great extension was achieved in the area believed to be completely covered by the sample census. In addition to the Thames Drainage Area, which has been surveyed annually, and the county of Sussex, covered by the independent exertions of Mr. E. M. Cawkell, all known heronries were counted in a large region of northern England covering most of Durham, Westmorland, Lancashire, Yorkshire, Cheshire, Derbyshire and Staffordshire. In this last region, excluding heronries whose numbers for both 1928 and 1937 are not known, and all those which have become extinct or started in the period, there appears to have been an increase during that period of some 16 per cent. Unfortunately this big increase in the established colonies is approximately cancelled out by the coming to an end of such notable heronries as Bagot's Park and Ilam in Staffordshire, Rossington in Yorkshire, and Rusland Moss in Lancashire. The area taken as a whole shows little change.

Persecution of breeding Herons appears to be a serious factor in parts of the midlands and north, and reports of destruction of colonies have reached us from Northumberland, Roxburgh, Cumberland and Derbyshire, the birds in the last case having been shot while feeding young, which were left to starve. Staffordshire, as we pointed out last year, has the unenviable distinction of having lost in the interval since 1928 no less than four of the six heronries then extant in the county, largely through deliberate destruction. Cheshire, on the other hand, has increased the size of its Heron population quite considerably.

Of the other two areas completely surveyed, Sussex has now made good the slight decline noted in 1935 and the Thames Drainage Area which has stayed consistently below the 1928 level during the previous three years is now well above it.

To sum up the experience of the different regions, north-east and north-west England suffered a fairly general set-back between 1936 and 1937 but both are still above the 1928 level; east England has had the opposite experience of being above 1936 breeding strength but still below 1928 levels for the same heronries; the Midlands are appreciably above 1936 and also above 1928; Wales and the neighbouring counties, like northern England showed some increase on 1928 but a set-back since 1936, and both south-east and south-west England showed declines on 1936 and also on 1928.

Looking at the results as a whole it is, however, remarkable that so much stability should be maintained, and the data being gathered must prove of value for comparison with future work on more sharply fluctuating species. As in previous years it must be pointed out that the credit for this work belongs not to the writer, who has merely summed up the results, but to the many volunteer observers who last spring visited more than 150 heronries for this purpose in different parts of the country, and to Mr. W. B. Alexander, University Museum, Oxford, who organized the operations and drew up the necessary returns on behalf of the British Trust for Ornithology.

A PUBLICATION OF THE BRITISH TRUST FOR ORNITHOLOGY.
REPORT OF THE BIRD-RINGING COMMITTEE :

PROGRESS FOR 1937.*

BY

A. LANDSBOROUGH THOMSON, C.B., D.SC.
Chairman of the Committee.

DURING the period now under review, on June 1st, 1937, the control of the former *British Birds* Marking Scheme was transferred to the Bird-Ringing Committee appointed for the purpose by the British Trust for Ornithology, under arrangements which have already been announced.† At the same time the headquarters were moved from the office of Messrs. H. F. & G. Witherby, Ltd., to the Bird Room in the British Museum (Natural History) at South Kensington, which is now the address of the Scheme. All new rings are being inscribed "BRITISH MUSEUM NAT. HIST. LONDON", but existing stocks will continue to be used. A close association is being maintained with *British Birds*, which will still be the medium of publication.

The Committee highly appreciates the honour of being entrusted with the future management of a Scheme which has already had such great success and is in so flourishing a state. The maintenance of this active and fruitful investigation for twenty-eight years is not the least among Mr. Witherby's important contributions to ornithological science, and it is indeed a privilege to be allowed a share in carrying on his work. The Committee is also most fortunate in being allowed to conduct the Scheme from the British Museum (Natural History), and desires warmly to thank the Trustees for the facilities given there.

The Committee is constituted as follows : Dr. A. Landsborough Thomson (Chairman), Mr. A. W. Boyd, Mr. A. B. Duncan, Mr. P. A. D. Hollom, Lord Ilchester (representing the British Museum Trustees), Lord Mansfield, Mr. H. F. Witherby (representing *British Birds*) and Miss E. P. Leach (Hon. Secretary). On the last-named the main burden of the task has naturally fallen ; her colleagues on the Committee are very sensible of the fact that the Scheme is greatly dependent on the time and trouble which Miss Leach

*Continuing the series of reports published annually since 1910, of which the last was "The *British Birds* Marking Scheme : Progress for 1936", by H. F. Witherby, *British Birds*, 1937, Vol. XXX., p. 337.

†"The Future of the *British Birds* Ringing Scheme : Transfer to the British Trust for Ornithology", *British Birds*, 1937, Vol. XXXI., p. 5.

gives so freely to the heavy headquarters' work, of which she had acquired full experience as Mr. Witherby's associate in the enterprise during recent years.

FINANCE.

The question of finance has given the Committee some concern, as under the new arrangements it is necessary that the Scheme should be entirely self-supporting. Expenditure has increased owing to the growing volume of correspondence, to the higher price of certain improved types of ring, and to the cost of clerical assistance which was previously provided free of charge in the office of *British Birds*. Apart from a generous subvention of £25 per annum from *British Birds* in lieu of former services, there is no regular source of income except the subscriptions from co-operators at the rate of 6s. per hundred rings issued.

The Committee is reluctant to propose a general increase in the rate of subscription, say to 7s. 6d. per hundred rings; although this would no more than cover the cost, it might make it difficult for some ringers to continue their co-operation on the present scale. The Committee therefore decided, in the first instance, to make a limited appeal for special contributions to the fund from such ringers as might be able and willing to give further help. To this there has already been a generous response, in donations ranging from 2s. 6d. to £5, for which the Committee is most grateful.

In addition to the need for covering essential expenses, the Committee is most anxious that some extra funds should be available for extending the Scheme in particular directions. With provision for expenses it should be possible to make special arrangements for ringing large numbers of certain species from which results of unusual interest may be expected.

Accounts will be published in due course.

NUMBER OF BIRDS RINGED.

				<i>Trapped.</i>	<i>Nestlings.</i>	<i>Total.</i>
In 1937	...	...	...	21,900	23,281	45,181
„ 1936	...	...	...	19,235	29,428	48,663
„ 1935	...	...	...	16,066	30,364	46,430
„ 1934	...	...	...	17,835	31,816	49,651
„ 1933	...	...	...	10,466	27,975	38,441
„ 1932	...	...	...	7,643	22,950	30,593
„ 1931	...	...	...	7,041	22,513	29,554

In 1909	...	2,171	In 1920	...	5,276
„ 1910	...	7,910	„ 1921	...	8,997
„ 1911	...	10,416	„ 1922	...	9,289
„ 1912	...	11,483	„ 1923	...	12,866
„ 1913	...	14,843	„ 1924	...	18,189
„ 1914	...	13,024	„ 1925	...	18,233
„ 1915	...	7,767	„ 1926	...	23,432
„ 1916	...	7,107	„ 1927	...	21,625
„ 1917	...	6,926	„ 1928	...	24,479
„ 1918	...	5,937	„ 1929	...	25,243
„ 1919	...	3,578	„ 1930	...	28,610
Grand Total	...	...	...	...	575,914

As will be seen from the table, the total of birds ringed in 1937 is very satisfactory, although it is rather less than in any of the last three years. The number of birds trapped is again a record, but the number of birds ringed as nestlings has fallen; the two figures seem to be approaching equality.

The second table shows the numbers ringed by individual co-operators. Fourteen of the totals run into four figures, and five of them exceed two thousand.

The highest total was achieved by the Skokholm Bird Observatory, with 4,402. This included 1,448 Manx Shearwaters, 904 Gannets, and 603 Razorbills. This represents a very noteworthy contribution to the work.

Mr. Charteris has once more marked over three thousand birds. His total of 3,044 includes 1,396 Chaffinches, mostly netted at their winter roosts.

Mr. Morshead has again been active in trapping. His excellent total of 2,546 includes 1,272 Starlings.

Mr. Robinson maintains a high total, 2,108, mostly by ringing nestlings. These include 1,367 Terns of various species, and 200 Gannets. An interesting item, however, is 220 adult Puffins caught at their nesting burrows.

Mr. Mayall's total of 2,024 is also largely made up of nestlings, including 348 Nightingales.

The London Natural History Society has a total of 1,976, including 937 Manx Shearwaters. The Oxford Ornithological Society's 1,835 is mainly made up of trapped birds, notably Starlings. Mr. Marchant has a well-distributed 1,234. The 1,144 marked for the Zoological Society at Whipsnade by Mr. E. A. Billett include 333 trapped Jackdaws. Mr. Cohen's 1,129 include 303 nestling Sandwich Terns. Rugby School records 1,114; Mr. Boyd 1,056; Dr. Moon, who has for many years headed the list, but was not able to do so much last season, 1,030; and Winchester College, 1,004.

The third table, in the usual cumulative form, gives the totals under species, with the numbers and percentages of recovery records to date. The most notable difference is the further increase in the number of Manx Shearwaters marked, the grand total for the species being now over 10,000. There has also been a big increase in the number of Gannets marked during the year.

Some species not shown in the table have been marked in small numbers. They include, for the first time, Mealy Redpoll, Little Bunting, Yellow-breasted Bunting, Waxwing, Red-breasted Flycatcher, Yellow-browed Warbler, Siberian Lesser Whitethroat, Hen-Harrier and Common Scoter.

RECOVERIES.

Two lists of recoveries* have been published since the last report, and these give ample evidence of the value and interest of the results which are being steadily accumulated.

<i>Trapped.</i>	<i>Nest- ling.</i>	<i>Total.</i>	<i>Trapped.</i>	<i>Nest- ling.</i>	<i>Total.</i>
Skokholm B. Obs. 2,059	2,343	4,402	J. Barnes ... 207	211	418
G. Charteris 2,401	643	3,044	E. L. Arnold ... 239	161	400
P. Morshead 2,313	233	2,546	R. M. Garnett ... 158	222	380
H. W. Robinson 242	1,866	2,108	Bootham School 172	195	367
A. Mayall ... 304	1,720	2,024	P. Hollom ... 320	19	339
London N. H. Soc. 1,075	901	1,976	Blundell's S. ... 24	311	335
Oxford Orn. Soc. 1,560	275	1,835	Miss Ferrier ... 13	322	335
S. Marchant ... 656	578	1,234	Sedbergh S. ... 75	260	335
Zool. Society 1,021	123	1,144	C. F. Tebbutt ... 88	213	301
E. Cohen ... 433	696	1,129	W. A. Cadman ... 61	239	300
Rugby School ... 88	1,026	1,114	M. Boardman ... 275	—	275
A. W. Boyd ... 671	385	1,056	E. G. Holt ... 242	28	270
H. J. Moon ... 184	846	1,030	C. S. Clarke ... 19	226	245
Winchester Coll. 513	491	1,004	J. Bartholomew 9	200	209
"Wippletree" ... 270	629	899	University Coll.		
Leighton Park S. 648	130	778	Exeter ... 163	45	208
I. o. May B. Obs. 753	9	762	Midlothian Orn. C. 7	199	206
A. J. Harthan ... 556	57	623	Cheltenham Coll. 22	183	205
A. H. and W. J.			Lord Dumfries ... 23	173	196
Eggeling ... 455	145	600	R. H. Brown ... 1	188	189
C. Wontner-Smith 60	524	584	St. Edmund's S. 4	184	188
N. H. Joy ... 435	68	503	G. Brown ... 8	179	187
A. Wainwright ... 315	178	493	H. B. Smith ... 175	—	175
R. G. Williams ... 17	472	489	C. Oakes and		
B. Coulson ... 287	181	468	E. Battersby ... 3	170	173
W. Pollok-Morris 204	244	448	Woodcock Inquiry 1	170	171
Mrs. Hodgkin ... 8	434	442	Brentwood S. ... 16	145	161
R. Martinson ... 35	398	433	E. Peake ... 155	5	160
J. F. Thomas ... 39	387	426	A. H. Bishop ... 34	112	156

*"Recovery of Marked Birds", by E. P. Leach, *British Birds*, 1937, Vol. XXXI., pp. 112 and 139; and *British Birds*, 1938, Vol. XXXI., pp. 302 and 323.

