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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

H. F. WITHERBY M.B.E. F.Z.S. M.B.O.U. H.F.A.O.U.

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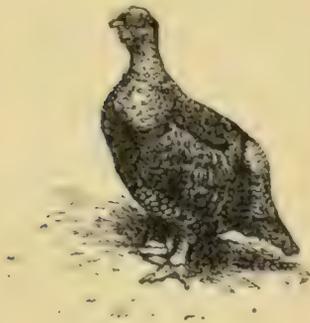
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LIST OF ILLUSTRATIONS.

	PAGE
ROOSTING HABITS OF THE TREE-CREEPER :—	
<i>Plate 1.</i> Tree-Creeper roosting in <i>Sequoia gigantea</i> at Portarlington, Queen's Co. (Photographed by Rev. F. M. Browne)	Frontispiece
Cavity in <i>Sequoia gigantea</i> , and Tree-Creeper roosting in dead Scots Pine	6
Tree-Creeper roosting in <i>Sequoia gigantea</i>	9
ON THE FIGHTING OF BLACKCOCK :—	
<i>Fig. 1.</i> —A general view of the "lek"	34
<i>Plate 2.</i> <i>Fig. 3.</i> —Bird on left in position for "the rough hiss"	34
<i>Fig. 4.</i> —Bird on right in position for "the bubbling cry" (Photographed by G. K. Yeates)	34
<i>Fig. 2.</i> —Normal position of Blackcock when not engaged in fighting	36
<i>Plate 3.</i> <i>Fig. 5.</i> —The face-up	36
<i>Fig. 6.</i> —Bird on right walking away from the fight. (Photographed by G. K. Yeates)	36
BLACKBIRD'S LARGE CLUTCH OF EGGS. (Photographed by O. G. Pike)	45
FURTHER NOTES ON TERRITORY IN THE GREAT CRESTED GREBE :—	
Sketch-map of Frensham Little Pond, S.W. Surrey	60
COLOURING OF THE SOFT PARTS OF THE BUFF-BACKED HERON :—	
<i>Plate 4.</i> —Pair of Buff-backed Herons at nest in reeds, South Spain, April, 1935. (Photographed by G. K. Yeates)	70
WOODPECKER NESTING-HOLES AND THE COMPASS :—	
Diagram showing the relation of Woodpecker nesting-holes to the points of the compass ..	85
SITE OF GOOSANDER'S NEST, DUMFRIESSHIRE, 1936 ..	88
Sketch of heads of nestling Goosander and Merganser	89

LIST OF ILLUSTRATIONS.

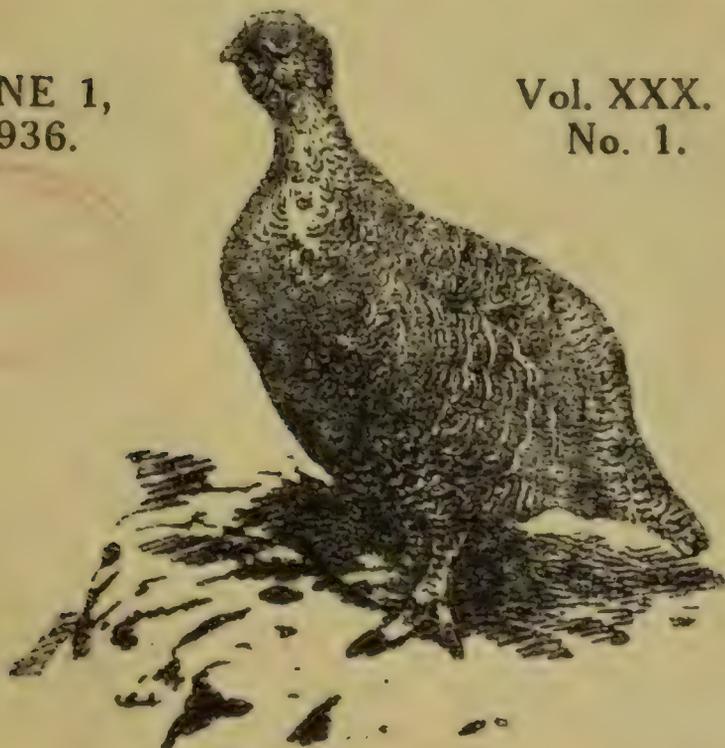
	PAGE
WATER TERRITORIES OF RESIDENT MOORHENS IN WINTER	120
REPORT ON GREAT CRESTED GREBE :—	
Chart.—Rainfall, Seasonal year, as per cent. of average	140
Map showing approximately the areas counted in 1935, and the relative density of Great Crested Grebe population compared with 1931 ..	145
Map showing recovery positions of Teal ringed in Orierton Decoy	161
THE COLOUR OF BILLS OF KINGFISHERS :—	
A-D. Bills of Scottish Kingfishers	181
E-F. Bills of English Kingfishers	181
ROOSTING OF SWIFTS : Diagrams illustrating the roosting cavity of Swifts	206
STEEP HOLM. (<i>Photographed by W. C. Taunton</i>) ..	219
BREEDING HABITS OF LEACH'S FORK-TAILED PETREL :—	
<i>Plate 5. Upper : Adult Leach's Fork-tailed Petrel.</i>	} 234
<i>Lower : Young Leach's Fork-tailed Petrel.</i> (<i>Photographed by Robert Atkinson</i>)	
Map showing greatest Density of Plankton and Breeding Stations of Leach's Fork-tailed Petrel in North Atlantic	235
Opened Burrow of Leach's Fork-tailed Petrel. (<i>Photographed by John Ainslie</i>)	238
DR. CHARCOT AND THE BIRDS OF ROCKALL :—	
Rockall	252
Key to Photographic Plan of Birds	253
SONG OF THE MISTLE-THRUSH :—	
Diagram showing times of sunrise on ten days and the minutes before sunrise when the Mistle-Thrush began to sing as well as the pitch variations of the song syllables	306
REDWING ROOST : Map showing area from which birds came	344

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Tree-Creeper roosting in *Sequoia gigantea* (G.4.W.6) at Portarlington, Queen's co. Taken March 20th, about 8 p.m.

(Photographed by Rev. F. M. Browne.)

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CONTENTS OF NUMBER I, VOL. XXX., JUNE I, 1936.

	PAGE
Roosting Habits of the Tree-Creeper. By P. G. Kennedy, S.J.	2
Behaviour of Starlings at Nesting Site. By George Marples, A.R.E., A.R.C.A., M.B.O.U.	14
Further Notes on the Sparrow-Hawk. By J. H. Owen ...	22
Notes:—	
Crossbills Method of feeding on Larch Cones (B. D. Moreton)	27
Large Brood of Mistle-Thrush (C. H. Kaye and C. Heycock) ...	28
White-tailed Eagle in Northamptonshire (A. F. Moody) ...	28
Another unrecorded Essex Heronry (Dr. J. W. Campbell) ...	29
Scaup and Black-necked Grebe in Inner London (Dr. G. C. Low and E. G. Pedler)... ..	30
Dunlins in Inner London (E. M. Nicholson)	30
Short Notes:—	
Homing Experiments with Wild Birds. Crossbill Breeding in Devon. Blue-headed Wagtail in Surrey. Iceland Redwings in Somerset and North Uist. Early Whinchat in Sussex. Sexual Display by Hedge-Sparrow. Bittern in Co. Fer- managh. Purple Heron off the coast of Ireland	31
<i>Die Vogelwarte Rossitten auf der Kurischen Nehrung</i>	32

1936
PURCHASED



ROOSTING HABITS OF THE TREE-CREEPER.

BY

P. G. KENNEDY, S.J.

(Plate 1).

SINCE November, 1935, I have been studying the roosting habits of the Tree-Creeper (*Certhia f. britannica*), and though there are many points still obscure, I consider I have at this stage sufficient evidence to draw some definite conclusions. Hitherto little has been known or written on the subject beyond the fact that Tree-Creepers bore holes in the soft bark of Wellingtonia trees (*Sequoia gigantea*) and sleep in these holes at night. Mr. Nevin H. Foster, of Hillsborough, Co. Down, was the first to notice the habit, and he published his observations in January, 1923 (*Irish Naturalist*, Vol. XXXII pp. 1 and 2). But he did not apparently himself see the birds in the cavities at night. Foster's article was followed up by short notes in *British Birds*, in March, 1923, by the Rev. E. U. Savage (Vol. XVI, p. 234), in June, 1924, by Mr. W. H. Thorpe (Vol. XVIII, pp. 20-22), and in October, 1925, by Mr. R. W. Hale (Vol. XIX, pp. 130 and 131). The writers of these notes agree in the main with Foster in holding that the Tree-Creepers sleep with their heads exposed and their beaks pointing upwards, though Thorpe mentions one bird which had its head completely hidden.

Before giving my own observations I should mention that here at Emo Park, Portarlinton, there is a wide field and perhaps unusual facilities for such a study. The grounds are extensive and well timbered. There are many Wellingtonias, all within easy reach of the house. In the first place there is a well-known Wellingtonia Avenue, more than a mile long, leading from the front of the house first towards the south and then curving away to the east. There are 82 Wellingtonia trees, 41 on each side, along this avenue. Then in the grounds to the east and north of the house there are 8 scattered Wellingtonias and 6 of the allied species, *Sequoia sempervirens*, while in an old wood across the lake, not quite half a mile away to the north of the house, there are many trees of the latter species.

There is considerable variety among these Wellingtonias. Some look, and probably are, older than others. In an old guide book, published in 1856, mention is made of the Emo Park Wellingtonias, so that some of the trees must have been planted here soon after their introduction into England in 1853. The younger trees have the bark not quite so furrowed as a normal oak tree while the older ones have very gnarled

surfaces with thick, cork-like bark which in places projects out two or three inches from the longitudinal fissures. Some have branches down to four feet from the base with extremities touching the ground; others have branches down to about eight feet with, usually, some open approaches to the trunk, while a few have no branches lower than from ten to twenty feet. The older trees and those with open approaches are most favoured by the Tree-Creepers.

In a daylight survey of the avenue I found that in 39 of the Wellingtonias there are 72 sleeping-holes either freshly made or with evidence of recent use. The other trees are without holes. The majority of the holes are facing east and north, those to the west being very few. Thus there are 1 E., 24 N., 9 S., 2 W., 5 N.E., 3 N.W. and 2 S.E. The average height from the ground is 8 feet, the highest being $13\frac{1}{2}$ feet and the lowest 4 feet. The avenue is divided into five reaches by cross avenues and clusters of beech trees, and though the divisions are not equal I have taken them for convenience in keeping records and call them A, B, C, D and E. Thus B. 4 N. 9, means: In the second reach of the avenue, in the fourth tree, on the right leading from the house, roost facing north at 9 feet from the ground. Again, in 7 of the 8 Wellingtonias in the grounds there are 40 roosts, 18 N., 13 E., 5 W., and 4 S. These trees for the purpose of taking notes I call 1, 2, 3, etc. The 6 trees of the species *Sequoia sempervirens*, all of which show evidence of roosting, I enter as S.S. 1, 2, 3, etc. Foster mentions the halfpenny (an inch in diameter) as the size of the holes, but Thorpe gives the average $2\frac{1}{2}$ to 3 inches long and 2 inches deep. I have not come across half a dozen holes into which a penny cannot be easily inserted, the majority having the opening as stated by Thorpe. But I find great variety in the depth of the holes. Some are mere scratchings to the surface, others are quite 2 inches deep. Again Foster and Thorpe say that the holes are all lower than the lowest branches. This is generally the case here too. But some which I have found occupied occasionally, and one almost regularly, are above branches, while those in most of the trees of *Sequoia sempervirens* must necessarily be so.

Up to February 15th I began my evening rounds at 5.30 and examined the trees in the grounds and reaches A, B and C of the avenue. In these three reaches there are 29 Wellingtonias, in 15 of which there are 25 roosting holes. In 7 of these trees in the avenue, in 6 of the 8 in the grounds and in 4 of the *Sequoia sempervirens* I have found birds in occupation at night. Thus I have seen Tree-Creepers sleeping at night

in 17 trees and in 52 different roosts. During the first three months of observation the average number of birds I found in roosts was about 8, rarely so few as 4. But since the beginning of February the average has been 12, with a maximum of 15. The raising of the average is partly attributable to improved methods of search and partly to other causes which I have so far failed to discover. During the whole period, the larger numbers were in frosty or calm and dry weather, the lower numbers on wet and stormy nights. A moderate breeze does not seem to affect the roosting nor the side of the tree occupied. But rain or a high wind from any quarter drives the birds from that side of the tree. Just as the majority of the holes are on the east and north, so I have found most birds on these sides. Hence on an average night there would be 3 E., 3 N., 1 S., and 1 W. The prevailing winds and rains here are from the south and west, and this fact accounts, I believe, for the fewer cavities and roosting birds on these sides. I should also mention that the two roosts to the west, which I have very frequently found occupied, are rather exceptional. One is in a tree sheltered by an oak plantation and a detached building, known as the Ambulacrum, the other, though on the west side of the tree, has a southern aspect owing to a projection on the side of the trunk. Yet, exceptionally, on February 11th I found 5 birds roosting to the west and 5 to the north. But the conditions were these: snow which had fallen on the previous night had melted during the day leaving the eastern sides of the trees quite wet, and a strong, cold wind was blowing from the east. It may be of interest to give, as a specimen, my notes of the location of these 10 birds. They are as follows:

Avenue: A. 1 L. N. $8\frac{1}{2}$. (This roost has been occupied every night since December 10th).

B. 4 R. N. 7.

B. 5 R. N. 8, and W. 4. (This W. 4 now occupied for the first time).

Grounds: G. 1 N. $7\frac{1}{2}$, and N. 11.

G. 4 W. 9. (This roost is above some branches).

G. 6 W. $12\frac{1}{2}$, and W. 7. (W. 7 now occupied for first time).

S.S. 1 W. 7. (Roost occupied for second time).

MANNER OF ROOSTING.

With regard to the manner of roosting, the body of the bird is fitted into the oval cavity in the bark and the tail is pressed into the tree below the cavity. Once the bird has

tled down for the night its head is completely hidden. I have no doubt of this, for I have now seen roosting birds hundreds of times. I have examined birds in roosts at four and five feet from the ground, with my eyes above their level, and never have I seen even the tip of the bill. The hunched appearance of the roosting bird suggests that the head must be buried in front with the beak pointing downwards, not upwards as Foster, Savage and Hale suggested. The result of this bending forward and downward of the head is that the feathers of the shoulders and back are fluffed out, in a manner suggestive of the spines on the back of a hedge-hog. One sees these feathers moving in the slightest breeze, and when a strong wind is blowing the dark down of the body is revealed. This being the fact, the question immediately arises: how is the warmth of the body maintained throughout the long winter nights, if, as has been stated, the conservation of heat in birds depends on the closeness of the feathering. To this question I have no answer at the moment. I can only reiterate that I have examined birds at night and in the dark of the morning and the manner of roosting is always the same: the head is quite hidden and the back feathers are fluffed out giving the general appearance of a ball of fluff with a tail appended.

As already stated I used to begin my evening inspection at about 5.30, and hence up to February the birds were well settled down for the night when I saw them. But almost from the beginning of February, when sunset was at 5.6, I have been able to see them in their cavities without the aid of a torch, and I have found it advisable to watch with glasses from a distance of 20 or 30 yards. To my surprise I discovered that up to 20 minutes after sunset the birds remain with their heads exposed and their beaks pointing upwards. It seems natural that before going to sleep they should look around to see that all is well, and consequently they are easy to disturb at this time. This habit, I feel sure, accounts for the statement of Foster and others that the birds spend the night with their beaks pointing upwards. Thus Hale (*loc. cit.*) mentions that on March 21st at 6.15 p.m. a bird had its head almost in the cavity, but with its beak resting on the edge of the hole. This was only 4 minutes after sunset, too soon for the bird to have settled down for the night. Again Thorpe (*loc. cit.*) speaks of disturbing a bird on two or three occasions, thereby showing that his observations were made before the bird had gone to sleep. Once the bird has rolled itself up and buried its head, it is not easily disturbed. Torch light can be played on it without causing it to turn a feather, and even the

explosion of a flash-light photograph does not, as a rule, awake it from its slumbers. The only thing that invariably dislodges the sleeping bird is touching the bark or knocking against the trunk of the tree, even at the opposite side. Finally Foster and Savage say that the back of the bird in the cavity is on a level with the bark of the tree. This is generally the case while the head is exposed and the back feathers are smoothed down, but when the head is lowered the back is arched out and the feathers stand out beyond the surface of the tree. Only in a few roosts with very narrow entrances and in those made in natural fissures have I found the body of the bird on a level with the bark.



Left: Cavity in *Sequoia gigantea* (G.3.S.6.) unchanged after months of use.

Right: Tree-Creeper roosting in dead Scots Pine (S.P.3.E.4).

“Early to bed” seems to be a fixed rule with the Tree-Creeper. While Blackbirds, Thrushes and Robins are still singing, the Tree-Creeper flies to the base of its roosting tree, creeps up as if feeding and either goes directly into or sidles

into the cavity. I have observed birds entering their roosts from 1 to 14 minutes after sunset. Mr. C. B. Moffat, who on September 29th, 1934, at Enniskerry, co. Wicklow, saw a Tree-Creeper arrive at its *Sequoia gigantea* 2 minutes after sunset, thinks it likely that going to roost may be earlier in the fairly long days than in the very short ones. This he has found to be the case with the Wagtails in O'Connell Street, Dublin, where they go to roost before sunset in the early half of the autumn, but wait till about half an hour after in the short winter days. My own observations of the Tree-Creepers since the beginning of February confirm Mr. Moffat's surmise. The birds have gradually shortened the period between sunset and taking roost so that in the first week of March the two times almost coincide.

As birds go Tree-Creepers are not early risers. Other birds are astir, and there is often a general morning chorus, quite half an hour before they think of moving. If one approaches an occupied tree from 20 minutes before sunrise onwards, the bird flies clean out of the hole and away. But if one is prepared to brave the cold morning air and arrive with glasses earlier, the whole ritual can be watched. At from 15 to 5 minutes before sunrise the Tree-Creeper suddenly lifts its head, looks round exposing the white of its throat and waits from 2 to 5 minutes before, as it were, jumping out of bed. During this time, owing to the smoothing down of the back feathers when the head is raised, the bird is inconspicuous except for the winking of the white throat as it moves its head to and fro. Finally it gives a few pecks at the bark, side-steps to the right or left or jumps forward and travels up the tree in its usual manner of feeding.

EXCAVATING THE CAVITIES.

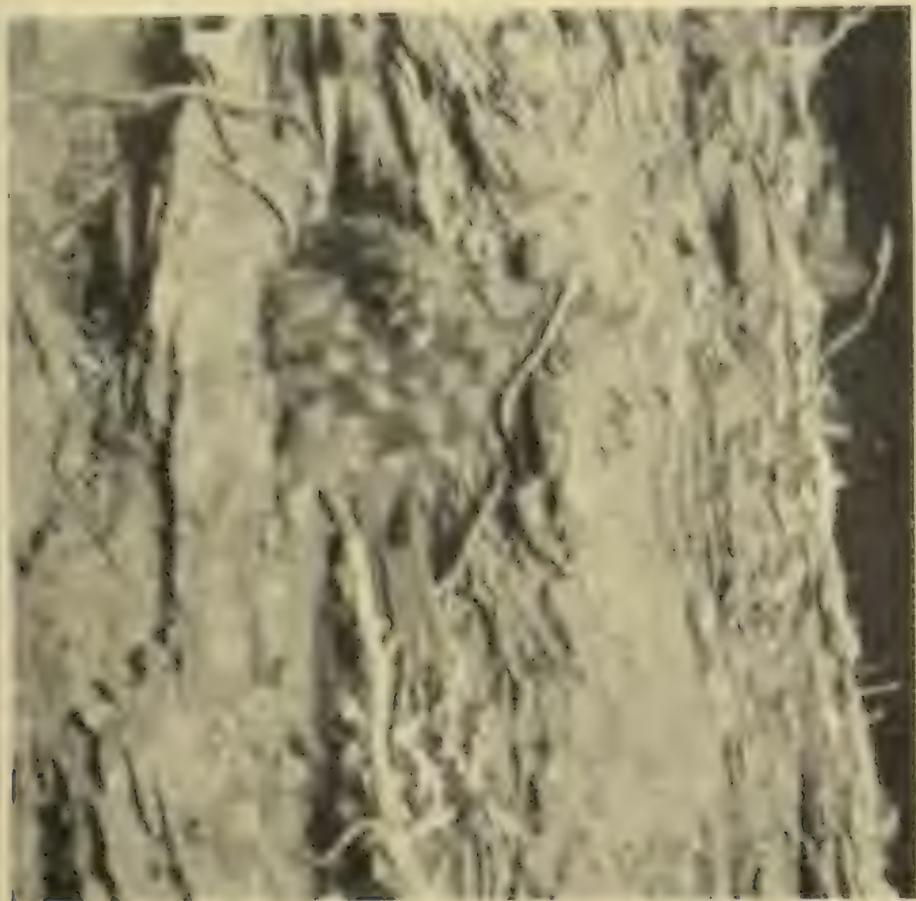
Hale (*loc. cit.*) speaks of a cavity, examined on two consecutive days, as showing signs of continued enlargement. That the birds enlarge the holes is certain. Some of the cavities in which I have found birds sleeping are mere scratchings in the bark, and no doubt the deepening is a gradual process. Some cavities, however, which are fairly regularly occupied, have remained unchanged for months and are quite black inside. On a few occasions both in the morning and in the evening I have witnessed the excavating. On February 10th, at 6.30 p.m. (sunset 5.10) I noticed a roosting bird in an unusual attitude. Its tail was projecting out, its head completely hidden, its body moving and its feet seemingly working. The roost was an old one, frequently occupied, which I had

examined in daylight a week previously when I found the interior quite dark. The bird was now excavating, or perhaps sweeping out the shavings after the operation, for next morning on looking in I saw a patch, of about the size of a penny, freshly pared off. Again on February 4th at 6.15 p.m. in another roost I noticed the legs of the bird to be working as if sweeping out the cavity. I surmised that this was consequent on some excavation work, and next morning I saw that the walls were freshly chipped off. On February 8th at 7.47 a.m. (sunrise 7.59) a bird that I had been watching suddenly woke up and went through the usual ritual for three minutes and then began to peck at the interior with resounding taps. For two minutes it worked energetically before jumping clear of the cavity and creeping up the tree as usual. This time the tail was kept pressed against the tree as during sleep, and no attempt was made to work the legs and clear out the débris. The roost was too high to be examined. Finally on February 17th at 5.43 p.m. (sunset 5.37) I watched a bird creep up G.I. and enter roost N.II. For nearly two minutes it pecked at the cavity, often looking round during the operation. Then to my surprise it jumped out of the hole, looped down to the base of the tree and began to creep up again. This time it entered roost N.7½, directly under N.II, and immediately began to peck at the rim of the cavity. After two minutes it ceased work but kept looking from side to side. At 5.48, a second bird appeared on the east side of the tree, crept up and sidled into N.II. Though the point at issue here is the excavating of the cavity, the behaviour of the first bird is rather puzzling and suggests a number of questions which I would like very much to be able to answer: Did the bird make a mistake in entering a roost which it presently discovered was not its own? Are the two birds a pair and was the first simply performing a friendly act for its mate? Is the same roost ever occupied by different birds on different nights? I fear I shall have to leave such problems for future investigation.

CHANGING OF ROOSTS.

Though a few roosts have been occupied almost without a break for months, my records show that scarcely ever are all the same cavities occupied on two consecutive nights. This may be partly due to the frequent changes of weather conditions during a varied winter. At any rate most of the Tree-Creepers seem to be of a nomadic turn. They freely change from tree to tree and from roost to roost on the same tree. This habit accounts, I think satisfactorily, for the great

number of holes compared with the few birds that have been found in occupation. It is not easy to follow some birds. They simply disappear on bad evenings and I do not know where they roost. All I can say is they do not roost on the Wellingtonias. One such bad evening, with the assistance of six young men, I examined the 96 *Sequoias* in the avenue and the grounds and found only 5 birds, one of which was in reach E, the last and longest division of the avenue. I had thought



Tree-Creeper roosting in *Sequoia gigantea* (G.6.N.5½).

that possibly on bad nights the birds might be distributed farther away from the house. But apparently they roost elsewhere. But where? Possibly in natural cavities in other trees, behind ivy or bark or such crannies in which later on they nest. I will mention three cases which seem to favour this hypothesis: (1.) Two of the roosts in S.S.I. are under projecting pieces of bark and when they have been tenanted the birds could not be seen except from below. I must add, however, that these roosts have sometimes been occupied on

good evenings. (2.) One evening I found a bird roosting in G.4. in a natural cavity under a lopped off branch and when I examined the position next day I saw that no excavation had been made. The evening, however, was fine, and the incident only proves that natural cavities are sometimes occupied. (3.) On the evening of February 6th I found a Tree-Creeper in a normal sleeping-hole of G.3. at $4\frac{1}{2}$ feet from the ground and facing north but somewhat exposed from the east side. That evening there was a fairly strong wind from the south-east. During the night the wind freshened and veered a point to the east. On the following morning at 7.30 (sunrise 8.1) I was surprised to find the roost empty, as it was rather dark at the time and never before had I seen a roost vacated so early. But on moving my torch light round I discovered the bird a foot and a half away, slightly higher up and towards the lee side, in a natural fold well sheltered from the wind. No excavation was made.

Still I seem to be able to keep in touch with a few birds. Let us try to follow for a week the bird which the photographer calls "Our Friend" because it often roosts at the convenient height of $4\frac{1}{2}$ feet.

February 2nd on G.1 one of three birds : E.10 $\frac{1}{2}$; E.8 $\frac{1}{2}$; N.7 $\frac{1}{2}$.

„ 3rd on G.1 one of three birds : E.10 $\frac{1}{2}$; E.8 $\frac{1}{4}$; N.7 $\frac{1}{2}$. (8 $\frac{1}{4}$ is directly under 8 $\frac{1}{2}$ and has a very narrow entrance.)

„ 4th, 5th and 6th in G.3.N.4 $\frac{1}{2}$. (G.3 is 200 yards from G.1.)

„ 7th—a gale blowing—in S.S.1.N.8. (S.S.1. is 30 yards from G.3.)

„ 8th—frosty—back in G.1 one of three birds : E.8 $\frac{1}{2}$; N.7 $\frac{1}{2}$; N.11.

Thus "Our Friend" roosts either in G.1 or in the group of trees which I call "the Circle," 200 yards from G.1. I should mention that "the Circle" consists of two trees of *Sequoia gigantea*, G.2 and G.3, and three of *Sequoia sempervirens*, S.S.1, 2 and 3, forming a circle of 15 yards radius round a *Cryptomeria japonica*. I have found the bird in two roosts of G.3, in five of S.S.1 and in two of S.S.2. Though S.S.3 shows evidence of roosting I have never found it occupied, while G.2 has been quite without roosts. But I shall speak of G.2 presently. When G.1 has had three birds in roosts, then the trees of "the Circle" have been untenanted, while on the other hand when a tree in "the Circle" has been occupied only two birds have been found in G.1. I admit that the evidence

gives only probability, but to arrive at any degree of certainty would require a much more extended period of observation than I have had, and perhaps involve experiments, which I am not prepared to make, of handling and marking the birds.

I followed "Our Friend," to my own satisfaction, until February 15th when complications arose. On that date at 5.40 p.m. (sunset 5.34) I was watching with glasses two birds which had just taken roost in G.1, in the cavities N.7½ and N.11, when a third bird appeared on the east side of the tree, crept up and down a few times and finally disappeared round to the south side. I felt sure there would be three birds roosting for the night in this tree, but when I returned with my torch at 6.15 I found only two. I then went on to "the Circle" and found a bird in S.S.1 in roost N.9, in which on previous occasions I had seen "Our Friend." But on examining G.3 I found another bird on the north side about 7 feet from the ground, on the flat surface of the tree where I was sure there was no cavity. The bird was flattened against the bark, quite motionless, with its head exposed, its eyes open and its beak pointing upward. This was something so unprecedented that I returned at 8.15, when I found the bird curled up in the normal fashion. It was still asleep at 7.15 (sunrise 7.43) next morning. When I examined the position later in the day I saw that not only was no excavation made but that there was scarcely a wrinkle on the surface where the bird had roosted. I was again perplexed, but I had passed the stage of being surprised at any behaviour of this versatile species. There were two cavities a few feet lower down on the same side of the tree and why did it not use one of them? Was the bird a stranger which would not enter a roost made by another? At any rate the bird has come to stay and since its arrival, except on two bad evenings, there have been two birds in "the Circle." One which I surmised was the newcomer has been in three different roosts, not hitherto occupied, in S.S.1 and S.S.2. The other, until February 23rd, had been in holes formerly used by "Our Friend" and I assumed it was "Our Friend." But on the 23rd another strange thing happened. I have already mentioned that G.2 has been without roosts of any kind. Though quite a bulky tree and probably as old as the others, it has the smoother bark of the younger looking trees which Tree-Creepers do not favour. On February 18th, with my penknife I made in this Wellingtonia three cavities as nearly approaching the normal type in size and shape as I could. On February 23rd I found one of these artificial cavities, S.6, occupied by "Our Friend." At least I took it

to be "Our Friend" for the following reason.: on February 22nd two birds were roosting S.S.2, one at W.6, a cavity occasionally patronized by "Our Friend" in the past, and the other at E.7, a newly occupied site, while on 23rd W.6 was empty and E.7 was still tenanted. On the morning of February 24th I inspected the artificial cavity, S.6, and I saw that the upper half had been neatly pared off. On the evening of February 24th, the same two holes, G.2.S.6 and S.S.2.E.7, were again occupied. Next morning on examining G.2.S.6, I found on the lower half a quantity of towy parings which I did not touch. Again on the evening of February 25th the same two holes were occupied, and on further examination of G.2.S.6 next day I saw that all the debris had been removed and the whole interior looked as if it had been sand-papered. The occupation of this artificial roost would tend to show that the Tree-Creeper does not always make its own cavity, though at the same time there is the possibility that it would sense whether the excavation had been done by one of its own species or not. On February 26th all my reasoning regarding the identity of "Our Friend" and the newcomer broke down. On that evening G.2.S.6, the artificial roost, was occupied and also S.S.1.E.8, a site often tenanted before the arrival of the second bird. The only conclusion that I can draw is that birds do occupy roosts which have been used by other birds