			<i>Nest-</i>						<i>Nest-</i>			
<i>Trapped.</i>			<i>ling.</i>	<i>Total.</i>	<i>Trapped.</i>			<i>ling.</i>	<i>Total.</i>			
E. J. Buxton ...	22	133	155	Miss Medcalf ...	4	65	69					
H. G. Alexander	147	—	147	Repton School...	48	19	67					
L. Monks and K. Williamson	2	145	147	Miss Elisabeth Sharp ...	2	63	65					
E. U. Savage ...	—	146	146	R. V. Marshall...	11	53	64					
D. Lack ...	87	58	145	J. Sumner and C. Buchan ...	60	1	61					
H. S. Langstaff	10	128	138	H. V. Bamford...	—	57	57					
Barnard Castle S.	61	76	137	F. A. Craine ...	7	48	55					
L. C. Kaye ...	71	62	133	R. D. Chancellor	15	39	54					
T. R. Tallis ...	—	129	129	R. E. Knowles	25	27	52					
A. Clark ...	127	—	127	H. Tully ...	48	2	50					
J. W. Lochore ...	14	112	126	H. Martin ...	21	28	49					
W. E. Kenrick...	113	4	117	Mrs. Greenlees	3	45	48					
Miss Hutchinson	5	104	109	H. S. Greg ...	—	48	48					
W. S. Cowin ...	96	9	105	C. H. Kaye ...	18	29	47					
P. A. Hirst ...	8	96	104	M. Philips Price	26	20	46					
R. S. Harkness	47	56	103	Shrewsbury S. ...	6	38	44					
C. W. Heycock...	49	53	102	Perths.N.H.Soc.	—	43	43					
J. Staton ...	70	31	101	J. Cunningham	40	2	42					
E. Blezard ...	1	97	98	H. Pease ...	42	—	42					
M. Wainwright...	2	90	92	Abbotsholme S.	10	29	39					
D. J. Robertson	1	86	87	F. Offen ...	26	12	38					
E. H. Bray ...	64	15	79	Sutton Valence S.	10	28	38					
E. Wishart ...	4	72	76	F. J. Ramsay ...	19	16	35					
Miss Henderson	1	68	69									

NUMBERS OF EACH SPECIES RINGED.

	1909 to 1936	1937			Grand Total.	RECOVERED	
		Trapped.	Nest- lings.	Total.		of those ringed 1909-36.	Per- centage.
Raven...	117	—	16	16	133	10	8.5
*Crow, Carrion	1043	1	107	108	1151	60	5.8
Rook ...	4094	125	289	414	4508	187	4.6
Jackdaw ...	2652	383	225	608	3260	104	3.9
*Magpie ...	726	8	69	77	803	24	3.3
Jay ...	382	10	29	39	421	25	6.5
Starling ...	43839	4981	934	5915	49754	1893	4.3
Greenfinch ...	21803	1543	326	1869	23672	1423	6.5
*Goldfinch ...	360	6	27	33	393	7	1.9
Redpoll, Lesser	544	3	11	14	558	3	0.5
Linnet ...	8391	142	515	657	9048	61	0.7
Bullfinch ...	1387	12	37	49	1436	49	3.5
Chaffinch ...	23020	2741	310	3051	26071	890	3.9
Brambling ...	525	255	—	255	780	24	4.6
Sparrow, Tree	1969	62	72	134	2103	45	2.3
Bunting, Yellow	4371	233	51	284	4655	229	5.2
Bunting, Reed	1600	42	41	83	1683	75	4.7
Lark, Sky ...	3376	71	11	82	3458	33	1.0
Pipit, Tree ...	1641	13	12	25	1666	4	0.2
Pipit, Meadow	4133	318	62	380	4513	79	1.9
Wagtail, Yellow	890	21	27	48	938	4	0.4
Wagtail, Grey	662	—	22	22	684	1	0.1
Wagtail, Pied	5180	117	166	283	5463	69	1.3
Tit, Great ...	3841	376	60	436	4277	608	15.8
Tit, Blue ...	5299	873	78	951	6250	981	18.5

	NUMBER OF EACH SPECIES RINGED.				Grand Total.	RECOVERED	
	1909 to 1936	Trapped.	1937 Nest- lings.	Total.		of those ringed 1909-36.	Per- centage.
Shrike, R.-backed	765	2	10	12	777	3	0.4
Flycatcher, S.	3131	45	41	86	3217	9	0.3
*Flycatcher, Pied	975	33	86	119	1094	7	0.7
Chiffchaff ...	749	61	12	73	822	5	0.7
Warbler, Willow	8830	485	30	515	9345	41	0.5
Warbler, Wood	945	3	22	25	970	2	0.2
Warbler, Reed	860	1	20	21	881	4	0.4
Warbler, Sedge	1038	103	15	118	1156	4	0.4
Warbler, Garden	1150	31	25	56	1206	1	0.08
Blackcap ...	838	10	23	33	871	1	0.1
Whitethroat ...	3525	353	15	368	3893	20	0.6
Thrush, Mistle	3860	28	247	275	4135	84	2.2
Thrush, Song...	56932	555	2510	3065	59997	1045	1.8
Redwing ...	314	262	—	262	576	—	—
Ouzel, Ring ...	437	42	—	42	479	5	1.1
Blackbird ...	47000	1436	2282	3718	50718	1935	4.1
Wheatear ...	1547	67	8	75	1622	30	1.9
Whinchat ...	1532	16	23	39	1571	11	0.7
Stonechat ...	698	10	33	43	741	5	0.7
Redstart ...	1792	37	39	76	1868	10	0.6
Nightingale ...	2018	1	366	367	2385	4	0.2
Redbreast ...	18327	851	615	1466	19793	1567	9.1
Sparrow, Hedge	12134	567	390	957	13091	986	8.1
Wren ...	3521	47	15	62	3583	16	0.5
Dipper ...	1054	1	49	50	1104	10	0.9
Swallow ...	36434	128	2094	2222	38656	327	0.9
Martin ...	10425	53	298	351	10776	69	0.7
Martin, Sand...	4331	93	47	140	4471	11	0.3
*Swift ...	818	20	32	52	870	51	6.2
Nightjar ...	198	—	13	13	211	2	1.0
Kingfisher ...	596	1	14	15	611	27	4.5
Wryneck ...	344	—	—	—	344	6	1.7
Cuckoo ...	618	4	26	30	648	17	2.8
*Owl, Little ...	461	11	28	39	500	42	9.1
Owl, Long-eared	193	—	—	—	193	7	3.6
Owl, Barn ...	483	5	51	56	539	42	8.7
Owl, Tawny ...	780	6	49	55	835	46	5.9
Peregrine Falcon	62	—	—	—	62	7	11.3
*Merlin...	167	1	15	16	183	39	23.4
Kestrel ...	698	1	62	63	761	76	10.9
*Buzzard ...	231	—	30	30	261	13	5.6
Hawk, Sparrow	416	2	32	34	450	58	13.9
Heron, Common	1775	1	102	103	1878	193	10.9
Sheld-Duck ...	413	—	23	23	436	20	4.8
Mallard ...	5678	292	9	301	5979	772	13.6
Teal ...	1035	6	2	8	1043	134	12.9
Wigeon ...	232	5	—	5	237	25	10.8
Duck, Tufted	151	5	—	5	156	29	19.2
Eider ...	799	1	9	10	809	40	5.0
Cormorant ...	1636	—	189	189	1825	317	19.4
Shag ...	1549	1	7	8	1557	154	9.9
Gannet ...	5126	25	1233	1258	6384	188	3.7
Shearwater, Manx	6886	2089	1157	3246	10132	228	3.3

	NUMBER OF EACH SPECIES RINGED.				Grand Total.	RECOVERED	
	1929 to 1936	Trapped.	1937 Nest- lings.	Total.		of those ringed 1909-36.	Per- centage
Wood-Pigeon...	2490	4	96	100	2590	92	3.7
Dove, Stock ...	510	15	22	37	547	39	7.6
Dove, Turtle ...	537	17	19	36	573	51	9.5
Stone-Curlew...	187	—	27	27	214	9	4.8
Oyster-catcher	1134	1	110	111	1245	44	3.9
Plover, Ringed	1149	—	104	104	1253	15	1.3
Plover, Golden	266	—	12	12	278	3	1.1
Lapwing ...	31119	1	1630	1631	32750	672	2.2
Sandpiper, C.	786	—	31	31	817	3	0.4
Redshank ...	1876	1	85	86	1962	67	3.6
Curlew, Common	2518	—	104	104	2622	99	3.9
Snipe, Common	1328	8	67	75	1403	73	5.5
Woodcock ...	4586	1	300	301	4887	331	7.2
Tern, Sandwich	13169	—	1163	1163	14332	229	1.7
Tern, Common	16516	23	1305	1328	17844	444	2.7
Tern, Arctic ...	1611	—	371	371	1982	8	0.5
Tern, Little ...	633	7	27	34	667	3	0.4
Gull, B.-headed	13244	374	20	394	13638	614	4.6
Gull, Common	1561	17	70	87	1648	45	2.9
Gull, Herring...	6339	13	455	468	6807	133	2.1
Gull, L. Blk.-bkd.	9839	—	312	312	10151	371	3.7
Gull, G. Blk.-bkd.	399	4	14	18	417	13	3.3
Kittiwake ...	1350	3	123	126	1476	15	1.1
Razorbill ...	2179	87	519	606	2785	42	1.9
*Guillemot ...	1744	20	90	110	1854	39	2.2
Puffin ...	3724	322	97	419	4143	46	1.3
Rail, Land ...	387	—	1	1	388	4	1.0
Moor-hen ...	1438	58	20	78	1516	34	2.4
Coot ...	134	3	—	3	137	11	8.2

*Of species so marked no record was kept of the number ringed from 1913 to 1920.

NOTES

SONG OF GREY WAGTAIL.

I FIND that Mr. H. G. Alexander's Chart of Bird-Song (*antea*, Vol. XXIX, p. 194) has no record of the song of the Grey Wagtail (*Motacilla c. cinerea*) between mid-January and mid-March. The report of a song which I heard at 5.20 p.m. on February 24th, 1938, may therefore be of interest. Throughout the winter I have been watching a young Grey Wagtail which haunts a deep ditch with running water and overhanging trees and bushes near the river Weaver at Beambridge, Nantwich, Cheshire. This evening, as I approached the ditch from the side which is lined by hedge-row and trees, I heard unusual rather tit-like notes, interspersed occasionally with little trills, proceeding from the ditch. I crossed the footbridge to the other side and saw *two* Grey Wagtails perched on the wire fence on the other side of the ditch, and the song was coming from one of these. I mentally figured the song as "see-see, see-see, trill", or "see-see, see-see" without a trill, repeated several times with little pause. This seems to agree with the recordings of E. M. Nicholson and Stanley Morris as given on page 105 of Nicholson and Koch's *Songs of Wild Birds* and is not unlike "the longer songs" noted by Voigt (*Exkursionsbuch* 10th edn., p. 90) as *zisisisi huit huit sirrrr doit säsäsäsä zuit*.

J. LODGE.

CONTINENTAL GREAT TIT IN GLOUCESTERSHIRE.

A CONTINENTAL Great Tit (*Parus m. major*) with a Rossitten ring, G 463182, was found dead in a garden in Cotham Park, Bristol, on February 4th, 1938. This bird was ringed as a nestling near Bautzen, Saxony, on May 20th, 1937, and is the first occurrence in this country of a ringed Great Tit from the Continent. Bautzen is about 700 miles east of Bristol. It may be mentioned that there is in the Bristol Museum a Black-headed Gull (*Larus r. ridibundus*), which was ringed also near Bautzen, on June 4th, 1931, and found dead at Blagdon, Somerset on January 5th, 1935.

H. TETLEY.

BLUE TIT'S SWINGING ROOST.

DURING three successive winters a Blue Tit (*Parus c. obscurus*) roosted close to my window, in a small cardboard cream carton that hung, upside down, on a length of string tied to the branch of a tree. The bird slept on a perch wedged across the mouth of this carton about half an inch from the lip.

Twice the string rotted, precipitating the bird during the night, and in time holes appeared in the roof and sides of this improvised "tit-bell", but without, it seems, affecting the amenities of this strange roosting place.

A breath of wind would set the bell swinging or spin it round (to a lesser extent) on its own axis. And on very windy nights the bird was literally blown out, after a buffeting of sometimes two hours. On moderately windy nights, however, it managed to cling to its swaying perch, even though the bell frequently struck the branches of the tree, and all the time twisted and jerked backwards and forwards through an arc of more than a yard.

I did not ring the bird and do not know whether it was the same individual that slept in this way for three winters. On the other hand, I got a second Tit to sleep in an inverted flower-pot hanging in a more sheltered position by another window. And later, when I had lost sight of these two birds, a Blue Tit roosted for a while in a bell swinging amongst the branches of a willow two hundred yards from the house.

One must believe, I suppose, either that a swinging and revolving roost is highly attractive to at least a small fraction of this acrobatic species; or, which seems more likely, that an inverted bell-shaped roost is so attractive that its many disadvantages are borne with equanimity. G. B. GOOCH.

NESTLING REDWING.

As there appears to be no published description of the nestling Redwing (*Turdus m. musicus*), the following notes taken on a fjeldside above Vossevangen, West Norway, on July 10th, 1934, may be of interest.

Nest in juniper; four young, three days old. Description of nestling: Down fawn, plentiful and long but very scanty on orbital tract; distribution, inner supra-orbital, occipital, spinal, humeral and ulnar. Bill purplish grey. Mouth, inside, gamboge yellow; tongue similar and unmarked; gape-flanges ivory. Skin on body yellow; legs purplish pink.

JOHN ARMITAGE.

THE IRISH DIPPER IN WEST SCOTLAND.

COL. R. MEINERTZHAGEN, writing in the *Ibis*, 1934, p. 58, was, I believe, the first to show that the Irish form of Dipper (*Cinclus c. hibernicus*) extended beyond Ireland, when he recorded that three examples from the Isle of Arran were referable to this darker race. A short note (*antea*, p. 236) enumerated this race from Kintyre, the most southern point of the Argyllshire mainland, and facing Arran.

I am fortunate in possessing considerable autumn and spring material from West Scotland, and a critical examination of this shows that the range of *C. c. hibernicus* covers Ayrshire and Renfrewshire, though a few examples from the latter county are slightly intermediate. What worn breeding specimens I have from north Lanarkshire, are hard to place accurately, but they most certainly show a leaning towards *hibernicus* rather than *gularis*. I also place a single June example from Dumbartonshire in the same category, but a breeding female from Callander, Perthshire, is without doubt *Cinclus c. gularis*. As far as my material goes at present the range of *C. c. hibernicus* in West Scotland is almost identical with that of *Saxicola t. theresæ*, and *Prunella m. hebridium*, and it is improbable that this form of Dipper extends much further inland.

PHILIP A. CLANCEY.

SHOVELER BREEDING IN THE ISLE OF WIGHT.

It may be of interest to record that, in April, 1937, the Shoveler (*Spatula clypeata*) bred in the Isle of Wight.

The nest was on Brading Harbour, situated in coarse grass some distance from water. It contained 12 eggs, 11 of which were successfully hatched, the remaining one being infertile. I had the nest under observation throughout the period of incubation. The duck sat very closely, even in the early stages of brooding and when flushed always gave me an excellent example of "injury feigning". On one occasion I followed her until she took wing and after pacing carefully back found she had led me 125 yards!

I am unaware of a previous record of the Shoveler breeding in the island.

W. KENNETH FROGGATT.

OILED BIRDS RESORTING TO FRESH WATER.

MR. E. C. ARNOLD writes to us that on visiting a pond in the shingle near Rye Harbour on December 29th, 1937, he found a collection of the following dead birds:—

Over 70 Scoters (*Oidemia n. nigra*), about 20 Velvet-Scoters (*O. f. fusca*) and a Red-throated Diver (*Colymbus stellatus*). There were also a few live birds on the water, namely a Red-throated Diver, 3 Velvet-Scoters and several Common Scoters. This fresh-water pond is some 200 yards from the sea.

Such collections of dead birds are regularly to be observed in the winter at the fresh-water or brackish pools just inland of the sea-wall bordering Romney Marsh. At the beginning of January, 1935, Mr. P. Allen counted at the Midrips and Wicks the corpses of 40 Scoters and 81 Velvet-Scoters, while on January 9th, 1938, I saw 34 Scoters and 15 Velvet-Scoters

there. The large totals are always the result of a process that has been going on over several weeks. It is seldom that the birds all come into the pools at once. Of those seen, for instance, this January, 2 Velvet-Scoters came in at the end of October and one of these was still alive (but the other had died) a fortnight later. Most of the others came in between December 10th and 26th and had been gradually dying since then.

The birds appear to be poisoned by something in the oil which they swallow when preening to rid themselves of it. In many cases the actual extent of the oiling on the feathers is quite insufficient to interfere with either flight or diving and often patches of oil are only 3 or 4 inches long by 2 inches wide on one flank and yet the bird has died in a condition of extreme emaciation. Probably it is an irritant poison that causes thirst that only freshwater can satisfy and hence probably the urge to seek these pools. Starvation, no doubt, has some bearing on the fatal issue and this may to a certain extent be voluntary in that the birds' digestive organs are so affected as to destroy all desire for food. In any case there is no normal food available for them in these pools and except during the first few days after their arrival, when a certain number flight to and from the sea, they evince no desire to leave the fresh water. Later they become too weak to do so.

Occasionally odd birds seek fresh water much farther inland, such as the Romney Marsh Fleets, three or four miles from the sea, while Mr. B. J. Brooker informs me of single corpses being found recently in the Brede valley and of a living bird on the lake in Ashburnham Park between five and seven miles inland.

An incidental point noticed by Mr. Arnold and confirmed by my own observations over a number of years is the preponderance in these collections of oiled corpses of adult males and especially in the case of Velvet-Scoters.

N. F. TICEHURST.

BLACK-THROATED DIVER IN WARWICKSHIRE.

ON February 24th, 1938, on one of the groups of lakes at Earlswood I discovered a Black-throated Diver (*Colymbus a. arcticus*). The bird, which was in winter plumage was very tame, allowing of close approach, this together with a good light and telescope rendered observation excellent.

The shape of the bill was necessarily the main feature in identifying this bird.

During the afternoon I got in touch with Mr. H. G. Alexander who visited the Reservoir and confirmed my diagnosis. The bird was last seen on March 2nd.

It is interesting to note that although both Great Northern and Red-throated Divers have appeared in the county from time to time this is, as far as I am aware, the first time that the Black-throated has been recorded. C. A. NORRIS.

ARCTIC RINGED PLOVER IN SOMERSET AND DEVON.

THE under-mentioned skins in the Bristol Museum and Art Gallery collections have been identified by Dr. G. Carmichael Low as those of the Arctic Ringed Plover (*Charadrius h. tundrae*) and he has kindly supplied the measurements. Details are :—

Sex.	Locality and Date.	Wing.	Tail	Bill.	Tarsus.
Ad. ♂	Portishead, Somerset, August 29th, 1922 ...	130	56	15	25 mm.
Ad. ♂	Burnham, Somerset, August 13th, 1923 ...	128	52	15	25 mm.
Juv. ♀	Cheriton Fitzpaine, Devon, January 9th, 1935	125	49	14	24 mm.

These are the first definite records for Somerset and also, it is believed, for Devon. H. TETLEY.

THE LONG-TAILED SKUA IN THE CHANNEL IN NOVEMBER.

V. C. WYNNE-EDWARDS ("On the Habits and Distribution of Birds in the North Atlantic", *Proc. Boston Soc. Nat. Hist.*, Vol. XL, 1935, p. 306) convincingly shows how predominantly the Long-tailed Skua (*Stercorarius longicaudus*) is an oceanic migrant and how rare by comparison is its coastwise transit. For this reason and also because of its unusual lateness it may be of interest to record an observation I made of the species in the English Channel on November 2nd, 1937. When crossing from Cherbourg to Southampton by the *Arlanza* on that day, I became aware of the Skua among the flock of following gulls (mostly Herring-Gulls with a few Lesser Black-backs) when about half-way across, at 11.54 a.m. I had a good view of this quite distinctive species on numerous occasions as it gracefully kept its place with the gulls and scrambled with them for cast-off scraps. It kept in the ship's company for the remainder of the journey, even continuing for a little way up the Solent, when I lost sight of it. Wynne-Edwards states that this species starts on its autumn passage

to the south in the last week of July, the movement reaching its maximum by the second half of August and being practically over by mid-October. He quotes October records for the eastern Atlantic for Ushant and the Bay of Cadiz. My observation appears to be among the latest on record for this latitude.

D. L. SERVENTY.

EARLY MARTIN IN GLOUCESTERSHIRE.—Mr. R. N. H. Whitehouse informs us that he and Mr. D. J. Brown observed a Martin (*Delichon u. urbica*) near Tewkesbury, Gloucestershire, on March 8th, 1938. The bird flew within a few yards of them and they particularly observed its white rump and white under-parts. This is a very early date for the appearance of the bird.

BEE-EATER IN CORK.—Mr. A. E. O. Waters states (*Irish Nat. Journal*, 1937, p. 278) that he saw a Bee-eater (*Merops apiaster*) near Aghern, co. Cork, on August 11th, 1937. Very slight particulars are given, but from information supplied the identification appears to have been correct.

ROUGH-LEGGED BUZZARDS IN KENT AND SUSSEX.—A Rough-legged Buzzard (*Buteo l. lagopus*) was reported in October, 1937, near Dungeness (*antea*, p. 275) and Mr. R. K. Cornwallis and Miss J. M. Swan inform us that this bird has remained in the same locality and on February 13th was seen there with a second bird which they identified as of the same species.

EARLY GARGANEY IN MIDDLESEX.—Mr. W. R. Philipson informs us that he identified a drake Garganey (*Anas querquedula*) on Ruislip Reservoir on March 7th, 1938, and that the bird remained until the 10th.

SMEWS IN SURREY.—Mr. P. A. S. Hirst informs us that he saw a Smew (*Mergus albellus*) on a pond near Godalming on February 13th, 1938, on the 16th and for several days later two others were with it. The birds were in female plumage.

LITTLE AUK INLAND IN DORSET.—Mr. G. K. Yeates informs us that a Little Auk (*Alle alle*) was picked up apparently exhausted, but in no way damaged, at Glanville's Wooton (about 20 miles inland) on February 15th, 1938.

RUFF IN DEVONSHIRE IN WINTER.—Mr. R. F. Moore reports that he with Messrs. Blackmore and Palmer watched a Reeve (*Philomachus pugnax*) in the Taw Estuary marshes on December 12th, 1937.

REVIEW.

Handbuch der Deutschen Vogelkunde. Edited by G. Niethammer. Bd. I. Passeres (Leipzig : Akademische Verlagsgesellschaft, 1937).

THE late Ernst Hartert was so impressed with the plan of the *Practical Handbook* that after this had been taken in hand he immediately proposed the production of a similar handbook for Germany. Preparations for this were actually begun under Dr. le Roi in 1913, but his death and the War held up the work, and later the difficulty of finding an editor was such that it was not until 1934 that Dr. G. Niethammer undertook to carry it through, with the assistance of seven other German ornithologists. The first volume of this excellent and compact Handbook, which we understand is to be completed this summer by a further volume in two sections, is now before us and reflects the greatest credit on all concerned.

The main difference in plan of the *Handbuch* and the *Practical Handbook* is that orders, families and genera are not described, no reference is given to the original description in the synonymy and the descriptions of plumages, moults and structure are much less full. Unusual visitors are much less fully treated in all sections than residents and regular migrants. On the other hand there is an additional section on parasites and a section is devoted specially to habitat, as it is in our new *Handbook*. The classification, following as it does Hartert's *Die Vögel der paläarktischen Fauna*, agrees closely with ours, though we notice that the Sparrows and Snow-finches are retained in the *Fringillidæ* instead of being placed in the *Ploceidæ*, which we now consider to be their correct position, as will be seen in the new *Handbook*. The nomenclature of this *Handbuch* and ours are remarkably uniform, which justifies in a striking way the claim that adherence to the principles of strict priority in nomenclature would bring uniformity.

The distributional data are divided under the heads of general distribution of the species or "Rassenkreis", general distribution of the race or races occurring in Germany, German distribution or occurrence of the same, and migrations, including ringing results. This method entails some repetition, but certainly adds to lucidity and the requisite space is secured by condensation in some of the other sections. In the case of species in which no sub-species are recognized the first two sections are combined in one. The diagrammatic maps illustrating the distribution or migrations of certain species are a new and valuable feature.

The section on field-characters while containing much useful matter undoubtedly suffers from over-compression. This is particularly true of the portion devoted to notes. We fully recognize that only a summary treatment of the main notes is intended, but too often this is confined to verbal renderings without, or without adequate, indications of the quality of the sound, and rarely with any attempt at comparison with the notes of allied species, even where this is important for field purposes. There can be no doubt that a quite small expansion on the lines indicated would have considerably enhanced the value to field workers of the data given.