ROOSTING IN TREES OTHER THAN SEQUOIAS

Where do Tree-Creepers roost in the absence of *Sequoias*? Miss Frances Pitt writes: "A Tree-Creeper could be found every evening in a favourite crevice of the bark on the trunk of an oak tree." (*The Field*, December 7th, 1935.) Recently I searched the extensive oak wood immediately to the west of the house and found only one doubtful roost. But then with so many *Sequoias* at hand it is not likely that oak trees would be used. However, on the west shore of the lake, less than half a mile away, I found in an oak tree at 4½ feet from the ground a cavity which showed evidence of frequent roosting and which I believe, could have been tenanted only by a Tree-Creeper. In my quest of Tree-Creepers at night I have met with various other birds roosting in cavities, but all seem to require a stance. The Tree-Creeper, in my experience, is the only bird which clings to the perpendicular side of a tree. Again in the old, neglected wood, already mentioned, to the north across the lake I found two similar roosts in Scots pines, one of which was occupied by a Tree-Creeper on March 30th and 31st. In this wood there are many dead Scots pines which look mere

skeletons. The branches have fallen off, the bark is generally gone and in many of the trunks the outer layer of wood is so decayed that it is quite as soft as the bark of the *Sequoias*. In upwards of a dozen of these dead trees I have found obvious roosts of Tree-Creepers. Since the middle of February I have cut out from my evening rounds Reach C of the avenue and have taken instead some of these dead trees which I call S.P.1, 2, 3, etc. On February 15th I found one Tree-Creeper roosting in S.P.1.E.12. On February 17th there were two birds in dead trees, S.P.1.E.12 and S.P.2.E.6. The 18th was a particularly bad evening owing to wind and rain and no birds were on the dead trees. But on the 20th, S.P.1 and S.P.2 were again occupied and were regularly occupied up to March 2nd, one in three different cavities, the other in four. On March 2nd there were still two birds, S.P.2.E.6 and S.P.3.E.4. Thus I have found Tree-Creepers roosting in three dead Scots pines and in eight different holes. It would appear that they occupy dead trees just as they occupy Wellingtonias and that on bad nights they roost elsewhere. In this wood, as already stated, there are many trees of the species *Sequoia sempervirens*, but from examination of these I should say that Tree-Creepers prefer dead trees, just as they prefer Wellingtonias. It would also seem that where there are decayed trees in abundance the birds use cavities or dents in growing trees as alternative roosts. And finally in the absence of dead trees and *Sequoias* it is natural to conclude that they would have to fall back altogether on living trees.

BEHAVIOUR OF STARLINGS AT NESTING SITE.

BY

GEORGE MARPLES, A.R.E., A.R.C.A., M.B.O.U.

EARLY each morning during the winter, flock after flock of Starlings (*Sturnus v. vulgaris*) hurry over the garden from their roosting place some seven miles to the north-west. Most of these birds continue their flight to the feeding ground, but each day a few fall out and alight on the highest twigs of a large elm in the hedge until a dozen or so birds are congregated on the tree-top. There for a time they sit, very pleasantly "charming" as the country people say, waiting, perhaps, until the rising sun softens the ground sufficiently to permit feeding. Then, one after another, they drop into the field to search for breakfast. Their arrival is inconveniently early for regular observation but I have managed to find that their time of arrival at the garden each day closely approximates to the moment of sunrise.

Towards the end of January, from one of these groups of tree-top "charmings", a solitary bird will glide down and examine the "starling-box". This is always a male bird which, so early in the season, evinces an interest in a possible nesting-site. The earliest date I have of such an occurrence is January 22nd, when a male Starling went in and out of the nesting-box many times. It is almost safe to say that after this initial visit a Starling, always a male, will call at the box each morning and explore the interior, though whether the same bird each time is, usually, impossible to determine. This point was settled, however, in 1934, when the first-comer was a male bird wearing a ring. (It may be stated here that this bird, which may have been one of a brood hatched in the box and ringed the previous season, continued his visits, obtained a mate and, ultimately, assisted in bringing up a family.)

The first calls are always made in the early part of the morning between eight and ten o'clock, no bird being seen at the box after the latter hour. But, as time goes on, the visiting hours extend both earlier and later though for some time no call will be made in the afternoon. The first bird to come is not the only Starling interested in the nesting-box, others have noticed his doings and, a few days later, one or two others will arrive with him. These are always males yet no quarrelling occurs. The coming of a female bird seems to be deferred until well into February though why this should be so is not apparent for females must be present, one would

think, in all morning flocks. With her coming the conduct of the male alters for, in addition to his usual singing on the perch, he enters and remains in the box for long periods, peeping out now and then. At times he will fly down and pluck a blade of grass or a leaf and carry it to the box. He may take the grass in and leave it, or he may sit on the perch holding it while he sings. Meanwhile the female goes in and out of the entrance many times as though estimating the suitability of the accommodation.

It is shortly after the adoption of the nesting-site by the pair that visits made by other birds are resented; temerarious males are chased away and often roughly dealt with as already described (*antea*, Vol. XXIX, pp. 321-3).

This early occupation may be interrupted any time by a spell of cold weather during which the site is, temporarily, deserted.

Toward the end of March the nesting-box will be visited later in the day for the first time; this occurred in 1936, on March 16th, about 3 o'clock, and again on the 20th, at 5.50 p.m.

A little later signs of interest in nest-construction are manifested. At first only the male carries building material, though in a day or two his mate is perfunctorily assisting. This concern appears to be of a somewhat tentative character and much of the material taken in is brought out again and dropped outside. As this rejection seems mostly to be conducted by the female one wonders whether she is showing disapproval of the kind of stuff collected by her mate.

Now occurs behaviour which looks to be of the nature of courtship yet cannot be described as "display". An extract from my journal will best explain this. "April 2nd. Much curious chasing has taken place to-day. The male alighted low down on a long, thin shoot of 'syringa' near the nesting-box. The female settled below him. He moved, spasmodically, up the branch a few inches at a time, she followed, edging her way sideways after him. This pursuit continued up the branch until he was standing on its tip, she being three to four inches below him. The branch bent low with their combined weight. He took to the air. Relieved of his weight the branch suddenly straightened almost catapulting the female off into the sky. He alighted in the oak-tree, she followed, and again the same sideways scramble up a branch took place until he was clinging to its extremity. He moved to another branch, alighting low down, and once more he worked his way upward followed by his mate. These

'branch-chases' were repeated many times, both birds flicking their tails incessantly the while. Presently he transferred himself to another tree closely followed by the female and the same succession of movements occurred. After this behaviour had gone on for several hours the speed of the climbing increased and developed into a rapid and determined pursuit during which she flew at him each time he alighted and drove him into flight, she close behind. In this way they again and again passed from branch to branch and from tree to tree, never leaving the garden. Often, as they passed the nesting-box, she would drop on to the perch, perhaps enter, emerging at once to resume the pursuit. The doings of the Starlings were observed throughout the day until 6.26 p.m. when the chases ceased. They had been repeated at intervals until that time, always the same consistent following of the male by the female until he reached each branch tip and moved to another. As the day wore on the female, when she visited the box, which she did every five minutes or so, would dive headlong into the hole without touching the perch, a feat which showed consummate judgment of direction as her entrance was made, usually, at great speed''.

The nesting-box is made in two compartments, a circumstance which was the reason of some difference of opinion between the two birds. One year the male set his heart on the compartment facing south; his mate fancied the north room. Regardless of her decision he persisted in carrying building material into the south room, but, whether on second thoughts or in response to remonstrances from his mate, he would re-enter and transfer whatever he had brought into the north room. This amusing performance recurred many times in the course of several days until he, reluctantly, accepted his mate's choice. I write "reluctantly" for even when incubation was in progress he still, at times, carried green leaves and flowers into the unoccupied compartment, subsequently transferring most of these to the other chamber.

About April 7th the female, which had, hitherto, played at carrying material was definitely seen to import an energy into her building efforts which had hitherto been missing, and serious construction became the order of the day. Both birds worked feverishly though there were long intervals when they were not seen. Early morning and evening were their most strenuous times.

An unaccountable incident happened when the male plucked a tuft of lichen from the oak and carried it to the south room

perch where he sat holding it. Suddenly he set off at a great pace and flew out of sight down the valley. Returning the same precipitate way after a considerable absence he is still carrying the lichen which he again took to the south where he dropped it. During building operations one interesting episode was frequently repeated. The male would arrive carrying a long, stiff plant-stem. As he held it in the middle he failed, of course, to get it into the box. His next move was to retreat to the extreme end of the perch, a distance of two feet, then charge at the entrance. Sometimes the stalk would bend or break with the impact when all would be well. But, if it did not yield he would essay the same trick again and possibly several times before he achieved success. Occasionally he would, with greater acumen, work his beak along to the end of the stalk when, easily, he took it in. He did not often think of this way out of his difficulty.

The male lived somewhat in dread of his mate for, quite commonly, when she was inside the box he would fear to enter, sitting on the perch waiting until she came out. She still continued to reject material, dropping it from the doorway. Whether to mitigate this disapproval of his lady or from some other obvious reason the male now began to convey green leaves and flowers into the nesting hole. During five days this action was noted I find he took in the following:—anemone flowers twice; forget-me-not flowers once; groundsel four times; chickweed once; a large spray of lilac buds once; oak, lilac and other leaves sixteen times, and lichen five times. Also it was observed that each day there were removals of dead and withered leaves, presumably the shrivelled remains of some of these offerings. Among other birds many Raptores are known to "decorate" their nests with sprays of green leaves and it is on record that a Goldfinch lined its nest with forget-me-not leaves. It is difficult to believe that this practice of taking leaves into the nest arises from any æsthetic sensibility. It is not more probable that leaves and flowers are not "decorations" but "presentations" forming part of the courtship ritual and are akin to the presents of fish made by males to their mates, the leaves carried by Warblers and the chickweed which plays so important a part in the "display" performances of Grebes.

Building continues throughout the day until about 5 p.m., having begun before 8 o'clock. Both birds then go off as though going some distance to sleep, probably they still frequenting their winter roost with others of their kind.

for flocks of Starlings are still to be seen in April feeding in the fields during the day.

Stranger Starlings will persist in paying calls much to the annoyance of the owners of the box, particularly the male. The doings of these callers are not without their diverting side. One will alight on the perch with his feathers tightly pressed to his body. This makes him look very tall, thin and sleek, an appearance not lessened by the necessity of stretching upward to peer into the entrance-hole. With great daring, very furtively glancing all around as he does so, he may approach the hole and insert his head. On rare occasions I have seen a stranger actually enter when, unknown to him, the owners were at home. Naturally this invasion produced great outcry and tumult inside the box and out of the entrance poured forth, first the stranger, then the male with the female close behind, all moving with the greatest haste. The chase which follows an unwanted call sometimes takes the birds far afield, but at this stage I have never seen a combat, for flight appeals more strongly to the interloper than resistance. Quite often throughout pursuits of this kind our male will carry a leaf or piece of lichen in his beak.

These events have brought our chronicle to the middle of April when coition may take place. My notes record that about this date the birds begin to arrive quite early, at 6 a.m. or thereabouts, and shortly after that hour building begins. At first this is done by the female only and she is attended closely by her mate which sings on the ground by her side while she gathers the material. Once, I have recorded, she took in material twenty times before 8 o'clock and that, subsequently, the male began to do his share.

I find April 18th is the average date for the first egg and each day afterwards another will follow until the full clutch is laid: this, here in Hampshire, seems usually to be six eggs.

Almost with the first egg incubation appears to begin, at any rate, the female stays in the box for long periods from this time onward. At first she does not encourage her mate to enter the box and bustles him out unceremoniously whenever he does so. But he persists in his attempts, taking in now and then an offering of a small bundle of building material, or grass blades, or leaves. This practice stops when he begins to take a share in the incubation, which he does about two days after the first egg is laid. This accession to his obligations he may signalize by carrying in a bundle of four or five feathers, the first and only ones to be used. They "change over" frequently for the male seems somewhat

patient of the duty of brooding, for though his mate stays in the nesting-box a considerable time, he soon gets bored. As a note on April 30th states that he remained in the box for two minutes, emerged, stretched, sang a few bars, went back, presently appeared and sang again, re-entered, then came out, then went in, seeming anxious to be released. This period of service being 14 minutes in all, is an example of his usual conduct. She is not too good a sitter either, always appearing glad of his return, meeting him on the perch. Nor is this to be wondered at for not only does it release her from the stuffy air of the box but he sometimes brings her a gift of a fat, brown grub on returning to the nest over the work.

Counting from the morning of the day when the last egg hatched to the time the first young one appears, incubation takes, approximately, 288 hours. When hatching is imminent the excitement is displayed, both birds popping in and out of the box continually but not carrying any food unless it is something too small to be seen. Towards evening, however, the male begins to bring food in the shape of grubs, usually two, which look like "leather jackets". Holding the grub he waits on the perch for some time not attempting to enter. Once he entered three times, remaining inside a few moments only. After each entry he emerged and sat on the perch still holding the grubs. Then when he made to go in for the fourth time his mate jumped out at him as though annoyed. On this he flew off and she went inside. In a few minutes he returned bearing one grub which, again, he was not allowed to deliver. Possibly this behaviour indicated that his mate thought he was premature in his attentions. An examination of the box showed that only one egg had hatched. Next day the female carried away egg shells which she dropped some 20 yards from the nest. After this in her turn, began to bring food, attended in her goings and comings by her mate, who did not carry any. For several days she appeared to be the sole food-provider, he being on her assiduously. Then, three days after his frustrated efforts he was seen once again to carry supplies. The male still objected to his exertions and tried to prevent him entering the box, but this time he forced his way in and then onwards both fed the young ones throughout the beginning round about 6 a.m. and finishing towards 6 p.m. On six occasions, on different days, their arrivals with food were timed. The average periods between visits were found to be: morning, 2 minutes and $3\frac{1}{4}$ minutes;

near mid-day, 3 minutes; in the evening, $3\frac{3}{4}$ minutes, 2 minutes and 4 minutes. Each hour there seems a "lacuna" of 10-12 minutes, most probably used for resting and preening or in partaking of food themselves. The staple food was "leather-jackets", i.e. Crane-fly larvæ (*Tipula oleracea*) with beetle grubs of unknown species a good second. Other things were brought such as large, striped burying-beetles, but never any worms.

At this stage the female no longer flew away to roost, her nights were spent in the nesting-box with her young ones. The male still went away for the night returning in the morning about 5.30 a.m. Immediately he arrived she departed for a short period.