Undoubtedly the best and most complete section is that devoted to reproduction. Here we find a significant and very remarkable advance. The *Practical Handbook* was a pioneer work in this field, but the researches of the last twenty years have added enormously to our knowledge of the life-history of birds. In the *Handbuch* a considerable saving of space has been effected by the omission of all

details of the breeding and often even the habitat of species which do not nest in Germany. This is, we think, to be regretted, though it is certainly arguable that the breeding of a rare migrant is not strictly a point which concerns the field-worker on German birds. This is so. Yet unless we have some details as to the reproduction of all species it is impossible to generalize from those which happen to breed within an arbitrary limit. But dealing with the German breeding species alone, there is now the skeleton of a complete history of the breeding cycle. Condensed, but useful, particulars are given in many cases with regard to such matters as territorial behaviour, choice of nest-site, etc., while data on age at which maturity is reached, period when incubation commences, share of sexes in feeding, etc., are all new features, and many details previously unknown have been added to those already recorded. The work of British observers has been carefully noted, though we find in some cases that notes on British local races are incorporated without comment under corresponding Continental forms. The work is naturally still incomplete, but has set a new standard in general European literature on this subject. A few errors and discrepancies are inevitable in work of this kind, but the general advance is very striking.

The Food section has been carefully worked out, but in rather general terms. Here again the work has been much simplified by the omission of food paragraphs in the case of occasional visitors. Presumably the information given relates solely to German limits—but we have not noticed any statement to that effect, though occasionally there is a general statement as to the usual food in the breeding haunts abroad. The book is illustrated, apart from the maps already mentioned, by good, if rather infrequent, text-figures and a coloured plate.

Dr. Niethammer and his collaborators have produced a thoroughly sound and most useful work, which should afford a very valuable aid and stimulus to ornithological work in Central Europe.

LETTERS.

INQUIRY INTO THE STATUS OF THE LANDRAIL OR CORNCRAKE, 1938.

To the Editors of BRITISH BIRDS.

SIRS,—Since at one or two widely separated localities in the Midlands this bird appears to be on the increase, and in places is actually re-establishing itself after years of absence, it has been thought desirable to hold a thorough inquiry into the present status of the species throughout the British Isles and this has been arranged in conjunction with the British Trust for Ornithology.

The Questionnaire sent out in this issue of *British Birds* is more or less self-explanatory. It is, however, desired that as much attention as possible should be paid to detail, especially in determining the state of the land frequented, as it has been suggested that the cause of the widespread decrease of the species was in some way connected with this question.

It should be noted that even a negative answer is of value. Whilst information not asked for in the Questionnaire will be welcome, manuscript will not be returned.

In estimating numbers, care should be taken to avoid being misled by the bird's ventriloquistic powers.

All communications connected with this Inquiry should be addressed to me.

C. A. NORRIS.

GRASSHOLME, STRATFORD-ON-AVON.

BIRD-FLIES.

To the Editors of BRITISH BIRDS.

SIRS,—Once again may I make an urgent appeal to all those ornithologists engaged in bird-ringing to collect ectoparasites, especially bird-flies, from birds. Having recently received a copy of an interesting report on the Hippoboscid flies collected from birds at the Austin Ornithological Research Station on Cape Cod, Massachusetts, it seems that we are far behind our American colleagues in making the utmost use of our opportunities to obtain parasites from birds without killing them. In order to learn something of the habits of these bird-flies (and other parasites such as ticks, fleas and lice) a vast amount of collecting is necessary and those engaged in bird-ringing have excellent opportunities to collect the various parasites.

In a paper shortly to be published in the *Entomologist's Monthly Magazine*, I have summarized briefly the evidence presented by about seventy records of two common species of bird-flies, namely *Ornithomyia avicularia* (Linn.) and *O. fringillina* Curtis. The former species seems to occur for the most part on the owls, hawks and pigeons, the latter species on waders, game-birds and small passerines. Two other species of bird-flies which are probably well known to most ornithologists are *C. pallida* (Latr.) specific parasite of the Swift (*Apus a. apus*) and *S. hirundinis* (Linn.), specific parasite of the House-Martin (*Delichon u. urbica*).

These bird-flies are a remarkable group of insects which have become modified in accordance with their parasitic habits. They are dorso-ventrally flattened insects, with a tough leathery integument; the head is sunk into an emargination of the thorax; the eyes are large, the antennæ are inserted in a depression in the front of the head; the mouth parts are of a piercing type and all the species are blood suckers. The legs are strong, bearing toothed claws. *Ornithomyia* spp. have well developed wings and are able to fly, whereas the two species occurring on the House-Martin and the Swift have reduced wings and are quite unable to fly.

The particular points concerning which I am anxious to obtain data are as follows:—

1. The earliest and latest dates when these flies are observed.
2. Whether the puparia (shining brown to black, ovoid, seed-like bodies) are observed among the feathers or in the nests of birds.
3. Whether juvenile birds are more frequently parasitized than adults.
4. The extent to which birds carry these flies on migration. (It seems fairly evident that they are not brought into the British Isles to any great extent by migrating birds, but it will be interesting to learn how many are found on birds leaving these islands on migration.)
5. The species of birds parasitized by the bird-flies. (Information regarding the number of birds examined which do not bear these flies is of equal interest.)

A method suggested by an American ornithologist for obtaining bird-flies is to hold the bird for a brief period in front of a closed window while its feathers are ruffled vigorously. The flies, then disturbed, fly to the window where they can be easily placed in a small tube.

These flies together with any other parasites from a *single* bird should be placed in a tube of approx. 70-80% alcohol together with a label bearing the following data: (1) Name of host, (2) adult or juvenile (sex, if possible), (3) locality, date and collector's name and (4) migratory or resident.

I shall be pleased to get into touch with anyone who is willing to collect parasites. If necessary, I can supply small tubes. All material received will be acknowledged and reported on. Communications should be addressed to me as below.

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BREEDING-HABITS OF THE DUNLIN.

BY

R. H. BROWN.

THE Dunlin (*Calidris a. schinzii*) breeds on the salt marshes fronting the Cumberland side of the Solway Firth and on the fells of the north Pennines. On the salt marshes the breeding ground is the level area of short grass intersected with little creeks and gutters and occasional pools. The breeding ground on the fells is usually above the two thousand feet altitude, where stretches of peaty land, growing cotton grass and broken up into hummocks and deep gutters, with odd little peaty pools, occur amongst the short grass and moss and creeping willow, with outcrops of limestone, that form the vegetation of the fell summits.

On the salt marshes the Dunlin usually has for nesting companions the Lapwing (*Vanellus vanellus*) and Redshank (*Tringa t. britannica*) and occasionally the Snipe (*Capella g. gallinago*) and Oystercatcher (*Hæmatopus o. occidentalis*) and Ringed Plover (*Charadrius h. hiaticula*). On the fells its usual nesting companion is the Golden Plover (*Charadrius a. apricarius*), and occasionally the Lapwing and Snipe. I have not, so far, found the Dunlin breeding at a greater altitude than 2,700 ft. (young found) and have found both the Golden Plover and the Lapwing breeding at this altitude— young found of both species—whilst I have suspected the Snipe of breeding at this altitude, as I have heard “bleating” in the spring above such high-lying land. On the salt marshes I have found occupied nests of the Dunlin and Redshank thirty-five yards apart; occupied nests of Dunlin and Snipe twenty-two yards apart, and of Dunlin and Lapwing twenty yards apart.

In April the Dunlin begins its courtship flight, which is performed by both sexes, whilst frequently three, or even four, birds partake in it and in addition it is often carried out whilst the adults are rearing young. Thus, in twos or threes or fours the Dunlins pursue each other in single file through the air, in a very rapid flight full of sudden twists and sharp turns; varied with long intervals of gliding when the birds hold their wings half vertically or V-shaped above their backs; legs straight out; whilst a rich trilling note is uttered that rises in cadence for several seconds, carrying a long way on the still marsh air, then abruptly ceasing. When only two birds, presumably cock and hen, partake in the courtship flight, sometimes only the one bird (the cock?) utters the

trilling notes, but on several such occasions both birds of a pair have been heard to utter the trilling notes, indicating that the hen trills as well as the cock.

At times a Dunlin will fly almost perpendicularly into the air, and, a certain altitude reached, will hover like a Skylark, gently rising and falling, whilst trilling the lovely rich notes that last for several seconds. Or again, after rising vertically into the air a Dunlin will begin to glide, with wings outstretched and slightly arched, head upturned, legs straight out, and uttering first a series of slow notes that finally merge into the rich trilling notes that rise in cadence for several seconds and then cease.

Although it is more usual for the birds to glide with their wings held half-vertically, on several occasions, especially after hovering, they have been observed to glide with wings outstretched and slightly arched, and twice the gliding bird, before trilling, has made a peculiar humming noise that, on a small scale, can be likened to the sound made by the wind through telegraph wires. A somewhat similar humming noise, although on a larger scale, is occasionally made by the Golden Plover during its courtship flight.

The trilling notes are sometimes uttered whilst the birds are walking in single file on the mud flats, and parties of obvious non-breeding Dunlins will occasionally burst forth into the trilling notes.

There is probably a display on the ground as after performing the courtship flight a Dunlin, on alighting, will frequently hold one wing aloft, bannerlike, to display the silvery-white underparts.

The nest is usually hollowed out in a small tuft of grass, the nest site generally near a pool or small creek. Exceptionally a depression in a grass mound or a peat mound is lined and used, a type of nest site used by the Golden Plover.

I have not found a full clutch of eggs earlier than May 10th, but on the other hand day-old nestlings have been found by May 27th one year, and in four different years by May 29th. Mr. Jourdain in *Practical Handbook of British Birds*, quotes W. Evans's record of the incubation period as twenty-two days; therefore the eggs that had hatched on May 27th must have been laid by May 5th, and those that hatched on May 29th by May 7th. These records refer to the salt marshes but day-old nestlings have been found on the fells, at an altitude of 2,700 ft., by June 1st.

The nestlings are an attractive sight on a fine sunny day when crouched on the short turf; their small size, the rich,

warm, reddish-buff down shading in places to light fawn and tipped with whitish spots, their little downy bodies make an agreeable contrast with the emerald green of the marsh turf.

The nestlings are brooded fairly constantly for the first few days of their lives, usually by the hen, but at times the cock will brood them, and it is during this period that the nestlings are easiest to find. After they are a week old and there is no longer any necessity, especially if the weather is fine and warm, to brood them constantly, the young take to hiding in the gutters and creeks and are very difficult to find, as the adults will not reveal their hiding places, but merely stand, at times preening themselves, and call to their young in hiding. I have ringed forty-three nestlings, and the majority were found when only a few days old.

When a pair of Dunlins have young a few days old, usually one adult, presumably the hen, will brood them whilst the cock keeps guard. As soon as a human being approaches the vicinity of the brooding adult the cock gives the alarm note, a short, sharp "twee", at the same time flying up into the air where he is quickly joined by the hen, and the two adults will fly around for several minutes in their rapid twisting flight, varied with intervals of gliding with their wings held half-vertical when the trilling notes are uttered. Finally, if the intruder is seated, both adults will presently alight near him and begin calling to each other, a note like "quoi-quoi". Then the cock slowly walks towards the intruder until he is within twelve or fifteen yards distance of him, the hen meanwhile remaining stationary. The cock is now stationary but still calls to the hen which, after a varying interval of time, if she thinks everything is safe, flies back to her young in a series of short flights, seldom more than three in number, her last flight landing her beside her young. As long as the human intruder makes no movement the cock will continue to call the "quoi-quoi" notes at intervals to the brooding hen, but should the intruder attempt to find the young, then the cock at once gives the alarm-note, the sharp "twee", and the hen usually flies off the young.

On one occasion a pair behaved as above except that the hen walked slowly through the grass for about sixty yards and then disappeared where she was flushed from a nest of unchipped eggs.

On three occasions I have found one adult only with the young, and on two of these occasions the adult, when disturbed from the young, has crept along the ground Sandpiper-fashion, with its back humped, tail fan-spread and trailing, wings

outspread with their tips trailing on the ground, the bird uttering the single alarm note of "twee". On the third occasion the adult, when disturbed from young, flew around in the air, frequently gliding with half-vertical wings and trilling the rich notes of the courtship song. If the first two adults from their behaviour were hens, then possibly the third adult, from its behaviour, was a cock. When both adults of a pair are present it is usual for the brooding adult to fly off the young, but once the young have been found, and especially if the young run a few yards to take fresh hiding, one adult will approach the intruder within a few feet and then begin creeping away from him with humped back and trailing tail and wings, whilst the other adult runs ahead calling, or flies around, hovering at times. It is assumed that it is usually the hen that creeps Sandpiper-fashion along the ground, although, of course, the cock may display like this. Certainly both adults assist at times in brooding the young, as on three separate occasions I have watched both the cock and the hen of a pair brooding the young in turn, and on one occasion I saw a pair changing-over during incubation.

One day a solitary adult was flushed from a brood of six young and began creeping along the ground with humped back and trailing wings and tail, at times uttering the alarm note, and in a very short time six or seven adults arrived upon the scene and began running ahead and calling or flying around and gliding or hovering. After an adult had alighted from such a flight it frequently displayed with one wing held aloft, bannerlike, to show the silvery white underparts.

On the coast and about the estuaries flocks of non-breeding black-breasted adults may be seen throughout the summer months, but on the salt marshes where the species breeds, flocking of the breeding adults and young is not usual before the second or third week in July although exceptionally I noticed flocking in one year by the end of June. On the other hand I have watched breeding adults on the salt marshes in the second week of July which from their behaviour obviously had young in hiding.

I have seen black-breasted Dunlins until the second week of October and white-breasted birds, in winter plumage, until the first week of April.

Once the breeding season is ended the salt marshes and fells are deserted until the next breeding season and the Dunlins are now to be found about the estuaries and low-lying coast, where they congregate commonly in flocks of hundreds whilst occasionally two or three of these flocks may unite and form

one large flock of several thousand birds, and the aerial evolutions of such a large flock on a sunny winter's day, now strung out in one long column, then hanging like a gigantic swarm of bees in the air, are very fascinating to watch. The Dunlin also associates readily with other waders, and parties or small flocks of Dunlins are commonly found during the autumn months feeding in company with Ringed Plovers or Sanderlings or Curlew-Sandpipers about the newly exposed mudflats or where the ebbing tide has left a thin film of water upon a stretch of sand ; whilst in company with Sanderlings the Dunlins frequently feed in the tidal shallows, although the Sanderlings usually wade in deeper than the Dunlins. Ringed Plovers and Sanderlings are also its associates during the winter months, as well as Knots and Redshanks and Godwits.

FURTHER NOTES ON THE HABITS OF SHELD-DUCK.

BY

HENRY BOASE.

IN *British Birds* for January, 1935 (Vol. XXVIII., pp. 218-224), the writer gave an account of the courtship and other habits of Sheld-Duck (*Tadorna tadorna*). Since then other matters of interest in the life-history of this species have come under notice, and these are detailed in this paper.

Little additional material has been found relating to the courtship. Reference is made in the 1935 notes to the distinctive forms of greeting used by the male and female. On March 3rd, 1935, these two forms were seen used at different times by a male and a female, both apparently unmated, without producing any response on the part of the other birds present (both male and female). It seems therefore that these two forms are definite display acts in themselves. Another minor variation relates to the "ak-ak-ak- -" trill. In April, 1936, a number of pairs feeding along the tide line gave trills so altered as to recall the call of Linnet in flock. The calling seemed to run in waves from silence to silence, and the sounds produced were quite unlike any normal duck notes so far heard.

Some records have been got which indicate that pairs may remain intact during the whole year. Pairs have been seen on the following dates: September 29th, 1934, September 8th, 1936, October 28th, 1922, October 10th, 1937, July 14th, 1935, July 27th, 1937, and repeated records in December. So far, display has been seen only once before January (October 25th, 1924), and only three times in January itself. There is little doubt, however, that the bulk of the Sheld-Duck are unmated during the winter.

During the last year or two the writer has paid some attention to the question of plumage details of paired birds. (Breeding pairs—that is, pairs with broods—are too few to serve here.) So far as field observation can go, there seems no doubt that one or both birds of a pair may show clear traces of juvenile characters in plumage. On the other hand, in the first days of March, 1937, a party of sixteen Sheld-Duck was noticed keeping apart. These were examined on March 20th, and at least eight (which could be seen properly) showed juvenile characters, and one had no trace of the chestnut pectoral band. One at least of this group lingered on its own until mid-May, and farther up-river two birds together with dull brown primaries were seen on the same day. A Sheld-Duck

without the pectoral band was seen off Kingoodie on May 26th. probably the bird seen in March. Similar records for a single bird and for a couple in this plumage were seen in April, 1935. At the end of June, 1937, two groups of seeming adults (the range was too great for detailed examination) were seen feeding in close company, evidently quite free from the jealousies of courtship, yet pairs were numerous all round them, ready to dispute with each other, and the single partners of brooding birds were feeding alone as usual. The number of birds present in June, 1937, amounted to about one hundred, although counts for May and July reached one hundred and fifty, so that the possible non-breeding group may have been from 13 to 20 per cent. of the total.

During the last few years, a partial albino Sheld-Duck has been seen repeatedly. It was first noticed in a party of young birds and one or two adults in eclipse on October 3rd, 1933, and recorded tentatively as abnormal. Not until 1935 was it seen again (if it were the same bird), on April 28th, and it lingered until June 2nd at least. At that time the black area of the head and neck in the abnormal bird was ashy-brown, the back was ashy, the wing-quills brown, and the pectoral band was absent. Seen again on April 5th, 1936, the head was patchy, the little colouring being pale ashy-brown. The bill was dull orange-red. This bird was seen again in 1937 during May and up till July 6th.

When this albino was seen off Kingoodie on April 5th, 1936, it seemed to be in company with a group of four or five pairs and one unattached bird judged to be a male. The abnormal bird seemed to be of interest to the solo male and also to the males of the various pairs. When it swam near, all seemed to watch it. Twice at least the albino gave the "bill-toss" display (a male act), yet it also gave the "scooping" action used by the normal female in greeting its mate. The males seemed puzzled. Later, the albino seemed to join company with the unattached male, but was later seen alone. In 1937 it was seen once again on one occasion in company with a normal adult.

The appearance year after year of this marked bird gives a clue to the possible life of the Sheld-Duck, and, of course, demonstrates the return to the same area each year. It is probable that it was a juvenile of the year when first seen in 1933, so that in 1937 it was already five years old.

Some matters of interest relating to breeding have been met with in the last year or two. In 1937 two broods were seen on Lochendores on July 1st. One brood consisted of

seven recent young with the two adults, the other of five recent young but without the adults in attendance. Four days later both pairs were present and the broods had shrunk to five and one. Again after four days (on the 9th) two pairs of adults were seen—one pair without any young, the other with only two. On the 13th only one pair remained and the two young seemed healthy, and these remained until July 27th. On the 30th only one adult and one juvenile were left. They were there again on the 31st but on August 7th none remained. There was nothing to indicate what had caused the loss of the broods; perhaps the rather cold weather and heavy rain of the period had something to do with it. At the end of July the juvenile was about half grown. During the whole of the time at Lochendores, both adults (but particularly the female) were very nervous and called the juveniles into hiding when they found themselves under observation. Sometimes both adults went into the reed-bed with the brood, more usually the male remaining outside. At first the juveniles merely picked food from the herbage and the surface of the water, but by the 9th the two survivors were diving—an easy slow dive, almost a glide under water—with a duration of dive of about six seconds. On one occasion both were running actively to and fro on the shore, feeding restlessly, a behaviour usual on the mud-flats of the estuary. On July 18th one juvenile was “up-ending” on the shallows and one diving, and on the 30th the survivor was “up-ending”.

On the Tay Estuary, or at least on that part under observation by the writer, no broods were seen in 1937 until July 6th, when broods of five, four, five and seven, all within seven days old, and one brood of two, almost half grown (say, one month old) were seen on the flats, each brood in charge of the two adults. Of more interest, however, was the presence of a “pack” of at least thirty-seven juveniles, perhaps of slightly different age, if size is any indication, in charge of one adult only. This pack numbered twenty-nine on July 23rd still with the adult, and twenty-three on July 28th; then no adult was with them. My absence from the district broke the sequence of the records and it is only surmise to suggest that the party of juveniles and perhaps one or two adults in eclipse, in all twenty-six on September 5th, twenty-nine on September 9th, and thirty-two on September 26th, were in the main the survivors of the pack. The only other indication of this behaviour was got on August 1st, 1936, when one adult was seen in company with nine juveniles, about three-quarter grown. On three other dates

in August, this party of juveniles was seen, on the 3rd with the adult and on the 15th and 25th alone, and by then reduced to eight. It is, of course, quite possible that this was a brood complete in itself. On the other hand, the rather marked absence of broods in most years, and the apparent high mortality of those watched, suggests the packing so clearly found in 1937. Attention was drawn to the group of nine in the first instance at long range by the rapid motions of the young birds as they fed over the flats. They kept up a steady run, sweeping over an area repeatedly in line abreast for the most part. This behaviour was noticed in the much larger pack seen in 1937 and was in itself so conspicuous as to render it unlikely that previous packs could have been overlooked.

Actually the five broods, equal to twenty-three, and the thirty-seven juveniles in the pack, represent the total number of young detected for a total number of pairs of about seventy, assuming the counts of May 14th and July 11th to represent peak figures. The count for July 6th—the date of these broods, etc.—was made to be at least ninety-three, and possibly one hundred and ten, or only about two-thirds of the peak figure, so the fifty juveniles seen represent an increase at that early stage of their lives of only about 50 per cent. on the lower count and 33 per cent. on the higher, a remarkably low figure. Not only so, but the figures for 1937 are far higher than anything that has ever been recorded before for juveniles, while that for adults, certainly greater than ever before, but not more than 25 per cent. on previous high counts. There is, of course, the complication that Sheld-Duck may take the young brood away to other feeding grounds at once, just as the Eider does, yet the counts of adults does not indicate this at all. That the Sheld-Duck holds its own and even increases must be accounted for by the absence of effective enemies rather than fertility, and so the records for the albino already referred to take a new interest in giving some indication of the possible life.

The actual numbers of Sheld-Duck passing the summer in the upper portion of the Tay Estuary (that section from the western boundary of Dundee extending westwards about three miles) seem to have increased greatly in recent years. Although in April, 1919, the count reached 100, this figure was not equalled again until 1935 (120 mid-May). In 1936, the highest count was 108 and in May, 1937, the count reached 150 and remained at this figure up to July 11th at least. When tabulated, the figures show an increase from

before the War ; the rate of increase, however, seems to be a good deal higher in the last few years.

At the beginning of July, 1937, the pairs at Lochendores were watched to determine the onset of moult. On July 1st the female of the pair present showed traces of change, and the male seemed perfect. By July 18th the male was clearly in moult about the base of the bill (white feathers showing), and on July 23rd both were very ragged. On the Tay Estuary some individuals had already lost the pectoral band at this time. The male did not depart from the loch until after July 27th, and the female after July 31st. From the very rapid decrease in numbers on the flats off Kingoodie, from about 150 on July 11th to ten on July 28th, and only one on August 16th, clearly the imminent moult compelled a departure to cover, and seemed to fix the main period of moult for early August. In 1922 one adult lingered at Lochendores until August 10th, surely an exceptionally late date, and reference has been made to the adult (probably a female) with the small pack of juveniles until August 3rd. The August records indicate that few show themselves at this time. Presumably they are in hiding at this time in the reed-beds of the upper estuary as no indication of them has been got far out on the flats. This is in contrast with the behaviour of Mallard. In September, in some years at least, there is an abrupt reappearance about the second week. Some of the evidence seems to point to these birds being almost all juveniles of the year and as later opportunities arise for examining them, this point will be investigated still further. The return to breeding dress seems to be irregular. The numbers seen in autumn and winter are not great so that records on this point are rather few. The earliest record so far of the breeding dress showing well (that is, the head black and the chestnut band showing clearly) is September 21st, 1924. Other early records are September 29th, 1934, October 5th, 1924, October 8th, 1933, October 11th, 1936 and October 10th, 1937. In the Tay Estuary September records appear to be exceptional. Juveniles of the year may be much later in changing to the first adult dress. Several seen on November 15th, 1925, and on November 4th, 1934, showed no sign of change, and three seen on December 7th, 1937, were far from perfect. One still without any trace of the pectoral band was seen on January 7th, 1935.

BIRDS OF INNER LONDON.

BY

A. HOLTE MACPHERSON.

DURING 1937 there was one addition to the list published in this magazine in 1929 (Vol. XXII, pp. 222-244) and subsequently extended.* The list, excluding doubtful occurrences, now numbers 141 species or sub-species.