On May 18th, 1935, a most intriguing thing happened. The male arrived with three large grubs held by their heads, dangling from his beak. Something seemed to deter him from bestowing them for he made twelve abortive approaches to the entrance, twice inserting his head but each time returning to the extremity of the perch. I thought the female must be inside but, no, she came with food, presenting it without delay to the young. After his twelfth attempt he went away, returning in 10 minutes with a very large beetle grub which he took in after two efforts. As the young ones were now fully feathered it seems possible that he was using the larvæ to tempt them to come out of the box. At his subsequent visits that day he always lingered for a while outside the entrance as though with the same intent. I never saw the female behave in this way, she always entered the box without hesitation and left at once without the food she had taken in.

Two of the young ones now left the box and they and the female disappeared after she had been seen to feed them on the lawn. From this time she must have devoted herself solely to their welfare for she left her mate to look after the fledgelings remaining in the nest.

His method of collecting food had its points of interest. He prodded, with open beak of course, here and there on the lawn, till his persistence was rewarded by the capture of a "leather jacket". Carrying this a few steps he laid it down and probed again. This he did several times until he extracted another larva, when he picked up the first and moved both to the place of his next digging to accomplish which he laid both his prizes on the grass. Having found a third grub he picked up the two first and carried the three to the nesting-box. Three grubs seemed always to be the limit of his catch each

10. In this manner he worked alone and unwearingly until the next day, which was the twenty-first after hatching, when the last of his family took to flight and were not seen again. The following points seem worthy of emphasis: The early appropriation of the nesting-box by the male Starling and his long, solitary occupation; the late coming of the female Starling; the tentative nest-construction mainly by the male; the rejection of building material by the female; the strange "branch-chases"; the "presentation" of flowers and leaves; the "discouragement" of the male by the female first, in the initial stages of nest-building; second, at the beginning of incubation; third, in regard to the early feeding of the young; the male's "attendance" on the female when she began, seriously, to build and to feed the young alone, himself, refraining from helping in these operations during his attendance; the "temptation" of the fledgelings; lastly, the "division of labour" at the end of the fledging period.

FURTHER NOTES ON THE SPARROW-HAWK.

BY

J. H. OWEN.

FROM time to time I have contributed articles to *British Birds* dealing chiefly with the home life of the Sparrow-Hawk* (*Accipiter n. nisus*). Since 1924 I have not done any photography, but otherwise I have kept notes of my observations. These have done little more than to corroborate what has already been published, but the following notes may be of interest.

NEST BUILDING.

Mr. H. S. Davenport told me that he had watched Sparrow-Hawks building and seen both birds picking up sticks from the ground. This does not agree with my experience, though I have watched male and female taking a share in nest-building. It is true that in a completely new nest, one not made on an old foundation of any sort, the lower and heavier sticks look as if they might have been picked up off the ground. However, I think these sticks are usually picked up, already broken off, from the forks of trees; they do not often show signs that they have been newly snapped off. On the other hand the lighter material and the lining are almost invariably broken off by the birds, and I have watched them getting them in the same way that Rooks do. The building seems spasmodic and dependent on the weather, especially when building starts a long time before the nest is actually needed for laying purposes. If the nest is being constructed in late April or early May, operations may be carried on more steadily. If by some mishap a nest has been destroyed, by a gale for example, a new nest may be completed in a very short time if there is need for hurry. I have known a nest completed, under such circumstances, in exactly the same position as the one destroyed in less than 48 hours after the disaster.

Towards evening the male will often bring a victim to the neighbourhood of the nest and call for the hen to come so that he may offer it to her. If she is out of the wood, as possibly she may be, hunting on her own, he will change his

* Mr. Owen's articles on the Sparrow-Hawk appeared in the following volumes: VIII., Food and Habits, p. 193; X., Breeding Habits, pp. 2, 26, 50, 74 and 106; XII., Some Breeding Habits, pp. 61 and 74; XIII., Some Habits, p. 114; XV., Breeding Habits, pp. 74 and 256; XX., Eggs, p. 114; XXV., Feeding Habits, p. 151; Hunting, p. 238; XXVI., Food, p. 34.

position two or three times, calling again after each change and, finally, if she makes no response to his appeals, he will himself make a meal of the prey somewhere not far from the nest. Usually he will preen and clean himself after this for a short time and then will suddenly busy himself in procuring material and taking it to the nest. He breaks a twig from a tree and puts it on the nest. He does not seem to take much trouble about fitting it into the nest material. Often he will only stay on the nest one or two seconds; at other times he may be as long as three-quarters of a minute. It is unusual for him to stay longer. His search for material is not long, so that when he is really busy he returns to the nest every hour or five minutes. It must not be presumed that this is a general habit, but I have observed it when the nest is incomplete and the time for laying is getting close.

There are a good many further points in connexion with nest building which seem worthy of record. In one wood of about 60 acres there is usually only one pair of Sparrow-Hawks. There are hundreds of trees in that wood that look eminently suitable for them to use. In spite of this a particular tree has been used by at least five different hen birds, two nests having been built by all of them, for the old nests were always poked down. Three different positions were used, and all with a more or less northerly aspect, which is itself unusual in Sparrow-Hawks. A tall birch was used in this wood in 1934. The nest was quite new and was pulled down.

In 1935 the same hen had built a new nest in the same crotch, and it had not been that the still substantial remains of the old nest were at the foot of the tree, and the marks of the climbing ladders in the bark, I should have thought I might have mistaken the tree. Another feature of this position was that the tree was far inside the wood and a very long way from a ride. Of course an old nest may be used again and again as a foundation for a new nest, but that is quite a different matter. My experience is that more often than not the Sparrow-Hawk builds a completely new nest. A large number of birds are shot nowadays by pigeon shooters in the woods during February and March. Also a very large proportion of the woods about Felsted have been cut down, so that it is much more difficult to find nests than it was a few years ago. In 1935 I investigated nine nests and of them seven were new and two built on old nests. But the percentage of new nests is generally rather less than this. In 1934 out of ten nests six were new, three on old nests as foundations, and one was a new nest on the very top of the dome of a new Magpie's

nest that had been robbed by some village boys in April. One of the new nests was in some lime undergrowth, about twelve feet high, and in an extremely precarious position. In 1933 out of nine nests I examined, six were entirely new. One of these was in some hornbeam undergrowth about twelve feet high. I fancy the bird was killed as the nest never contained eggs, so far as I know. In 1932 I examined fifteen nests; of these thirteen were new, an extraordinary high percentage. In 1931, out of thirteen nests nine were new. One of the others was built on a nest started in 1930 but never used.

For the last five years this gives an average of practically 75 per cent. of the nests as new.

LAYING AND INCUBATION.

In an article on the laying and incubation of the Sparrow-Hawk (Vol. XII.) I have given the interval between eggs as 48 hours or more. I have only once had this statement queried. A man who spent a great deal of his time nest-hunting informed me that he had come across a bird that laid every day—five eggs in all. One must be prepared to believe almost anything out of the usual run that is reported about birds, but my experience of Sparrow-Hawks runs to hundreds of nests, and I have never yet known two eggs laid on consecutive days.

SIZE OF EGGS.

In Volume XX. I state the average measurement of 425 eggs to be 38.86 by 31.22 mm. During the summer of 1926 I measured 99 eggs which gave an average of 39.40 by 31.50; this is a considerable advance in size on the previous average. In the same article I stated that I had no measurements of a six-set in which every egg measured over 40 mm. Since then I have seen more than one such set and a few details of two sets may be interesting. In 1930 the six eggs averaged 41.3 by 31.8; in 1931 they averaged 42.5 by 30.4. I have not worked out the volumes but probably the 1930 eggs have greater volume than those of 1931. They were the produce of a young bird in the first and second seasons. It is very unusual to see such a marked increase of length, but the decrease in width is even greater. A five-set I measured in 1931 had an average of 42.7 by 32.75; this was a magnificent set of eggs from a bird in its prime and all the eggs were extremely even in size. Another bird laid very small eggs. In 1925 she laid five averaging 34.3 by 29.3; they looked very round but rather misshapen. In 1926 I heard this bird

"kewing" in a plaintive way in a part of a wood that was being cut down and found her nest in the next tree to be felled. She had six eggs averaging 34.0 by 29.5, and these were the smallest sets I have measured. There was very little deviation in size from the average. I have not got any notes about the 1925 eggs, but four of the 1926 eggs (which had been incubated a considerable time) were infertile and one contained a dead chick. It is curious what a number of misshapen eggs are infertile even when they are normal in size, and these were considerably below normal. These eggs seemed to be those of a bird of some age. I have two sets of eggs from one female from a wood that was cut down in 1926. In each case the timber-fellers sent word about the nest. The first set of five averaged 41.3 by 31.9; her second set, also of five, averaged 42.9 by 31.5. She was a young bird laying for the first time. The increase in the size of the eggs is most unusual.

NUMBER OF EGGS.

I have not seen a nest with seven eggs for many years, though an old boy of Felsted School found one a year or two ago. I opened my notes at random and took a list of the eggs in the next hundred nests which I knew were first layings and had not been interfered with to my knowledge. Twenty-three had six eggs, fifty-seven had five eggs, nineteen had four eggs and one had three eggs. This gives an aggregate of 32 eggs for the hundred nests.

REPLACEMENT OF LOST MATES.

In one wood I used to go shooting pigeons. The keeper asked me to kill a pair of Sparrow-Hawks. The first Saturday I killed a hen. By the next Saturday a pair had started a nest; on that day I killed a male. The next Saturday the nest had increased considerably; I killed another female. On my next visit the nest was further increased and I saw a pair of birds but did not shoot at them. During May the nest was robbed of its eggs. This shows how easy it is for male or female Sparrow-Hawks to find a new mate.

SOARING.

Comparatively few people have seen Sparrow-Hawks soar though they do it very well. Yet I think that a keen observer might have the luck to witness a single bird do it at any season of the year. On August 29th, 1935, at 10 a.m. (M.T.), I watched a male in the Montgomeryshire Hills rising up to several hundred feet in slow small circles, hardly

using the wings at all. There seemed no object at all in the action unless it was for pure enjoyment. Afterwards it flew very slowly away at about 500 feet ; this flight was probably a prospecting flight to find a spot to hunt in.

ROOSTING.

Kestrels and Owls usually use the same roosting place regularly. The accumulation of whitewash and pellets is evidence of this, and it is not hard to obtain pellets for examination. My experience of Sparrow-Hawks is that they are liable to change their roosting perch every night, and therefore it is very difficult to find pellets. The favourite roosting place is a blackthorn thicket, if there is one, or a large hawthorn bush. They, of course, often roost on a small branch against, or very near, the bole of the tree. I have searched the woods on moonlight nights for roosting Hawks, but when I have seen one, and gone away without flushing the bird, I have never found the bird in the same place the next night. I have found a well-used dining place much more likely to furnish pellets.

NOTES

CROSSBILLS' METHOD OF FEEDING ON LARCH CONES.

In the middle of October, 1935, to my great pleasure I found that a flock of Crossbills (*Loxia curvirostra*) had arrived in a larch plantation near my home in Surrey, and the following observations which I have been able to make on the bird's method of feeding on the cones of this tree may be of value.

When at work in a larch tree the Crossbill sometimes attacks a cone *in situ*, but more usually it is first removed. Owing to the toughness of the stalks of the cones they cannot be plucked or snatched from their anchorage, nor does it seem to me that they are actually cut free. A bird at work hangs below a twig, one foot gripping it, the claws of the other grasping the cone, it makes a few picks at the base of the pedicel, then in one swift movement has the cone free, and holding it in its bill by the stalk flies to a firm perch. If, after it has been discarded, the cone be then examined, the pedicel is seen to show a shearing scar, not a jagged tear. By gripping the base of the stalk of a growing cone with a pair of strong forceps, I found that it was easily removed with little force by a sudden sideways twist. Occasionally, however, I have found cones with jagged torn stalks, and, which is probably connected with this, have sometimes watched a Crossbill picking for a longer time at the foot of a pedicel, while fragments floated downwards from it.

When a cone is carried to a firm perch, the bird holds it against the branch with one foot, and extracts the seeds. I have not seen whether it thrusts its closed bill behind a scale thus forcing it outwards and splitting it (when the crossed mandibles make a space in which to operate), or first splits a scale down with open bill. The beak is pushed in sideways, and the scales then show one or two vertical splits. The cones with these scales and the shearing scar of the stalk, strewn the floor of a plantation, are unmistakable evidence of the presence of Crossbills. I have never found a cone with any scales stripped right off, or lacerated and broken away as by a grey squirrel.

As each seed is extracted the bird raises its head, and by working its mandibles cleans it of its membraneous wing which comes floating down in fragments. As long as fifteen minutes are often spent on one cone, but at other times one

quite sound may be dropped scarcely touched and another selected. I have not seen a fallen cone ever retrieved, even when one Crossbill has left its own food to attack another bird—for they are quarrelsome birds—and both cones were let fall and lost.

B. D. MORETON.

LARGE BROOD OF MISTLE-THRUSH

AT Port St. Mary, Isle of Man, on April 9th, 1936, we found a nest of Mistle-Thrush (*Turdus v. viscivorus*) with six young and one addled egg. The nest was in a chestnut tree in a private garden. We were told by the owners of the garden that it was a second attempt as the first nest had been blown down by a gale. We observed only two old birds, and there was no evidence at all of there being a second female.

C. H. KAYE.

C. HEYCOCK.

[While the normal clutch of the species is only four, and five is exceptional, there are about nine recorded occurrences of six eggs. H. S. Davenport (*Zool.* 1885, p. 333) described a case where two hens laid nine eggs in one nest, and in the following year he found a nest with seven eggs of two types (four and three) which were apparently the produce of the same two hens, and in this case it seems probable that both were mated to the same cock. The above is the first instance of a clutch of seven eggs which has come to my notice. F. C. R. JOURDAIN.]

WHITE-TAILED EAGLE IN NORTHAMPTONSHIRE.

AN adult White-tailed Eagle (*Haliaeetus albicilla*) appeared at Milton Park, near Peterborough, about February 17th, 1936, and stayed in the district until March 7th or 9th. My first view of the Eagle was on the afternoon of February 22nd, and as it moved out of a tree at a distance of perhaps thirty yards the tail looked pure white, rather short and square in shape. Altogether I saw the bird on four occasions and had it under observation for several hours. Owing to its rather small size I thought it was a male, but this was a general impression gained from my having lived for many years in daily contact with the species in captivity. The bird was decidedly tame, and I had the impression that it might possibly have escaped from captivity. Usually when seen it was sitting in a tree and it was much "mobbed" by Rooks. It fed for some time on a fallen deer in the Park and also took rabbits.

A. F. MOODY.

[A bird stated to be a White-tailed Eagle was reported in *Cage Birds* to have been observed during the first half of March on several occasions in the neighbourhood of Dartmoor.