ADDITIONAL SPECIES.

A Red-necked Grebe (*Podiceps g. griseigena*) appeared on the Round Pond, Kensington Gardens, on January 31st and remained there till February 10th. It has already been recorded in these pages (Vol. XXX, p. 323).

ADDITIONAL NOTES IN 1937.

As was the case in the previous year, only one pair of Jackdaws (*Colæus m. spermologus*) appears to have bred in Kensington Gardens, where Miss M. S. van Oostveen watched a young bird being fed by its parents.

A Goldfinch (*Carduelis c. britannica*) was seen on the bank of the Regent's Canal on June 16th by Mr. D. Seth-Smith, and another by Sir Cyril Hurcomb on December 3rd near Kensington Palace. Mr. G. W. Collett saw a Lesser Redpoll (*Carduelis f. cabaret*) in St. James's Park on November 3rd (C. S. Bayne).

On March 2nd Mr. D. Seth-Smith noticed a Brambling (*Fringilla montifringilla*) in a flock of mixed finches on Primrose Hill.

A Grey Wagtail (*Motacilla c. cinerea*) was seen by a pond in the Zoological Gardens on January 17th and another by the Regent's Canal on September 24th (D. Seth-Smith). Mr. C. W. Baxter saw one on October 29th in Hyde Park.

On January 17th a Nuthatch (*Sitta e. affinis*) visited the garden of Mr. G. R. Hayes at 177, Holland Park Avenue.

When Spotted Flycatchers (*Muscicapa s. striata*) arrived, the Parks were almost entirely covered with tents, but there is evidence that one or two pairs remained and bred.

A Chiffchaff (*Phylloscopus c. collybita*) with an unusual song could be heard almost any day from the beginning of May until the second week of July in the grounds of

*For other reports on this subject see Vol. XXIII, pp. 266-268; Vol. XXIV, pp. 323-325; Vol. XXV, pp. 355-356; Vol. XXVI, pp. 292-294; Vol. XXVIII, pp. 34-35 and 292-294; Vol. XXIX, pp. 345-348; Vol. XXX, pp. 365-368.

Holland House. The song began normally, but its end was indistinguishable from that of a Willow-Warbler. It appeared to be a solitary bird.

There was no very hard weather during the year. I saw only one Fieldfare (*Turdus pilaris*) which was in Kensington Gardens in December, and fewer Redwings (*Turdus musicus*) than usual were reported.

Several Wheatears (*Ænanthe æ. ænanthe*) were noticed in spring, but observations at this season were greatly hampered by preparations for the military camps which occupied most of the Parks in connexion with the Coronation Celebrations.

No Redstarts (*Phœnicurus ph. phœnicurus*) were reported during the spring migration, but one was seen on September 4th by Mr. C. W. Baxter in Kensington Gardens.

A Kingfisher (*Alcedo a. ispida*) visited the Long Water in September and was noticed by several observers. I saw another there a month later.

A Green Woodpecker (*Picus v. virescens*) frequented the garden of Marlborough House for some weeks, and Mr. Hinton, the bird keeper, tells me that it occasionally visited St. James's Park.

Great Spotted Woodpeckers (*Dryobates m. anglicus*) were noticed in Kensington Gardens and various squares in the neighbourhood. A pair was seen in St. John's Wood and Regent's Park, and on October 2nd one visited the Zoological Gardens (D. Seth-Smith). A pair bored a hole 25 feet up the trunk of an elm in the grounds of Holland House, but Starlings took possession of it.

The Lesser Spotted Woodpecker (*Dryobates m. comminutus*) was reported from Kensington Gardens on four occasions: by Mr. C. W. Baxter on March 23rd, by Miss M. S. van Oostveen on April 9th and September 6th, and by Mr. F. Verry on November 7th.

The Cuckoo (*Cuculus c. canorus*) was heard by Miss M. S. van Oostveen on April 24th in Kensington Gardens; and by myself on May 6th in Regent's Park, and May 14th in Holland House grounds.

No less than four Kestrels (*Falco t. tinnunculus*) were seen soaring over the Imperial Institute in the last week of February. Some weeks later a pair established itself in a window slit high up on the western tower of that building and were watched on many days by Mrs. E. MacAlister. From their behaviour it is probable that they nested, though the fact was not definitely established.

The Sparrow-Hawk (*Accipiter n. nisus*) was reported three times : from Regent's Park on March 1st, on the bank of the Regent's Canal on October 31st, and over the Zoological Gardens on December 18th (D. Seth-Smith).

In June two broods of Mallard (*Anas p. platyrhyncha*) were hatched in long grass among the tombstones in Brompton Cemetery.

A large proportion of the Tufted Duck (*Nyroca fuligula*) to be seen in winter on the waters round London must have sprung from St. James's Park, where for some years 80 to 100 or more have been bred annually. In 1937 a North American White Pelican recently deposited in that Park developed a taste for the ducklings. The Superintendent estimated that not more than 40 Tufted ducklings escaped.

A Shag (*Phalacrocorax a. aristotelis*) was seen by Mr. W. B. Alexander on the Serpentine on February 17th. Another was caught alive by a policeman in Golden Square, Soho, on December 14th and was taken to the Zoological Gardens, where it soon died. A third Shag was identified by Mr. E. G. Pedler on December 17th on the Serpentine.

As usual, Great Crested Grebes (*Podiceps c. cristatus*) appeared on various occasions in spring and autumn in Hyde Park and Kensington Gardens. Two were also reported from Regent's Park.

A Slavonian Grebe (*Podiceps auritus*) was to be seen from February 1st to 6th on the Serpentine and Long Water. It was the second known to have occurred in Inner London and has already been recorded in this magazine (Vol. XXX, p. 323).

From one to four Little Grebes (*Podiceps r. ruficollis*) were on the Round Pond on many days in the autumn. One appeared on the lake in Regent's Park in November and one was seen on December 10th on the Regent's Canal (D. Seth-Smith).

Mr. T. R. Garnett saw three Common Sandpipers (*Totanus hypoleucos*) on May 7th on the steps leading to the Thames near Westminster Bridge. In the autumn, the species was identified in Kensington Gardens on three occasions : one bird being seen by Dr. G. Carmichael Low on August 11th, one by myself on August 16th, and two by Mr. E. G. Pedler on August 27th.

A Woodcock (*Scolopax r. rusticola*) was seen by Mr. T. R. Garnett on March 27th in Vincent Square, Westminster ; it flew quite close to him in an easterly direction. Another was flushed by Mr. Hinton on October 30th from the Kensington Gardens bird sanctuary.

A Common Tern (*Sterna h. hirundo*) was seen by Major W. M. Beckwith on September 11th over the Round Pond.

Owing to the dense fog on Christmas Day, hundreds of Black-headed Gulls (*Larus r. ridibundus*) which leave the Parks each evening at sunset to roost on the reservoirs surrounding London, had to spend the night in town. The Superintendent reported that the Gulls were very agitated; the loud cries of the invisible birds sounding most mysterious.

I saw a Scandinavian Lesser Black-backed Gull (*Larus f. fuscus*) on the Serpentine on February 6th, and again on November 25th. Another for three days in March frequented the Round Pond, where it was observed by Dr. G. Carmichael Low and myself.

On November 5th Mr. C. S. Bayne saw an adult Kittiwake (*Rissa t. tridactyla*), a bird of very rare occurrence in London. He had excellent views of it as it flew round and round over the lake in St. James's Park.

A Puffin (*Fratercula a. grabæ*) was found alive on the Thames Embankment on November 21st and was taken to the Zoological Gardens where it died about a week later.

In January a Common Partridge (*Perdix p. perdix*) was found, alive but injured, in the garden of Buckingham Palace. It was taken to St. James's Park and handed over to the bird-keeper but did not long survive.

NOTE.—I have omitted a Wood-Lark, recorded as having been seen in Regent's Park. The observer saw the bird flying over his head and identified it by its short tail and characteristic flight, but he heard no note and did not see any other diagnostic character.

It should also be mentioned that a Sandwich Tern over the Round Pond and a Little Gull on the Serpentine were recorded, but a good naturalist was satisfied that the Tern was a Common Tern; and with regard to the Little Gull other observers searched the Serpentine for it in vain, and the observer himself expressed to me his doubts as to whether the bird was not a Black-headed!

NOTES FROM RESERVOIRS AND SEWAGE FARMS.

STAFFORDSHIRE RESERVOIRS, 1937.

THE following notes refer to Bellfields Reservoir except when Gailey Pool is specially mentioned.

Once again Mr. H. G. Alexander has kindly sent me his notes and others made by Miss C. K. James and Messrs. G. M. King, H. Ll. Wilson and C. Wilson.

HOODED CROW (*Corvus c. cornix*).—One shot at Gailey on November 28th (Mrs. Ll. Twentyman).

WHITE WAGTAIL (*Motacilla a. alba*).—One or more on March 29th (H. G. A.).

GARGANEY (*Anas querquedula*).—A pair on June 28th (H. G. A.).

WIGEON (*Anas penelope*).—Reached their maximum at the end of December (about 400—H. G. A.). There had been an increase in the previous February when up to 300 were seen (A. W. B.). One shot on August 14th near Penkrige (C. Wilson).

PINTAIL (*Anas a. acuta*).—Two on November 29th (A. W. B.).

SHOVELER (*Spatula clypeata*).—Throughout the year. Most in January, February, March and November up to 30 in number.

POCHARD (*Nyroca f. ferina*).—Throughout the year. Two lots seen on June 28th may possibly have been family parties (H. G. A.). Largest flock 170 at Gailey, September 24th (H. G. A.).

TUFTED DUCK (*Nyroca fuligula*).—In increased numbers: over 150 at Gailey in February, March and September and about 150 at Bellfields on April 28th; on June 28th about 80 (H. G. A.).

GOLDENEYE (*Bucephala c. clangula*).—Fewer than usual: from January 2nd to April 28th but never more than eleven. Again in November and December.

LONG-TAILED DUCK (*Clangula hyemalis*).—Two recorded at the end of 1936 remained till March 29th.

GOOSANDER (*Mergus m. merganser*).—Throughout January and February to March 29th. In pairs in March (H. G. A.). Largest number 23 to 25, February 21st (A. W. B.). First seen in autumn on November 29th—one drake; 39 on December 27th (A. W. B.).

SMEW (*Mergus albellus*).—Three (one ad. drake) on February 21st (A. W. B.) and a pair on March 10th (H. Ll. W.).

CORMORANT (*Phalacrocorax c. carbo*).—At Gailey January 12th, February 1st, March 29th, April 13th. Two at Bellfields November 10th (G. M. K.).

SLAVONIAN GREBE (*Podiceps auritus*).—In rather unusual numbers. First seen (3) on February 15th (A. W. B.), and on February 18th, 4 or 5 (H. G. A.). On February 21st and March 14th, one; on March 29th, two (H. G. A.). On April 25th, two—one in full plumage (A. W. B.) and one on May 1st in half plumage (G. M. K.).

RED-NECKED GREBE (*Podiceps g. griseigena*).—One on February 18th (H. G. A.), and on February 21st (A. W. B.).

BLACK-THROATED DIVER (*Colymbus a. arcticus*).—One at Gailey March 20th (C. K. J. and H. Ll. W.) and on March 29th (H. G. A.).

RED-THROATED DIVER (*Colymbus stellatus*).—On February 18th, two at Gailey (H. G. A.).

RINGED PLOVER (*Charadrius hiaticula*).—One (or 3) on September 24th (H. G. A.).

KNOT (*Calidris c. canutus*).—One on November 10th (G. M. K.).

DUNLIN (*Calidris alpina*).—One March 29th and four September 24th (H. G. A.).

COMMON SANDPIPER (*Tringa hypoleucos*).—In April, on June 28th and on September 24th (H. G. A.).

JACK SNIFE (*Lymnocyptes minimus*).—In January, on September 24th and in December (H. G. A.). In November (A. W. B.). Near Penkridge first on October 2nd and subsequently 20 to 30 seen in a day (C. W.).

BLACK TERN (*Chlidonias n. niger*).—One on April 25th (A. W. B.).

BLACK-HEADED GULL (*Larus r. ridibundus*).—Common in the winter months—often about 100 present. Seen also in April and on June 28th (2—H. G. A.).

COMMON GULL (*Larus c. canus*).—Seen only on January 12th (1—H. G. A.).

HERRING-GULL (*Larus a. argentatus*).—A few in the winter months and odd immature birds in March and April.

COOT (*Fulica a. atra*).—Though numerous never in such great numbers as in some years. June 28th, about 100 (H. G. A.) and December 27th, 200 (A. W. B.). At Gailey 197 on November 29th.

A. W. BOYD.

ALTRINCHAM SEWAGE FARM, CHESHIRE, 1937.

The following notes have been compiled from the observations of Messrs. R. Storey, G. G. Uttley and myself and include several sent to me by Mr. E. L. Arnold. As usual the migration of waders was at its height in the last week of August and first two of September. A Glaucous Gull was a new bird to the farm and, indeed, to Cheshire.

YELLOW WAGTAIL (*Motacilla f. rayi*).—Last seen on October 2nd—a late date (A. W. B.).

SHELD-DUCK (*Tadorna tadorna*).—One on four days in January and two on April 25th.

PINTAIL (*Anas a. acuta*).—A pair on May 19th (A. W. B.).

SHOVELER (*Spatula clypeata*).—Seen in May, June (eleven on 21st (R. S.)) and September.

RINGED PLOVER (*Charadrius hiaticula*).—In each month from April to October; often seen. The largest number was 39 on August 21st.

GOLDEN PLOVER (*Charadrius apricarius*).—Though the largest numbers have been, as usual, found on meadow-land in the neighbourhood (200 on January 21st), they visited the farm more often than in other years and were almost always present from August to November—at least 100 on August 30th, 60 on November 2nd.

LAPWING (*Vanellus vanellus*).—Mr. R. Storey kept a careful record of this species: March 20th to April 15th—fifty, decreasing to twelve; June 20th to July 10th—twelve, increasing to forty (very many August 21st (A. W. B.)); September 15th to 30th—variable numbers up to 150; December 15th to 30th—one to six—only one when tanks frozen.

TURNSTONE (*Arenaria i. interpres*).—Two on August 15th and one almost daily till September 12th.

RUFF (*Philomachus pugnax*).—On June 21st a Ruff in full breeding plumage and a Reeve on June 28th (R. S.). One on July 26th (A. W. B.).

From August 1st to October 2nd usually a few ; six on September 18th (A. W. B.) and twelve on September 19th (G. G. U.) the largest numbers.

SANDERLING (*Crocethia alba*).—Two in full plumage on May 19th, one on May 27th and one on August 21st (A. W. B.). One August 22nd and two on October 3rd (R. S.). It never occurs in any numbers ; more this year than usual.

KNOT (*Calidris c. canutus*).—A chestnut-breasted bird on August 28th and two on September 4th (A. W. B.). Five on September 19th and one on November 7th (G. G. U.) ; one December 31st (E. L. A.).

DUNLIN (*Calidris alpina*).—In every month of the year except possibly in June in rapidly changing numbers. Specially numerous in spring (87 on May 8th (R. S.)) and again in July, August, September.

CURLEW-SANDPIPER (*Calidris testacea*).—From August 21st to October 3rd a few almost always present ; largest number fifteen on September 5th (A. W. B.).

LITTLE STINT (*Calidris minuta*).—One on three days in January (R. S. and A. W. B.) ; one September 26th and 27th (G. G. U. and E. L. A.).

COMMON SANDPIPER (*Tringa hypoleucos*).—First seen April 11th (G. G. U.).

GREEN SANDPIPER (*Tringa ochropus*).—Seen singly in June, July, August and September. Three on August 15th and one November 2nd (G. G. U.).

COMMON REDSHANK (*Tringa totanus*).—Throughout the year in fluctuating numbers. Fewer in May than in other months. Greatest numbers : 200 on January 13th (R. S.) ; 2/300 on July 25th and 100 on August 15th (G. G. U.) ; 100/120 September 4th (A. W. B.).

SPOTTED REDSHANK (*Tringa erythropus*).—Singly on April 19th September 18th and 20th (A. W. B.), and on November 7th (G. G. U.).

GREENSHANK (*Tringa nebularia*).—One May 1st (E. L. A.) and May 15th (R. S.)—rarely seen in spring. Two on July 11th (G. G. U.) ; three, August 15th (G. G. U. and A. W. B.) and one August 22nd (R. S.).

BAR-TAILED GODWIT (*Limosa l. lapponica*).—One on May 8th (R. S.).

BLACK-TAILED GODWIT (*Limosa l. limosa*).—Three on May 1st and one on September 7th (E. L. A.). One from September 8th to 12th (A. W. B.).

CURLEW (*Numenius a. arquata*).—Still strangely uncommon ; seen in April, August, September and October, but never more than two together.

SNIPE (*Capella g. gallinago*).—At the maximum in the first week of September, when several hundred were present. An increase was noted early in August and by August 21st very many in close flocks. These large numbers persisted through September and October.

BLACK TERN (*Chlidonias n. niger*).—One on August 15th (A. W. B.).

COMMON OR ARCTIC TERN (*Sterna h. hirundo vel macrura*).—One on May 8th (R. S.).

LITTLE GULL (*Larus minutus*).—One seen on November 14th (G. G. U.).

GLAUCOUS GULL (*Larus hyperboreus*).—First seen on August 29th by Mr. G. R. Vlies and on the 30th by A. W. B. It was seen on a number of occasions up to September 20th by several observers ; on the last date it was found half a mile from the farm in a field with Herring-Gulls, birds with which it always associated. It was very tame at first and allowed approach within a few yards. Not fully mature in plumage—probably about two years old.

Herring-Gulls (*Larus a. argentatus*) frequent the farm in much greater numbers than was the case a few years ago ; from 150 to 200 in winter and an increase noted in August and September. Common Gulls (*L. c. canus*), so common on Cheshire meadows, are rare on the farm—one on October 2nd. Lesser Black-backed Gulls (*L. fuscus*) several with the Herring-Gulls in August, September and October and one on November 17th (A. W. B.). One on January 10th and three on March 21st (G. G. U.). Black-headed Gulls (*L. r. ridibundus*) almost invariably present at all times ; a great flock of unusual size on August 21st.

RED GROUSE (*Lagopus s. scoticus*).—The occurrence of two on July 24th (R. S.) was of particular interest, for the neighbouring land was once a grouse moor. It was reclaimed almost 50 years ago and the last Grouse was shot in 1895 (Coward's *Fauna of Cheshire*). A very few Red Grouse are still to be found on Chat Moss on the north side of the River Mersey a few miles away.

A. W. BOYD.

NOTES

WATER-PIPIT SEEN IN CAMBRIDGESHIRE.

ON March 3rd, 1938, at Cambridge sewage farm we observed a Pipit which we were able to identify as a Water-Pipit (*Anthus s. spinoletta*). It was first seen feeding amongst other birds (Meadow-Pipits, Pied Wagtails and waders) on one of the tanks and its different appearance was clearly marked.

Viewed from behind its general appearance was uniformly greyish with a slight buff tinge below the nape, whilst the under-parts were whitish (no pinkish tinge noticed) with scarcely any markings on the breast or throat. It had a whitish eyestripe and the legs were dark grey.

On March 5th the bird was again watched and it was seen to be slightly larger than the many Meadow-Pipits about, and to have a more upright pose. On this occasion, too, it was seen, when in flight, to have light outer tail-feathers, but it seemed very shy and flew off when disturbed and has not been found since.

E. L. ARNOLD,
D. I. MOLTENO.

ICELAND REDWING IN RENFREWSHIRE.

ON December 19th, 1937, an example of the Iceland Redwing (*Turdus m. coburni*) was obtained near Cathcart, east Renfrewshire.

The specimen, an adult male with a wing measurement of 121.5 mm., would appear to be the first record of this race in the Clyde area.

PHILIP A. CLANCEY.

SHARE OF SEXES IN INCUBATION OF THE DIPPER.

WHEN the article on the Breeding-Habits of the British Dipper (*Cinclus c. gularis*) in the *Practical Handbook* was published in 1920, we had little information on the share of the sexes in brooding, and their great similarity rendered observation, except under very favourable conditions, extremely difficult. There were, however, a number of cases from Derbyshire and Staffordshire in which the sitting birds were seen to leave the nest voluntarily, and yet after quite short intervals it was found to be occupied. Another point which seemed to show that the male shared was the fact that we never saw the hen fed on the nest, although the cock was assiduous in feeding the young. Mr. O. G. Pike (*The Nightingale*, etc., p. 166) also provided confirmatory evidence, as he stated that the male

usually took up his duties in the morning after his mate had been sitting during the night. Jägerskjöld also says that the male relieves the female at intervals in the case of *C. cinclus cinclus*. Recently the new German *Handbuch* (p. 442) quotes the statements of Jägerskjöld and myself in the *Practical Handbook* in favour of both sexes, and Lönnberg and Eggebrecht as ascribing all incubation to the hen. Since 1920 further observations have come to hand which seem to prove that normally all the work is done by the hen. Col. B. H. Ryves has shown in a series of observations that the hen alone incubates and is very rarely fed by the male on the nest, but normally leaves the nest from time to time to feed. Mr. Pike (*in litt.*) informs me that he has changed his views and that what he took for the male must have been the hen returning after a short feed. He also adds that in Scotland, while filming this bird, he came to the conclusion that the female alone incubated and in this case she also did all the feeding, the male not coming near the nest once during a week of watching, though in another nest close by both sexes were bringing food. Still further confirmation is provided by a most painstaking piece of work by Herr O. Eggebrecht (*Journal f. Orn.*, 1937, pp. 636-676) in which he records the fact that during one day's incubation the hen left the nest 20 times, at average intervals of 32 minutes and was off the eggs for about 9 minutes on each occasion. This applies to *C. cinclus aquaticus*, but there seems to be little doubt that it is also true of the other races and that normally the hen of *Cinclus cinclus* alone incubates. F. C. R. JOURDAIN.

LITTLE STINTS IN SPRING IN NORTHUMBERLAND.

ON June 5th, 1937, I saw two Little Stints (*Calidris minuta*) in summer plumage, with a large flock of Sanderlings (*Crocethia alba*) on Goswick Sands, Northumberland. This appears to be the first spring record for this county. Only two of the Sanderlings appeared to be in full summer plumage.

H. TULLY.

TAMENESS OF WHOOPER SWANS IN HAMPSHIRE.

IN the winter of 1936-37 six Whooper Swans (*Cygnus cygnus*) appeared on the Beaulieu River and stayed some months, and were undisturbed by passing motor cars and pedestrians along the road close to them.

This winter two birds appeared at the end of October, 1937, and are still here in April, 1938. Captain J. A. Macdonald

who has a house on the bank of the river has been feeding the birds all the winter and they have become remarkably tame and will almost feed out of his hand. The photograph herewith



Wild Whooper Swans at Beaulieu, Hants.

Photo by Captain MacDonald—off his garden—just after high-water.

was taken without a hide of any kind and shows how very close the birds can be approached without their taking alarm.

THOMAS H. C. TROUBRIDGE.

EARLY WHINCHATS IN HAMPSHIRE.—Mr. B. J. Ringrose informs us that he and Mrs. Ringrose identified three Whinchats (*Saxicola rubetra*) on March 9th, 1938, at Keyhaven. The only records which we have of an earlier date of the bird's appearance are March 6th, 1919, Berkshire, and March 8th, 1853, Middlesex, while there is a record for March 9th, 1930, in Surrey.

COMMON SANDPIPER IN KENT IN WINTER.—Mr. P. A. Rayfield writes that he had a Common Sandpiper (*Tringa hypoleucos*) under observation in a small creek off the Medway at Strood on December 27th and 31st, 1937, and on several dates in January, February and March 1938. From his description it is clear that the bird was correctly identified.

REVIEWS.

De Nederlandsche Vogels. Bewerkt door Dr. C. Eykman, P. A. Hens, Jhr Dr. Ir F. C. van Heurn, Dr. C. G. B. ten Kate, J. G. van Marle, G. van der Meer, M. J. Tekke en Tsj. Gs. de Vries. Eerste Deel. (Wageningen : Boek en Handelsdrukkerij).

This is the first volume (of two) of a compact "Handbook" of the birds of Holland by a number of Dutch ornithologists each being responsible for sections and the whole edited by Dr. ten Kate. It is produced under the auspices of the "Club van Nederlandsche Vogelkundigen" and is a much amplified successor to Baron Snouckaert van Schauburg's "Handlist" of 1908. There is an elaborate illustrated key at the beginning. Under each species a list of vernacular as well as English, German and French names, diagnostic characters, a series of measurements, description, field-characters and a brief account of notes and song, a detailed account of breeding-habits, a carefully worked out Dutch distribution including information on ringing results and migrations, and a brief account in general terms of distribution abroad. There is no mention of food. A number of the species are illustrated by small blocks from good wash drawings of heads by Dr. Eykman. The book contains a great deal of sound information in a comparatively small compass and is a great advance, more especially on the biological side, on any previous work on Dutch birds, and equips the ornithologists of yet another European country with a work more or less on the lines of our *Practical Handbook*.