Mr. E. Giles informs us that in Breconshire on April 15th, after observing Kites and Buzzards, he watched a bird which from its large size, long wings and outspread pinions with upturned tips was evidently an Eagle. It was high up and its coloration could not be observed but its tail was not white. Mr. Giles thought it was a Golden Eagle, but an immature White-tailed is perhaps more probable.—EDS.]

ANOTHER UNRECORDED ESSEX HERONRY.

On April 22nd, 1936, I visited a heronry in Copthall Grove, Essex, which has not previously been recorded. Copthall Grove is half a mile north of Little Wigborough church, three-quarters of a mile south-east of Great Wigborough church, and within three-quarters of a mile of the extensive saltings which lie to the east of Salcott Creek. Salcott Creek joins the Blackwater estuary between West Mersea and Tollesbury. Mr. A. R. Thompson and I counted thirty-seven nests, all of which we judged to be occupied; there were young birds in most of them. There were also three half-built nests, which, of course, may have been relics from the previous season. Thirty-two nests were in oak and five in elm, while the largest number in any one tree was four for oak and three for elm. Mr. Stimpson, who has been at Copthall for the last four years, informed me that the heronry had increased rapidly, for when he came to Copthall there were only three or four nests.

I am indebted to Mr. R. Hutley for the following information concerning this heronry. The first Herons nested in Copthall Grove either in 1926 or 1927 when there was one nest. In the following year there were two, and by 1929 there were three nests.

Birch heronry, which the *Heron Census* (1928) showed had decreased, is three and a half miles NNW. of Copthall Grove, and Rolls Farm heronry is approximately five miles south-west.

I wish to acknowledge my thanks to Major A. Waller, who first informed me of the existence of this heronry, and to Mr. H. J. Hines for permission to visit Copthall Grove.

During the severe winter gales, considerable damage was done to the nest trees at the Rolls Farm heronry, Tollesbury, the existence of which I first reported in 1934 (*antea*, Vol. XXVIII., p. 52). Of the four hedge-row elms, which held nests in 1935, two have been blown down, and of the other two only the trunks and a few of the larger branches remain. On April 24th, 1936, I counted only six occupied nests; in 1935 there were nineteen.

I have been unable to make an extensive search of the surrounding country so as to satisfy myself that there are no isolated nests, but three nests containing young Herons have been discovered in two adjacent elms about half a mile north-west of the main heronry.

The fact that adequate accommodation is no longer available at the original Rolls Farm site seems worth recording in case new colonies are reported in this area within the next few years. The number of sites available, similar to that at Rolls Farm, is large and it is hoped that observers who may visit this district, either the north shore of the Blackwater, especially between Tollesbury and Goldhanger, or the south shore in the neighbourhood of Bradwell, will keep a look out for Herons' nests.

JAMES W. CAMPBELL.

SCAUP AND BLACK-NECKED GREBE IN INNER LONDON.

ON March 13th, 1936, a young male Scaup (*Nyroca m. marila*) appeared amongst the Pochards which inhabit the Round Pond during winter. It was a young bird, not quite mature as to its plumage, and comparatively tame, feeding with the other ducks. It stayed for some time; the last time we saw it being on March 25th.

On April 21st, 1936, on the same pond we saw a Black-necked Grebe (*Podiceps n. nigricollis*), in full summer plumage, swimming about close to the bank. The bird was very tame. This makes the second record of this species for the Round Pond, one of us (G. C. L.), having reported a similar occurrence on September 28th, 1931 (Vol. XXV, 1931, p. 166).

G. CARMICHAEL LOW.

E. G. PEDLER.

DUNLINS IN INNER LONDON.

Mr. A. Holte Macpherson remarks in his "Birds of Inner London, 1935" (*antea*, Vol. XXIX, p. 347), that there is only one definite record of the occurrence of the Dunlin (*Calidris alpina*) in Inner London before last year, I would like to add two previous occurrences from my own notes, not hitherto recorded, as I had overlooked the infrequency of this species. On August 21, 1924, a Dunlin flew past me near the Hudson Bird Sanctuary in Hyde Park, going south-east, and calling, about noon. On December 16, 1925, when the Round Pond was mainly frozen, I found two very tame Dunlins by the small remnant of open water about 1.45 p.m. They allowed close approach but were persecuted by both Gulls and Mallards, and eventually flew first to the edge of the ice, then

ain to the margin, and then away to the west, actually
ighting for a moment on the Broad Walk by Queen Victoria's
statue.

E. M. NICHOLSON.

HOMING EXPERIMENTS WITH WILD BIRDS.—Reference was
ade last year (Vol. XXVIII, p. 283) to "homing"
periments by Dr. Werner Rüppell, the results of which
cluded return flights by Swallows (*Hirundo r. rustica*) and
ouse-Martins (*Delichon u. urbica*) from distances of rather
er 300 English miles. The same author has now published
. *f. Orn.*, 1936, Vol. LXXXIV, p. 180) an account of further
periments in which still more remarkable results have been
obtained. Of particular interest to British readers are the
ses of successful "homing" from England to Germany.
even Swallows were caught on their nests at Scheessel, near
remen, at 10 p.m. on May 20th, 1935. They were ringed, and
eir plumage was also stained with red dye. They were sent
er aeroplane to Croydon Aerodrome, London, where they were
et next morning (21st) by Dr. A. L. Thomson and released
three batches at about 12.30 p.m. One bird was seen at
heessel at 6 p.m. on May 25th, two others early on May 26th,
d a further two on later dates: four of them were eventually
ught for exact identification. The distance between the
o places is about 428 miles. In a later experiment with
ouse-Martins from Deinste, in the same part of Germany,
urteen were released at Croydon by the staff there at 11.45
m. on June 22nd, 1935. Two, or possibly three, of these were
bsequently observed at the original locality, the first at
20 p.m. on June 24th. Other results include return flights of
arlings (*Sturnus vulgaris*) from Gleiwitz, near Breslau
38 miles), and of Starlings and House-Martins from Malmö,
southern Sweden (210 miles). In other experiments with
arlings, over shorter distances, the birds were mechanically
bjected to continuous rotation in the dark during the out-
urd journey, without adverse effect on their homing powers.

CROSSBILL BREEDING IN DEVON.—Mr. W. Walmesley White
forms us that during the last week in April he constantly
atched two young Crossbills (*Loxia curvirostra*) being fed
y their parents at Budleigh Salterton.

BLUE-HEADED WAGTAIL IN SURREY.—Mr. E. G. Pedler and
r. G. Carmichael Low inform us that on April 18th, 1936,
hen watching a flight of Yellow Wagtails at Barn Elms, just
rived, they noticed amongst them a Blue-headed Wagtail
(*Motacilla f. flava*), which allowed a close approach and satis-
ctory identification.

ICELAND REDWINGS IN SOMERSET AND NORTH UIST.—Mr. Charles M. N. White informs us that he examined in the Liverpool Museum a Redwing dated male, November 17th, 1899, from Clevedon, Somerset. This bird had a wing of 126 mm. and its coloration was rather dark. Mr. White considers it to be of the Iceland form *Turdus m. coburni*. Mr. White also identifies three Redwings (males with wings 123, 125, female 123) obtained in N. Uist, Outer Hebrides, on February 3rd, 1936, as of this form.

EARLY WHINCHAT IN SUSSEX.—Mr. Richard N. Ticehurst informs us that on March 18th, 1936, he saw a male Whinchat (*Saxicola r. rubetra*) in Ashdown Forest. He had good views of it through glasses as it perched on a gorse bush and remarked the pale eye-stripe and white wing patches and in flight the white base to the tail.

SEXUAL DISPLAY BY HEDGE-SPARROW.—With reference to the note on this subject (*antea* Vol. XXIX, p. 360) Mr. W. L. Colyer kindly points out that the late Edmund Selous made notes on this habit under dates 1908 and 1902, as will be found on pages 107 and 109 of his *Evolution of Habit in Birds*.

BITTERN IN CO. FERMANAGH.—Mr. J. P. Burkitt informs us that a Bittern (*Botaurus stellaris*) was shot at Enniskillen on March 14th, 1936.

PURPLE HERON OFF THE COAST OF IRELAND.—Mr. H. R. Wakefield informs us that a Purple Heron (*Ardea purpurea*) fell exhausted on to the deck of a trawler when 90 miles off the west coast of Ireland on April 5th, 1936.

The skipper of the trawler and his crew fed the bird upon soaked bread and flat fish, and brought it home alive. It was eventually taken by Mr. Percy Player, who kept the bird and has now handed it over to the London Zoological Society, and he and Mr. Wakefield satisfied themselves of the identification by comparison with birds at the Swansea museum. Although the bird came on board so far off the coast it is advisable that it should be recorded.

Die Vogelwarte Rossitten auf der Kurischen Nehrung.

UNDER this title the firm of Ludwig Bredigkeit, of Berlin, has placed on the market a series of lantern slides (8.5 by 10 cm.) illustrating the work of the ornithological station at Rossitten. The set costs Rm. 84, or single slides Rm. 1.25 each, and is also available in miniature on a positive strip of standard cinema film for Rm. 7.50; explanatory text by Dr. E. Schüz is supplied in a multigraphed brochure. The slides are mostly photographs showing the buildings and neighbourhood of the station, various phases of marking activities, and birds of relevant interest; there are also some maps showing marking results and the like.

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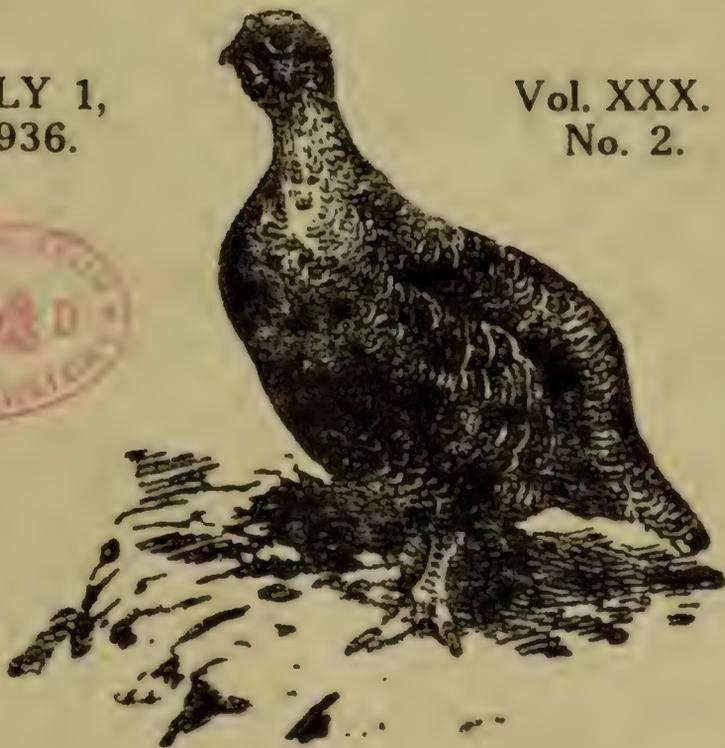
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ON THE FIGHTING OF BLACKCOCK.

BY
GEORGE K. YEATES.

(Plates 2 and 3.)

THE following notes on the fighting of Blackcock (*Lyrurus tetrrix britannicus*) were made whilst I was engaged in photographing this performance during mid-April, 1936, in the forest of Rothiemurchus, Inverness-shire. While I cannot pretend that my observations were as thorough or as protracted as those already carried out by E. Selous and described by him in *Realities of Bird Life*, the photographs may perhaps explain the various positions assumed more clearly than any written account.



Fig. 1.—A general view of the "lek" showing proximity to keepers' dwelling.

The tournament ground or "lek" was a small grass field in close proximity to a keeper's cottage (Fig. 1). Such would seem to be very normal sites, for all the other fighting grounds which I saw were, with one exception, similarly placed, i.e., in open fields rather than rank heather. Since the meeting of



Fig. 3.—Bird on left in position for “the rough hiss”.

Fig. 4.—Bird on right in position for “the bubbling cry”.

(Photographed by G. K. Yeates.)



the birds seems to be as much for purposes of feeding as of fighting, it is perhaps natural that such sites should be popular. In the case of the birds on my ground, they certainly ate largely of the remains from the chickens' meals. Fig. 1 again shows the birds very close to the fowl house.

My observations were made mainly in the morning, from a hide round which the birds did their fighting within two yards. Abel Chapman, in *Bird Life of the Borders*, has stated that during April the fighting goes on throughout the day. If so, I never saw it between 8 a.m. and 7.30 p.m. (winter time). This may in part have been due to the disturbed sites selected by the birds. Yet I was in the forest most of the day as well, without once hearing the characteristic "bubbling" which infallibly indicates the "lek."

For the morning meeting the birds collect very early. Selous has, in fact, shown that they begin to arrive before daylight. Yet they are very loth to leave the ground, even if disturbed, and I found that, at 5 a.m., they retired only to a safe distance, flying back again immediately the human presence had vanished.

In the evening the birds could be seen gathering near the "leks" from about 5.30 p.m. onwards. For nearly two hours they were content with feeding, and indeed the evening fighting, even at its best, was only spasmodic, and quite secondary to the desire for a meal. Of the two sessions the morning produces the most violent sparring.

The weather affects the Blackcock tournament. Heavy snow makes them reluctant to appear. In view of the important part which feeding plays in the motive of these tournaments this is not surprising. Thus, on April 19th, after a heavy fall of snow by which the ground was thickly covered, no birds were anywhere found displaying. All that I saw were perched in the larch, birch and pine clumps around, where they were feeding off the young shoots. It is perhaps worth noting that even up aloft the tail of one cock bird was still carried in the display position, and he was uttering the melodious "bubbling" call which is the note of the birds at the "lek."

Light snow, however, as can be seen in the photographs, did not seem seriously to inconvenience them. It was not, however, heavy enough to stop their feeding.

As I have already tried to stress, there was on the tourney ground more feeding than fighting, although even when not engaged in actual combat the majority of birds held their tails in the display position. At times, however, they allowed it to fall back into its normal place (Fig. 2).

Of the "display" itself perhaps the most striking feature is the suddenness of the outbursts of vindictiveness. The birds may only be relied upon to fight either when they first arrive (when all the birds seem momentarily to indulge in a short joust before settling down to feeding), or on the arrival of a grey hen in their midst. Thereafter it is spasmodic and uncertain. A feeding bird will quite suddenly, however, show desire to fight. This he does with a little jump into the air.



Fig. 2.—Normal position of Blackcock when not engaged in fighting.

This may take him only a few inches off the ground, or he may leap as high as two feet. From what I could see the height of his leap is the measure of his vindictiveness, for the arrival of grey hens produced the best efforts! The jump is accompanied by a rough hiss, which I syllabized as "*tchiir-rew*". This is the note Selous renders as "*tchu-whai*". It is uttered as the bird reaches the ground with the head held high (Plate 2, Fig. 3).

This action would seem merely an expression of feeling. It is not, however, the true challenge. At least it seemed to me that birds only became matched when they uttered the bubbling cry—"hoo-hoo-how-whur" (with the emphasis on the "how"). I am a little at a loss to reconcile this note with Selous's "*choc-ke-ra-ha*" but as he calls it the "bellicose"



Fig. 5.—The face-up.