A History of Richmond Park, with an Account of its Birds and Animals.
By C. L. Collenette. Plates and Map. (Sidgwick & Jackson.)
7s. 6d.

This book is divided into two parts, the first being historical and the second dealing with the birds and mammals. The second part naturally concerns us most, but the first part seems carefully drawn up and besides its historical interest, contains a number of notes concerning birds and animals (chiefly game) and gives an idea of the changes made by cutting of timber, drainage and so on.

In the second part the author, who has been the official bird-observer since 1932, has made a very careful and valuable annotated list of the birds. He has had the advantage of a previous good list in 1905 by Mr. L. B. Mouritz from which to draw comparisons, and the regular official reports of birds during the last twelve years contributed by many observers have provided much information. Besides these and other special sources a very considerable list of more general references is given.

Mr. Collenette's list of birds comprises 46 residents and 13 summer residents which usually breed, 16 winter residents, 5 regular passage migrants and 52 irregular visitors. Amongst the breeding birds the Carrion-Crow has increased and in its present numbers it appears to be a menace. Several species have decreased or disappeared during the present century. The Yellow Wagtail, Wheatear and probably the Nightjar no longer breed and the Wryneck has decreased. Wood-Larks fluctuate and are now unfortunately dangerously scarce. On the other hand ducks have increased. Several pairs of Tufted now breed and the Pochard has bred, while Goosanders especially are numerous in winter. Altogether Richmond Park has much to interest the bird-lover and the many observers who take advantage of it will greatly appreciate Mr. Collenette's sound piece of work.

Studies of British Birds. Written and illustrated by "Fish-Hawk". (Duckworth.) 15s.

THE main attraction of this book is probably in its illustrations in black-and-white from drawings by the author. These vary in quality. Those of the larger birds and especially the swans, geese and ducks are the best. The small birds are not very successful and there is often an indefiniteness which gives a weak effect, and this style suits better a group than single birds. Some of the attitudes are well done and probably the artist is at his best with birds in flight.

The text is disappointing as one would have expected more personal observation rather than a somewhat humdrum account of a large number of birds, giving details which would be more easily found and more fully and satisfactorily given in a good textbook. Here and there we find some curious statements given without the support of any evidence. For instance: that "in self defence" (from the Great Black-backed Gull) Manx Shearwaters "no longer come ashore during the hours of daylight, and leave their mates to brood their egg without food until the coming of darkness"; that it is usually the hen Robin which sings during the earlier winter months; and that Fieldfares will begin nest-building and even laying before they leave this country though they do not rear a brood.

In another category is an interesting account of Guillemots, Puffins and Razorbills becoming incapacitated during a long spell of hot, calm weather in the North Sea in 1933 by their plumage becoming clogged with a marine diatom which came to the surface in vast quantities. In this area five-sixths of a bucket filled in the sea consisted of diatoms, and the whole surface of the water was milky white. The author had on board some thirty birds which he tried to clean, but could not relieve until he reached an area clear of these diatoms, which he states have a high oil content.

LETTER.

SONG OF THE CHAFFINCH.

To the Editors of BRITISH BIRDS.

SIRS,—I have read with great interest the note upon the song of the Chaffinch (*Fringilla c. gentleri*) in *The Handbook of British Birds* especially in reference to the "alternative call" as described by Mr. H. G. Alexander, *i.e.*, the single prolonged "tswee-e-e" resembling the note of the Greenfinch.

It may be of interest to record that the first time I heard this note was in Ireland in the spring of 1933, when it was uttered by a male bird, and for considerable periods on each occasion. Since then I have heard it occasionally in London in the Parks, and in Ken Wood, and on March 27th I had under observation two male birds on Berkhamsted Common which uttered this note continuously for periods of eight, twelve and fifteen minutes without ceasing. The birds sat perched in the top branches of an ash and sycamore, and appeared to be rivals in song and other notes; a female was also there but paid no attention to either male. I watched these birds for over an hour and a half and during that time the most frequent note from both males was the "Greenfinch note".

H. RAIT KERR.

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- NOTE.—The nomenclature followed in this volume is in accordance with the "Systematic List" printed at the end of the Volume II of *A Practical Handbook of British Birds* and reprinted in *A Check List of British Birds* and the additions and alterations appearing on pages 101-2 of Volume XXII, pages 24 and 25 of Volume XXIV, pages 8 and 16 of Volume XXVI, pages 2 and 3 of Volume XXVII, pages 90-96 and 186-187 of Volume XXVIII and pages 7-13 of Volume XXXI of *British Birds*.
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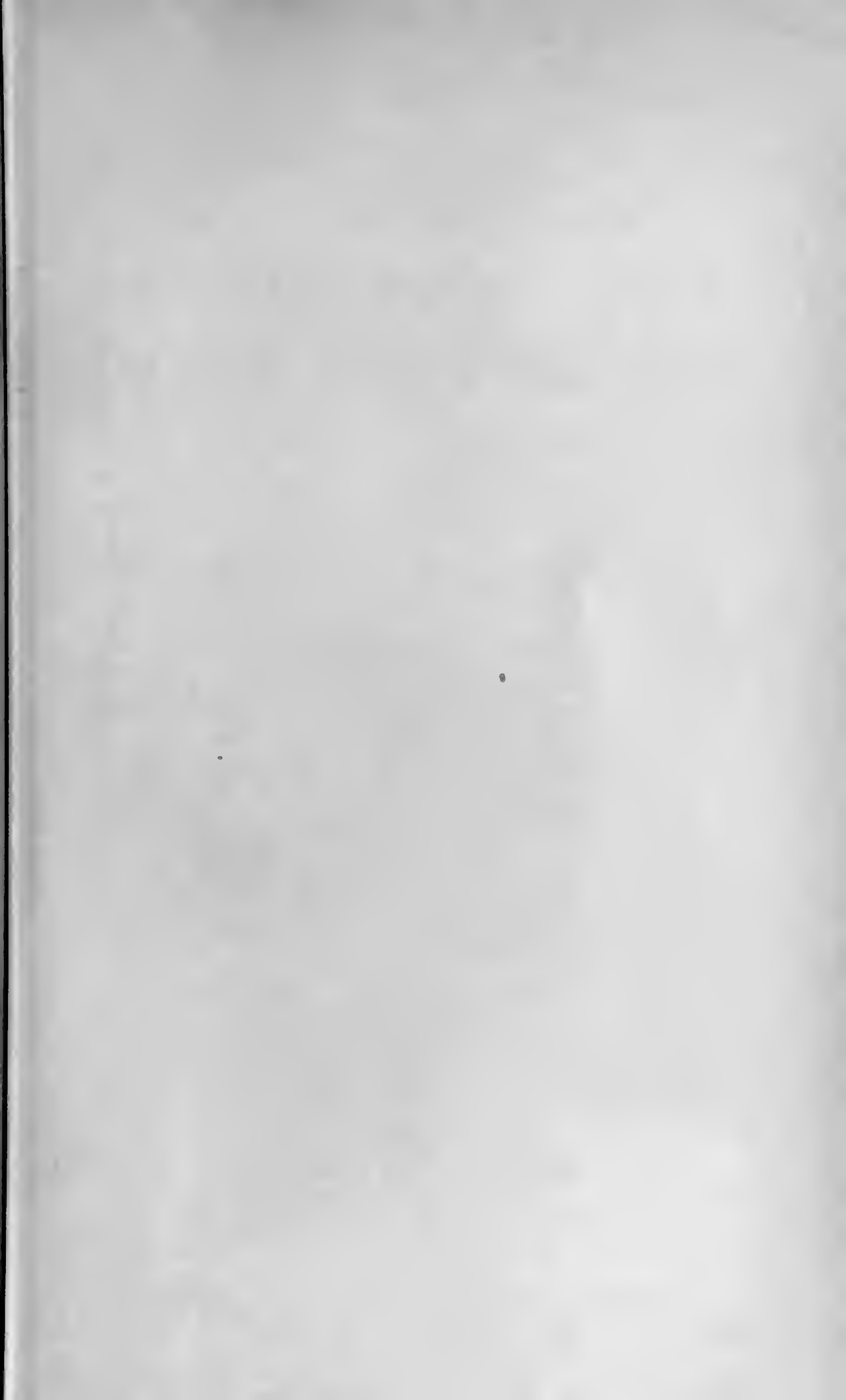
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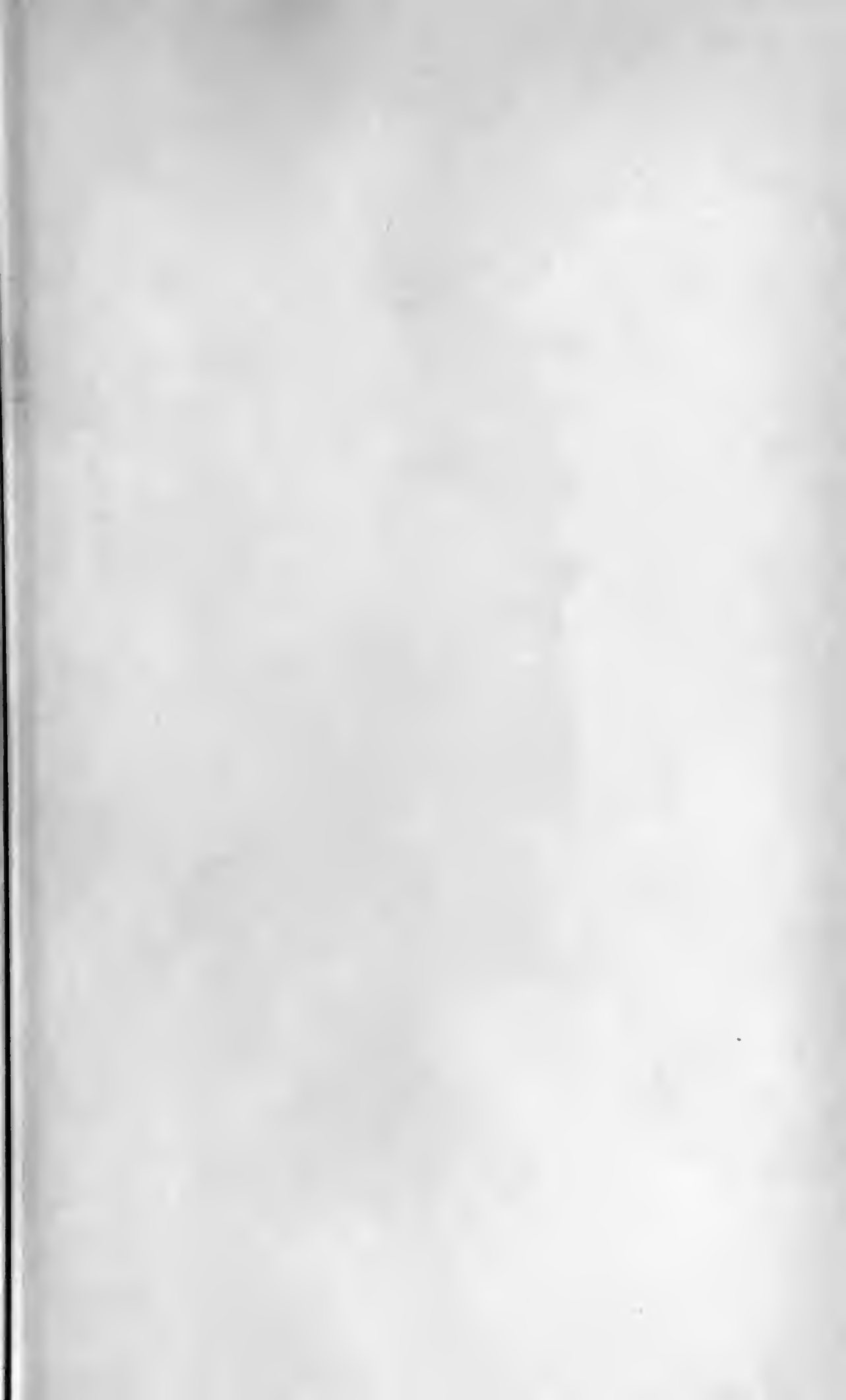
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