Fig. 6.—Bird on right walking away from the fight.

(Photographed by G. K. Yeates.)



note, I must assume it is the same. This is the characteristic sound of the display ground, and by it the Blackcock fighting stations can best be located. The note is much repeated and is uttered with the head held forward and parallel with the ground (Plate 2, Fig. 4). This brings the rival to match the challenger.

Even so hostilities are slow to begin, and for some minutes on end the birds just stand and stare at each other (Plate 3, Fig. 5). When at last they do come to grips, it is a mere mockery of a fight. The exact details escape the eye, but it seemed to me that despite the earnest charge both birds are anxious to avoid actual combat. They run in with great speed, but, leaning well back as they are, they withdraw again before they have really tried to inflict a telling blow. After one or two such charges the joust ends as suddenly as it had begun—by the simple process of the one or the other of the birds engaged walking quietly off (Plate 3, Fig. 6) and recommencing feeding. The other party does not pursue or harry the bird in retreat, but quickly forgets its pugnacious feelings and itself begins to feed, until once again either its own pugnacity is aroused or it answers the challenge of another.

THE SPRING HABITS OF THE RED-LEGGED
PARTRIDGE.

BY

WILLIAM E. GLEGG.

THE strange behaviour of this species in the early months of the year created in some minds, including those of experienced ornithologists, the idea that the Red-legged Partridge (*Alectoris rufa rufa*) was a migrant. J. H. Gurney, Senr. and W. R. Fisher (*Zool.*, 1846, p. 1317) claimed it as a Norfolk bird because it had been said to immigrate to the county. Stevenson (*The Birds of Norfolk*, 1866) confirmed the reports of coveys, generally exhausted, being found regularly on the coast in spring. In the neighbourhood of Yarmouth, in many successive springs about March or April these birds had been seen on the beach close to the water. On one occasion, when the sands were said to have been covered with their footprints, a covey of from 20 to 30 was flushed and flew out to sea where the birds were lost sight of. Another correspondent informed him that the French Partridges came in about the middle of March or beginning of April, some 10 or 12 in a flock; he had seen them when four or five miles from land. Stevenson, although he did not go so far as Gurney, still adhered to migration as an explanation of the incidents. His supposition was that the Partridges attempted to emigrate and finding the distance too great returned to the shore. He recorded (*Zool.*, 1869, p. 1489) that a covey of seven dropped into the sea near Cromer on March 17th, 1868, and were picked up alive, suggesting that this was another instance of intended migration. E. T. Booth (*Rough Notes*, etc., 1881-7) writes that having often in early spring, March and April, observed the Red-legged Partridges that were seen in considerable numbers flying round one or two of the larger broads in the east of Norfolk and occasionally falling into the water, he ascertained that the birds remaining inland are also affected by a desire to make a move in spring. Once early in March, 1873, he picked up several on the surface of the water, or attempting to conceal themselves in the beds of reeds, on the swampy islets on Heigham Sounds, and a few that were crossing and recrossing from one side of the pool to the other were shot. Booth, while rejecting the idea of oversea migration, suggests that the Partridges become restless and excited in spring and make occasionally vain attempts to change their quarters, thus accounting for the additional numbers seen near the coast and the Broads. J. Cordeaux clung tenaciously to the idea of migration. Writing in 1898 (*Field*, Vol. XCI., p. 899), he

ates that for the previous seven or eight years Red-legged Partridges had come in regularly between the middle of March and the end of the first week in April. Sometimes they were washed up on the coast, dropped exhausted into the docks, etc., and were also caught in the streets near the coast. A year later (*Field*, Vol. XCIII., p. 516) he tells us: "True to their time, these birds have made their now annual appearance at the town of Great Grimsby", and he quotes two instances of single birds having been taken in April. He argued that these were not local birds but came in direct from the sea and confirmed his views in his *A List of British Birds belonging to the Lumber District*, published in 1899. A. H. Patterson (*Zool.*, 1900, p. 535; 1905, p. 186; 1909, p. 197), W. J. Clarke (*Zool.*, 1907, p. 166; 1905, p. 314; *Naturalist*, May, 1936, p. 117) and Coburn (*Zool.*, 1897, p. 233) quote evidence similar to that of Evenson and Cordeaux. Coburn's record is of interest as it refers to Bournemouth and is the only one not from the east coast. N. F. Ticehurst (*A History of the Birds of Kent* (1900), p. 388) states that although he did not wish to imply that there was a regular migratory movement between Kent and the continent, yet he was convinced that occasional birds or coveys will wander across.

I now come to a series of records from Staines Reservoir, Middlesex. Mr. D. Gunn informs me that on February 20th, 1925, the bodies of five freshly dead Red-legged Partridges were found lying together at the edge of the northern reservoir. The same observer also tells me that one of the labourers found three dead in the southern reservoir. This happened prior to 1930, but the date is not known. At a later date found in the northern reservoir the very much decomposed remains of a bird, which had obviously been in the water a long time and in the same place I found a freshly dead bird on March 4th, 1934, and close at hand flushed another Red-legged Partridge. My most intimate experience with these immersions was on March 15th, 1936. I was seated on the northern bank of the southern reservoir when three or four birds flew past me at a great pace. They were flying over the water at least fifty yards from and parallel with the southern bank, moving to the west. The Partridges were about twenty feet from the water and just after passing me one planed down and alighted on it while the remainder of the party continued on their way and presumably safely reached the west bank. It was only when I turned my monocular on the bird in the water that I realized it was a Red-legged Partridge. It made one or two unsuccessful attempts to rise and then turned its head in my direction. Assisted by a fairly strong

north-westerly wind, it came steadily towards the bank, its head always towards its objective, and always kept well above the waves. The bird seemingly rode the water buoyantly. It appeared that it would safely reach the bank, but when only two or three yards off its head drooped into the water. I fished it out as rapidly as possible and although life was not quite extinct my efforts to revive the bird were unavailing. The primary cause of death was probably the low temperature of the water. In considering these occurrences at Staines it must not be forgotten that Partridges are not abundant and of the total not more than 20 per cent. are Red-legged. I have no knowledge that Common Partridges have ever been found in the Reservoir, although they are seen not infrequently on the banks and have nested there.

I am of the opinion that the behaviour of the Red-legged Partridge as observed at the coast, the Broads and Staines Reservoir is of the same nature. Migration cannot be accepted as an explanation as the incidents are confined to early spring, chiefly March and April, have never been noticed at the time of the autumn migration, were not recorded before the birds had been established by introduction, and have happened in inland localities. The actions of the "Frenchman" in spring may be most logically accounted for by the sexual impulse of the season. The evidence suggests that at this period wide stretches of water have an attraction for the birds. The additional numbers of birds seen in the immediate vicinity of the coast would be thus accounted for. We are confronted by two other problems, namely the immersions and the birds which are said to have been caught by hand. Exhaustion might account for the birds found in the sea as they might fly too far and be unable to return, but this would not explain the deaths of birds in the Broads and Staines Reservoir. The bird, whose descent into the water I witnessed, did not act as though exhausted, and by a slight deviation of its course could have reached land in a matter of seconds. It seems more probable that the Partridges are indulging in pairing flights, in which they become frenzied and oblivious of their danger. As to the easy capture of some Red-legged Partridges it would seem that exhaustion is a cause, but this might also be accounted for by their descent into the water and swimming ashore. It is probable that the Staines bird would have escaped but for the low temperature of the water, and Lord Lilford (*The Birds of Northamptonshire*, Vol. I., p. 306) quotes two instances of having seen this species swimming, on the second, "with apparent ease and equanimity" in the Broad district of Norfolk.

FURTHER NOTES ON BEHAVIOUR OF STARLINGS AT THE NESTING-SITE.

BY

GEORGE MARPLES, A.R.E., A.R.C.A., M.B.O.U.

THE account which appeared on pp. 14-21 *antea*, described the normal life of Starlings, tenants of one of my nesting-boxes. But not always do events work out so satisfactorily as the following will show. Another nesting-box was appropriated, on April 15th, by a male Starling (*Sturnus v. vulgaris*) which between intervals of popping in and out of the hole, sang persistently from the perch gazing the while in all directions into the sky. Whenever another Starling appeared in the vicinity or flew overhead the perched bird's wings, which generally flapped a little during singing, began to wave wildly, being held so loosely as to suggest dislocation of the shoulder joint. The secondaries were spread, the primaries being kept closed or nearly so, their points describing complete circles during the waving. This grotesque action is eminently suitable as an accompaniment to the equally grotesque song and seems practised in order to attract the attention of other passing Starlings for, not only does it appear more usual with unmated birds, it is undoubtedly more pronounced when another Starling is observed. After six days of this singing and waving and diving into the box and out again, still without a mate, he began to build, carrying material into the box at intervals and at times bringing some of it out again.

There was not the slightest display of antagonism against the neighbouring birds which lived only twelve feet away; indeed, they would, now and again, go off and feed together.

On April 16th great excitement was observed, the cause being the arrival of a female. This bird proceeded to share the perch with the male, singing a little, both of them entering and leaving the hole many times. All seemed to be well and expected their future doings would follow normal lines. But this was not to be. Whether on further acquaintance he (or she) was found wanting or whether the nesting-box disclosed unsatisfactory features cannot be told. Whatever the reason, after a day and a half of close association the female disappeared, not to return. Nothing daunted the male resumed his song-vigil on the perch, still building from time to time. Occasionally he returned to the box in a most precipitate manner, going into the hole without alighting or with the lightest hesitation on the perch. After entering in this cadlong fashion he remained inside for a considerable period

or would peep out looking in all directions as though expecting an enemy might be in the vicinity. This recurrent proceeding suggested a fear that his nesting-site was in danger of being filched from him if he were not actually in possession to defend it. Notwithstanding his strenuous wing-wavings to attract a second spouse he failed to do so and after a few days, a lone existence being intolerable, he too departed for, perhaps, a more successful sphere. After he had gone I extracted the result of his building efforts and found he had accumulated enough material almost to fill an ordinary waste-paper basket. Its weight was exactly eight ounces and was made up of dead leaves and tufts of grass, green leaves, small plants from the flower beds, flowers of various kinds, twigs and straws.

This instance of an unmated male had, curiously enough, its counterpart in 1936, in the other nesting-box which was occupied by a widowed Starling. A pair took possession and in due course a clutch of eggs was laid. Incubation proceeded for almost its normal period when the male bird disappeared. The female, nothing daunted, continued to sit, dashing off at short intervals for change and food. In a few days the young were hatched and then commenced a strenuous time for the female which single-handed undertook the task of providing the necessary food. This was done by a rapid series of returns with grubs of various kinds and at times with something invisible. Is it possible that on these occasions she was carrying water? After a burst of this quick feeding she remained in the box for a period, then resumed the feeding, then stayed in the box and so on throughout the day. Several times she returned accompanied by a male, a stranger, which alighted on a shrub near by. He was evidently attracted by the widow but when he alighted on the perch to investigate her home the yelping youngsters in the box obviously made him pause for he looked with evident surprise at the hole, flew precipitately away and was not seen again. So, alone, the mother continued her task until the emergence of her family to fend for themselves put an end to her labours.

NOTES

CROSSBILLS' METHOD OF FEEDING.

A NOTE in the June number of *British Birds* (Vol. XXX., p. 27) by B. D. Moreton, tempts me to carry the observations a little farther by publishing a few notes made as long ago as 1888 on the method of feeding of some Crossbills which I kept in a large open aviary. While it is much more interesting to make observations on birds in their native haunts, there are some minute actions which can only be appreciated at very close quarters, and even Newton in his *Dictionary* recommends the study of Crossbills in captivity to the "attentive observer", being so fearless by nature and becoming almost too familiar in an aviary, they lend themselves readily to close observation. I had altogether seven Crossbills, some with the bills crossing one way, some the other: a pair from Scotland, and five foreigners, purchased from "Cross's Menagerie" in Liverpool. Cross fed his birds entirely on hempseed and they would seldom eat any other if hempseed could be got; failing this they chose Indian Thistle or Canary. They picked up the seed between the tip of the tongue and the point of the upper mandible and, after shelling it, dropped out the husk always on the same side of the bill, that over which the upper mandible crossed. When I could obtain cone-bearing branches of larch the following method was adopted—the bird broke off the cone with its bill, by taking hold of the short stalk attaching it to the branch, then flew with it to a perch and placed it horizontally between its feet with the base always towards the side on which the upper mandible crossed. Sometimes the cone was held obliquely with its apex away from the bird, but always with its base inclined to the side I have indicated. Having thus placed the cone in position, the bird inserted the opened bill under a scale near the base of the cone, and levered it up by a lateral movement, with the lower mandible applied to the body of the cone as the fulcrum. It then extracted the seed by the tongue pushed out between the crossed mandibles, rapidly shelled it, and dropped out the husk on the same side of the bill as in shelling ordinary seeds. Before the bird could sinuate the beak laterally, it often had to seize the scale and jar it downwards towards the base, thus no doubt causing the vertical splits as noted by B. D. Moreton. This constant variation of the position of the cone and the side of extrusion of the husk or shell to the direction of the crossing of the mandibles is what one might expect, but I have not seen it noted

anywhere. I have been hoping to confirm these observations but have had no further opportunity. W. HENRY DOBIE.

GREY-HEADED WAGTAIL IN NORFOLK.

ON May 11th, 1936, a male Grey-headed Wagtail (*Motacilla f. thunbergi*) appeared at Hickling. I was accompanied by Col. H. W. Madoc, who had seen this subspecies abroad, and by Mr. R. M. Garnett. We had very good views of the bird, which had the crown dark slate blue with black or almost black lores and ear-coverts and no eye-stripe whatever. The under-parts were sulphur yellow, shading to a pale yellow or light buff on the chin.

There was a pair of Yellow Wagtails (*M. f. rayi*) near the bird, which displayed to the female.

On May 12th it was alone in the same area and Mr. J. C. Harrison made several drawings of it from a distance of a few yards. The bird was seen in swampy ground within three-quarters of a mile of the original spot by several other ornithologists up to May 21st. It was always tame and busy catching insects off the growing rushes. J. VINCENT.

PIED FLYCATCHER IN RENFREWSHIRE.

As I believe the Pied Flycatcher (*Muscicapa h. hypoleuca*) has not been previously recorded for Renfrewshire, it is advisable to state that I saw a pair on May 9th, 1936, in a well-wooded valley in the east of the county. Both birds were very shy and usually kept to the tops of the trees, but their white under-parts and "pied" upper-parts were very noticeable. The cock bird frequently uttered a series of notes which I likened to "tweech." The birds may have been intending to nest as they never left a certain spot in the wood for very long at a time. PHILIP A. CLANCEY.

THRUSH DESTROYING EGGS OF THE WILD-DUCK.

A MALLARD (*Anas p. platyrhynchos*) that had its nest close to my garden pond discontinued laying therein, evidently on account of one or more of the eggs having been destroyed. I was curious as to cause of the trouble until I caught a Song-Thrush (*Turdus e. ericetorum*) red-handed, smashing in at the larger end, one of the two remaining eggs and feeding on the contents. The last egg was transferred to the duck's second nest. J. S. ELLIOTT.

BLACKBIRD'S LARGE CLUTCH OF EGGS.

ON May 8th, 1936, I was shown a nest of the Blackbird (*Turdus m. merula*) containing nine eggs. This was built in a small bush close to the house in a garden at Wing near Leighton

Buzzard, Bedfordshire. The nest was found after it contained the full clutch, and as all nine eggs are exactly the same dark type there is no doubt that they were all laid by the same bird.



Phot. O. G. Pike

The owner of the garden thought that as it was a record clutch it ought to go into a collection, and when the eggs were blown it was found that they were all in the same state of incubation practically fresh, with the exception of two which showed a slight trace of having been sat upon. This, I think, could be accounted for by the long period the hen would spend on the nest in depositing nine eggs.

There seem to be a number of large clutches about this season ; I have heard of two Blackbirds with seven and several Lapwings with five.

OLIVER G. PIKE.

SIZE OF CLUTCHES OF BLACKBIRD IN EAST RENFREW AND WEST LANARK.

THE remarkably small clutches frequently laid by the Blackbird (*Turdus m. merula*) in East Renfrewshire and West Lanarkshire I think call for notice. It is my opinion that this habit of laying small clutches has nothing to do with the weather (drought, etc.), as several records are a year or two old.

Small clutches are on the whole nearly always first layings, though on at least one occasion I have seen two eggs in mid-June. This certainly was a second or third laying.

The following will give some idea of the size of clutches found in this region.

1. Three records of one egg :—

Carmunnock, Lanarkshire, May 23rd, 1932.

Cathcart, Renfrewshire, April 16th, 1935.

„ „ „ April 21st, 1936.

2. Twelve records of two eggs. The following being the two earliest and the two latest :—

Busby, Renfrewshire, April 15th, 1933.

Cathcart, „ „ April 20th, 1935.

„ „ „ May 12th, 1935.

Carmunnock, Lanarkshire, June 15th, 1935.

I have between thirty and forty records of three eggs. Four eggs are very common, while five eggs are only very occasionally found in second or third layings. PHILIP A. CLANCEY.

UNUSUAL METHOD OF DRUMMING BY GREAT SPOTTED WOODPECKER.

ON February 14th, 1936, in Richmond Park I watched a Great Spotted Woodpecker (*Dryobates m. anglicus*) “drumming” in a way which, in my experience, is very unusual.

Near the top of an oak tree a dead branch was leaning about ten degrees from the perpendicular. Beneath it clung the bird—a female. She inserted her beak in a slot and made the noise by striking each side of it with the *side* of her bill alternately and very rapidly. The slot seemed to be a longitudinal crack an inch or so wide.

I had a clear view of the bird's action, through glasses, in good light.

She made the drumming-call several times and preened herself in the intervals. Another bird was replying at some distance and at last she flew off towards it.

WILLIAM L. COLYER.

GREEN WOODPECKER DRUMMING.

ON April 29th, 1936, in a wood near Marske, Swaledale, Yorkshire, my brother and I heard a sound resembling a kettle-drum being played, and saw a Green Woodpecker (*Picus v. virescens*) halfway up the living trunk of a slender, sixty-foot ash tree, about seventy yards away. The bird, which was a male, was at the lower end of a long, narrow crack in the bark. Its head was bent forward into the crack and its wings were quivering; the sound stopped, the head was

flung back and the familiar cry was given with open bill, before the drumming was resumed. There were six "drums" and three "cries" whilst the stance remained the same. After this the bird moved up and round the tree and flew away.

D. STEINTHAL.

TAWNY OWL TAKING PREY DURING THE DAY.

WHEN walking along a ride of my woodland in Wyre Forest, Shropshire, at 4.45 p.m. (Greenwich time) on April 27th, 1936—a bright summer afternoon—I flushed a Tawny Owl (*Strix a. silvatica*) from the undergrowth. It rose heavily but soon settled again on the lower branch of an oak tree and I was then able to make a close approach and saw that it held a small rabbit in its talons, but which I failed to make it release. Possibly a brood of young owls may have been the pressing necessity in this instance.

J. S. ELLIOTT.

SPOONBILL IN COUNTY DOWN.

MR. CRAWFORD ROGERS, a keen bird observer, writes me that while fishing at Lord Bangor's lake at Killough, co. Down, on May 24th, 1936, his boatman, Jack Rogan, pointed out a pure white bird of a kind unknown to him about 25 yards away. Mr. Rogers told him to row slowly towards it and he got within ten yards of it. The bird was standing in about six inches of water and appeared to be about two feet in height, had a long curved neck, large white wings not too closely laid along its body, thin legs and a long beak ending in a flat surface like a pair of hands laid palm to palm. It rose and flew slowly but powerfully towards the sea coast a short distance away.

Mr. Rogers asked me could it possibly be a Spoonbill (*Platalea leucorodia*) and on showing him a plate of this species, he at once recognised the bird as the one he had seen.

This is a most interesting record for Ulster as according to Ussher and Warren there have been only three previous occurrences of this rare bird, although it has been reported more frequently from Southern Ireland. W. H. WORKMAN.

A FURTHER ADDITION TO ESSEX HERONRIES.

ON May 18th, 1936, I paid a visit to a heronry in the parish of Woodham Walter, Essex, which is a further addition to the colonies in the county. There were eight nests, all of which appeared to be occupied, in three trees—an elm, an ash and an oak—growing in a hedge beside a water meadow and within a quarter of a mile of the Chelmer and Blackwater Canal.

Five of the nests were in the elm, two in the oak and one in the ash. This heronry is approximately two and three-quarter miles east from West Mead Grove, which is the site of the heronry at Boreham, one and three-quarter miles north-west from Woodham Walter Church and one and a half miles south from Hatfield Peverel Church.

Mr. E. G. Speakman, of Woodham Walter Lodge, on whose property this heronry is, informed me that the Herons (*Ardea c. cinerea*), first nested at this site in 1934, when there was one nest; in 1935 there were three nests. Last year a Starling (*Sturnus v. vulgaris*) reared a brood in a nest built among the foundations of one of the Herons' nests and this year a Jackdaw (*Colæus m. spermologus*) used a similar site.

I am indebted to Mr. A. R. Thompson for informing me of the existence of this heronry and to Mr. E. G. Speakman both for permission to visit the heronry and for the information concerning it.

JAMES W. CAMPBELL.

AUDUBON'S LITTLE SHEARWATER IN SUSSEX. A NEW BRITISH BIRD.

ON January 7th, 1936, an example of this race of the Little Shearwater (*Puffinus assimilis l'herminieri* Lesson) was found on the beach at Bexhill-on-Sea. The bird was taken to Mr. G. Bristow of St. Leonards for preservation and subsequently came into my possession.

In view of the fact that it is new to the British List and that it had not been seen in the flesh by any competent authority, I went to considerable pains to find out the exact circumstances of its discovery. I ascertained from Mr. Bristow that it had been found by a Mr. W. E. Dance of Pebsham, near Bexhill, upon whom I accordingly called the following day. I was quite unknown to and unexpected by Mr. Dance. When shown the specimen, without any leading questions having been put, and with in addition all the data labels covered over, he gave me a full statement of its finding, a statement subsequently attested by Mr. Dance before a Commissioner for Oaths. The narrative as told me gave me no cause whatsoever to doubt its truth. This briefly was that on January 7th he saw on the beach at Galley Hill, Bexhill, a small sea-bird surrounded and being molested by Gulls, and putting up a vigorous fight. On reaching it Mr. Dance picked it up to examine it, and then put it down on the shingle again to see if it would fly, it merely spread its wings and then collapsed on the beach. He thereupon decided to take the bird home, and it died about half an hour after being found. It was taken to Mr. Bristow that same evening for preservation.

A comparison of this specimen with material in the British Museum leaves no doubt that the bird is the West Indies form (*Puffinus assimilis l'herminieri* Lesson). The present specimen was unsexed and is of a brownish slate colour on the upper parts, the lores and just above the eyes are mottled with whitish, while it is white immediately above the gape. The under tail-coverts are mostly white, the outer ones, however, are brownish on the outer webs. The inner webs of the primaries are dusky. When compared with the Madeiran and the Cape Verde birds its browner upper parts are at once apparent, while on measurements also it is outside both these races.

The only previous record for this Shearwater is Gould's specimen now in the National Collection, which was said to have been obtained in Devon, a record discredited as no confirmatory evidence was obtainable, while Gould himself did not allude to the supposed occurrence in his *Birds of Great Britain* (see H. F. Witherby, *Brit. Birds* (Mag.) Vol. IX, p. 203). The present specimen therefore constitutes a first record.

The soft parts according to the finder were as follows: Iris: yellowish brown. Bill: sides at gape dull orange-yellow, shading to brown towards the middle and tip; culmen proper rather brighter orange-yellow, nail bright polished brown, nares bluish. Tarsi: outer side dull (flat) brown, inner sides bright yellowish-brown. Webs: bright yellowish-brown.

The description of the soft parts is supported by the appearances of these in the dried skin, which suggests browns and yellows and in my opinion excludes blackish or blue tones entirely except on the nares where some traces of a darker pigment can be discerned.

The measurements of the specimen are as follows:—

Wing, 201 mm.; exposed culmen, 30; depth of closed bill at base, 9.5; least depth of bill, 6.5; width of bill at base, 10.5; tarsus, 30; middle toe and claw, 44. JAMES M. HARRISON.

OYSTER-CATCHER AND ROCK-PIBIT NESTING INLAND IN CHESHIRE.

AT Mount Manisty on the Mersey banks of the Manchester Ship Canal between Eastham and Ellesmere Port, with a party of the Liverpool Naturalists' Field Club on May 23rd, 1936, I came across the nest of a pair of Oyster-Catchers (*Hamatopus o. occidentalis*) containing one egg, just above high tide line, the birds being in the vicinity. I later took a number of naturalists to verify the record as there is no previous record of Oyster-Catchers nesting in Cheshire.

On the two mile stone embankment of the canal from Eastham locks to Mount Manisty I also noted three pairs of Rock-Pipit (*Anthus s. obscurus*) nesting between the stones of the embankment on the (tidal) Merseyside. The locality is some twelve miles from the sea, and the only other known nesting place of the Rock-Pipit in Cheshire is Hilbre Island in the Dee Estuary. The Mount Manisty region was formerly open to the public but for some time now has been preserved by the canal authorities with a marked increase of nesting birds.

ERIC HARDY.

AVOCET RINGED IN RHONE DELTA FOUND IN ESSEX.

I AM indebted to Dr. J. Campbell for giving me the information that an Avocet (*Recurvirostra avosetta*) bearing a ring inscribed Oiseaux Museum, Paris, F. 3211, was shot in the estuary of the Colne, Essex, on August 8th, 1934. Dr. Campbell's informant stated that on enquiry at the Muséum National d'Histoire Naturelle in Paris, the ring was stated to have been put on a nestling at the Ile de Mornes in the Camargue on May 26th, 1934, by the "Station de la Réserve zoologique de Camargue", a fact kindly confirmed to me by Dr. J. Berlioz.

Dr. Campbell was further informed that four other Avocets (without rings) were most unfortunately shot at the same time, but as these had no rings it is, of course, impossible to say whether they were of the same origin.

I am also informed by Dr. Berlioz that while 274 Avocets in all have been ringed in the Camargue since 1932, there have been only three other reported recoveries and these only of local interest.

The fact that this Avocet travelled in its first autumn from the Camargue to Essex is sufficiently extraordinary to record specially, though without further information of the migration of others from this district one must, I think, consider provisionally that this is an abnormal case.

There are some other records of ringed migrants going north in their first autumn and perhaps the most striking example recorded for this country is the Lapwing (*Vanellus vanellus*) which travelled from Hungary to Lincolnshire (*antea* Vol. XXVIII, p. 139). There are also records of birds having been found in subsequent summers far north of the place in which they were bred, and it seems possible that there may be some connexion between the two cases, since a bird taking an unusual route in its first autumn may then join and stay with other birds of the same species belonging to a totally different breeding area.

H. F. WITHERBY.

IMMATURE LITTLE GULL IN HERTFORDSHIRE
WITH NOTES ON ITS CHARACTERISTICS.

FOR half an hour on the afternoon of May 3rd, 1936, I watched with a telescope, at a distance of between 400 and 500 yards, a party of half a dozen Common—or it may be, though that is hardly likely, Arctic—Terns, at the Wilstone Reservoir, Tring. With the Terns was a Little Gull (*Larus minutus*). In appearance more robust and with shorter and more rounded wings than the Terns, its behaviour was similar to theirs: flying up and down in a desultory way and frequently swooping down to pick something from the surface of the water. Its underparts, including the under-wing, were white. The distal half of the upper wing was entirely black; the proximal half had throughout its length a broad, ill-defined black band, bordered by areas of pale grey. These characters and the dusky ear-coverts as well as the Tern-like appearance and habits of the bird met the requirements of an immature Little Gull, but the tail, as it appeared to be, definitely did not. The brown tail-bar of immaturity is curiously inconspicuous in many Gulls at quite close range; and at a distance of more than 400 yards the tail-bar of this Little Gull was quite imperceptible. The central tail feathers were white throughout their length, and, the brown bar on the other feathers being imperceptible, the whole tail seemed to be white, and as the bird turned in the air to be not merely graduated but markedly wedge-shaped, a perplexing and, until the seeming absence of the tail-bar was realized, an almost disconcerting appearance; a good example of the different appearance of a bird in the hand and one in the field.

The only previous occurrence of the Little Gull in Hertfordshire known to me is that of an immature bird, shot at the Tring Reservoirs on September 16th, 1927 (*Trans. Herts. Nat. Hist. Soc.*, XVIII., p. 203)

CHAS. OLDHAM.

LITTLE GULL IN WARWICKSHIRE.

ON May 9th, 1936, Mr. F. R. Barlow, Mr. and Mrs. M. A. Swann and the writer watched a Little Gull (*L. minutus*) at very close quarters on Curdworth Sewage farm, Warwickshire. It was a bird in second-year plumage, with pale underside to the wing, the primaries and mantle strongly marked with dark brown and black, forehead white, a spot behind the eye blackish, back of the head grey. The two central tail-feathers were white to the tips, the rest black tipped, so that at a distance the centre of the tail looked to be elongated; but when the bird flew overhead the square tail was plainly

outlined. For about half an hour the bird was swimming and hovering over the water among some Black-headed Gulls. It then flew away eastwards, along the line of the River Tame. On the following day, however, it was again seen at Curdworth, but not subsequently. H. G. ALEXANDER.

QUAIL IN SUFFOLK.

A Quail (*Coturnix c. coturnix*) was handed to me on June 2nd, 1936. It would seem to have hit the telegraph wires at Trimley St. Martin and was picked up dead. It was brought to a gamekeeper and is now being set up for the Ipswich Museum. Dr. C. B. Ticehurst in his *History of the Birds of Suffolk* (1932) states that since 1884 he can enumerate only six occurrences of the Quail in Suffolk, five in autumn and one in May. G. BIRD.

MOULT OF THE ROOK.—Those interested in studying the Rook (*Corvus f. frugilegus*), and especially points connected with the bare "face" and the moult which takes place at different ages, may like to know that the material I collected in 1911-12 for the purpose of studying the moult, especially of the "face," is now in the Natural History Museum, Cromwell Road. This material consists chiefly of heads and wings of Rooks at all ages and seasons collected for me by the kindness of the Duchess of Bedford and Mr. Hugh S. Gladstone, and some of my notes regarding them, microscopical slides and a copy of my paper on the subject in *BRITISH BIRDS*, October, 1913. Mr. N. B. Kinnear has had these arranged in a special drawer and they are now available for examination by any student of the subject. H. F. WITHERBY.

GREAT GREY SHRIKE IN MAY IN KENT.—Mr. J. C. Britt gives us a good description of a Great Grey Shrike (*Lanius excubitor*) which he saw on May 23rd, 1936—a late date—near Lydd.

"GREAT WHITE HERON" IN WILTSHIRE.—In July, 1935, Dr. J. Berry and Mr. C. R. Stonor observed a large white Heron at Tisbury, Wiltshire, and came to the conclusion that it was an example of *Egretta alba* (Vol. XXIX, pp. 249-251). Other observers also saw the bird, but no one was able to describe the colour of the bill and legs. In May, 1936, Mr. C. M. R. Pitman informed us that a white Heron which he considered to be an albinistic *Ardea cinerea* was still in the same place and as a result of careful observations he described the bill and legs as of a "dirty yellowish colour".

Dr. Berry informs us that he has seen a white Heron at this place on several occasions this year (February and March) and writes as follows :

" This bird is almost entirely greyish-white. Seen in flight from any distance, unquestionably it might appear entirely white, especially in the brilliant sunshine in which we saw the bird which we took to be *Egretta alba* last summer. In spite of the dictates of reason, however, I am not fully satisfied that this was the case. Were it so, I cannot understand how the duller plumage and darker markings of the semi-albino could have given us so strong an impression of brilliant and complete whiteness together with a rather truncated appearance in flight. Of course, the observation cannot now be considered as an authentic record of *Egretta alba*."

RUFF IN OUTER HEBRIDES.—We are informed by the Hon. Guy Charteris that a young Ruff (*Philomachus pugnax*) was shot in South Uist late in August, 1935, and was sent to him for identification. As the bird is a scarce passage migrant in the Outer Hebrides this should be put on record.

RUFFS IN SUMMER AND GARGANEY IN CHESHIRE.—Mr. R. B. Sibson informs us that he watched two pairs of Ruffs (*Philomachus pugnax*) in south Cheshire on May 18th, 1936. Both males were in full summer plumage in which state they are seldom observed in the county, the last record being in May, 1924 (Vol. XVIII, p. 60).

The same observer saw a drake Garganey (*Anas querquedula*) in this locality on May 24th.

LITTLE TERNS IN MIDDLESEX.—Mrs. Helen Rait Kerr informs us that she watched two Little Terns (*Sterna a. albifrons*) hawking over Highgate Ponds on the afternoon of May 6th, 1936.

REVIEWS.

LOCAL REPORTS.

Transactions of the Norfolk and Norwich Naturalists' Society, 1935.

THE Report of the Committee for Wild Bird Protection is very full this year and gives a good account of the main ornithological events in the county. Notes by Major A. Buxton on the behaviour of a pair of Water-Rails at the nest are of considerable interest and these are illustrated by excellent photographs. The deplorable destruction of Harriers which has already been recorded is set forth as well as Mr. Vincent's opinion of their effect on other bird-life. Bearded Tits were extremely plentiful. At Hickling a Temminck's Stint was noted on May 9th, an immature Sabine's Gull on September 19th, a bird which Mr. Vincent identified as a female Rustic Bunting on April 28th and an Alpine Swift on September 3rd. In Mr. Cadman's report on Breckland we find that Stone-Curlews are still clinging to their ancestral breeding grounds, and nesting in numbers took place in fairly dense plantations (Professor Newton recorded that a pair resorted to a spot at Elveden long after it had become the centre of a flourishing wood). A Snipe's nest was also found in a plantation three years old, and a

Ringed Plover and a Lapwing nested successfully in forestry nurseries. In his report on the Kelling-Salthouse-Cley area Mr. Garnett mentions a Firecrest at Kelling in January and February, a Willow-Tit nesting at Kelling (there are few records for Norfolk), and an unusually large migration of Swifts at the end of August. A Red-spotted Bluethroat was seen by the watcher on May 29th. Dr. Long records seeing a Hooded Crow not fully fledged on the dunes at Horsey on June 4th and fifteen Avocets (which remained some days) in August at Breydon.

In another paper Dr. Long gives a very useful historical account of the Norfolk sanctuaries.

The London Naturalist, 1935.

THIS contains the usual careful account contributed by a large number of observers on "Birds in the London Area." Amongst these distributional notes there is a Grey Wagtail nesting at Elmers End (Kent), a Stone-Curlew in Richmond Park on April 14th, Grey Phalarope at Staines in September and Barn Elms in November, and several records of Scandinavian Lesser Black-backed Gulls on the Thames.

This volume also includes a Great Crested Grebe Report for the area by Mr. P. A. D. Hollom, an interesting point in which is the importance of gravel pits to these birds. In 1931 there were six pairs in gravel pits and in 1935 sixteen pairs. Unfortunately, as Mr. Hollom remarks, in many cases this accommodation for nesting Grebes is only temporary as the pits are often filled in with rubbish and even built over.

Dr. J. Berry contributes "An Identification Key to British Grey Geese" in which some as yet not generally accepted ideas about the Bean-Geese are summarized.

South-Eastern Bird Report, 1935.

THIS is the second annual issue of a Report which was instituted and is edited by Mr. Ralph Whitlock. Originally it included the whole of Hampshire, Sussex, Kent and Surrey, but this year it wisely omits those parts of the two last-named counties which are covered by the London Natural History Society. In noticing the first Report we ventured to criticize some of the records and to suggest that Mr. Whitlock might obtain expert assistance in various parts of the area and this he has now done. Besides the more usual tables of arrival and departure dates of migrants, the Report contains a number of tabulated records on song, which should prove a useful feature if continued and amplified. Among the "County Notes" arranged systematically, we find a full report on the movement of Jays in Hampshire, a number of notes on the immigration of Crossbills, occurrences of Waxwings in March and April in Hampshire, a Dartford Warbler in the Dungeness area in January, a Whinchat at Sandwich Bay on November 3rd (a very late date), a record from Romsey of young Swallows in nests under a corrugated iron roof suffering from intense heat and many falling to the floor below and dying, a Garganey breeding in S.E. Hampshire, a report of a Bittern said to have nested near Lymington in 1934 but this being without details is valueless, also a report of a Dunlin breeding near Havant in 1932, an egg being identified by two experts cannot be accepted without further information; a number of notes of Black-tailed Godwits; several occurrences of Grey Plover in Sussex at the end of May, and a record of a Caspian Tern, whose distinctive features are described, near Deal on November 15th, a remarkably late date for an occurrence of this species.

The Report is well put together and contains an unusually large number of notes and though some are of a trivial nature, many are of interest and value.

Report of the Cambridge Bird Club, 1935.

THIS Report is severely restricted on account of expense as the Club is still handicapped by a debt on the production of the *Birds of Cambridge-shire*. There is a short list of more important birds observed, including a Water-Pipit on the Sewage Farm on March 26th, the Yellowshank already recorded in our pages (*antea*, Vol. XXVII, pp. 357-8, Vol. XXIX, p. 123), which first arrived on March 29th, 1934, was frequently seen in 1935 from mid-March to April 21st and again in September up to the 13th but not since, the Common Pochard bred again in Barwell Fen and a Little Gull was seen on the Sewage Farm on April 16th.

Report on Somerset Birds, 1935.

ANOTHER excellent county Report. More records are given of tree-nesting Ravens, an extension of the Buzzard's range is chronicled and a Garganey is reported on the R. Axe in September.

Special attention has been paid to the number of Ducks and Grebes visiting Barrow Reservoirs, careful counts being made on a number of occasions. A large number (1,200) of Pochard at the end of the year was remarkable, while huge flocks of Teal were reported off Brean Down in January.

Special reports are made on the birds selected for the year by the British Trust for Ornithology, viz., Redstart, Great Spotted Woodpecker and Common Pochard (not yet definitely recorded as breeding). The Report also contains a careful description of the appearance, light and notes of the Barrow Pectoral Sandpiper (*antea* Vol. XXIX., pp. 183-5).

Ornithological Record for Derbyshire, 1934-5.

IN this Report we find notes of a pair of Waxwings in November, 1935, near Ambergate, Whooper Swans at Coombs Reservoir, a Grey Phalarope at Cromford in September and we are glad to hear of a number of Blackcock in North Staffordshire and that the bird still exists on the Derby-Stafford borders.

Ornithological Notes, 1933-4 (Transactions of the Cardiff Naturalists Society).

THESE notes, though brief, contain some important distributional records and among these we may mention a Hooded Crow at Neath in April, 1934 (a rare bird for Glamorgan), a pair of Cirl Buntings in the Vale of Glamorgan on May 26th, 1934, five Barnacle-Geese at Whitford Burrows in December, 1933, and one in February, 1934 (first definite record for Glamorgan (*antea*, Vol. XXVII, p. 359), an Avocet in Gower on June 8th, 1934 (the first recorded for a century), two Garganeys in August, 1934, and a Grey Phalarope in September, 1933, just over the border in Monmouth.

Report of the Oxford Ornithological Society on the Birds of Oxfordshire, Berkshire and Buckinghamshire, 1934.

THIS Report arrived late in 1935 and has been overlooked. It is full of useful details, well arranged and edited. Among the systematic notes we may mention: the finding of Wood-Larks nesting on the Oxfordshire Chilterns; an example of *Phylloscopus t. evermanni* obtained at Midgham on May 3rd and identified by Dr. C. B. Ticehurst to whose judgment we submit; an adult Night-Heron was shot near Deddington (Oxon) on September 29th; the autumn was remarkable for the number of Ruffs seen at the Reading Sewage Farm, while one was seen on February 25th; a Wood-Sandpiper was seen at the same place on April 12th and two on September 10th; two Little Gulls were observed at the same place on September 6th.

Special investigations were made into the status of the Brambling. A census of Kingfishers was made on the Thames and its tributaries within the boundaries of the three counties, from which it would appear that there was a pair on the average about every two miles. A survey of Nightjars was also undertaken with interesting results. This Report also contains an article by P. J. Campbell with a list of birds which have been observed on Port Meadow.

Transactions of the Hertfordshire Natural History Society and Field Club, Vol. XX, Part II.

This part contains a number of contributions of ornithological interest. In Mr. C. Oldham's "Reports on Birds" for 1933 and 1934 there are many items worthy of note. The 1934 Report gives an account of the effect on birds of the drought and the drying up of the Tring and Elstree reservoirs and at the former the subsequent growth of vegetation which attracted flocks of various kinds of Finches while Ducks, Grebes and Coots suffered, and wading birds were attracted by the uncovered mud. Amongst the latter we notice occurrences in both years at Tring of Ruffs, Wood-Sandpiper and Greenshank and in 1934 of Grey Plover, Turnstone, Sanderling and Curlew-Sandpiper. Quite unusual numbers (up to 300) of Teal were present in these reservoirs both in the early and autumn months of 1934 owing to the dwindling waters. A Great Northern Diver was seen at Elstree by Mr. Lloyd at the end of October, 1934. Miss Walters contributes some brief but useful notes on the breeding of Red-backed Shrikes and there are other good field notes.

Besides the reports this volume contains short articles by Mr. Bertram Lloyd on "The Diving of the Shoveler", "A Garganey Duck at Elstree" and "Notes on the Behaviour of the Great Crested Grebe", while Dr. N. F. Ticehurst contributes an authoritative historical article on "The Mute Swan in Hertfordshire".

LETTER.

COLOUR OF LESSER BLACK-BACKED GULL AFFECTED BY ANGLE OF LIGHT.

To the Editors of BRITISH BIRDS.

SIRS,—I have often been struck by the apparent differences in colour of Lesser Black-backed Gulls on the Clyde. On May 9th, 1936, at 9.30 a.m. (summer time) I watched half a dozen of these Gulls sitting on a railing on Dunoon pier within a few yards of me. The railing was so placed that the Gulls were turned either directly to the sun or directly away from it. Those facing the sun appeared black on the mantle, and those facing in the opposite direction appeared dark brown. When any Gull turned round, its colour changed. What I saw would certainly make me hesitate to identify a bird in the open as a Scandinavian Lesser Black-backed Gull, especially in the morning light, unless I carefully noted how it stood in relation to the sun. This may also explain why sub-specific differences in colour are sometimes more apparent in the field and sometimes when the bird is in the hand. I cannot remember seeing any notes on the effect of the angle of sunlight on the apparent colour of birds.

J. M. McWILLIAM.

[A comparative test which should probably be effective in all angles of light is that mentioned by Messrs. Rooke and Smith (Vol. XXVIII., p. 117), who found that in the Scandinavian form the mantle was as black as the primary tips, while in the British bird the colour of the mantle was very distinctly paler than the primaries.—EDS.]

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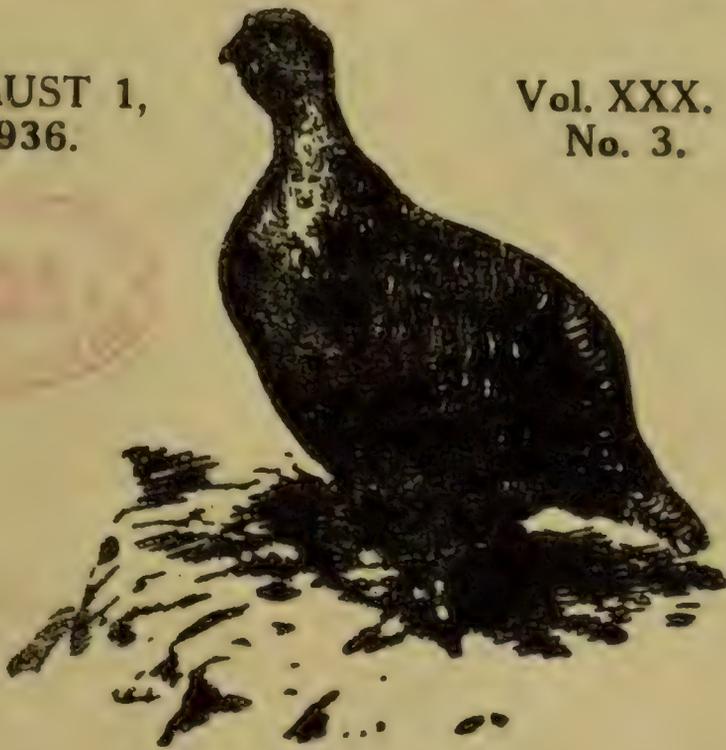
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CONTENTS OF NUMBER 3, VOL. XXX., August 1, 1936.

	PAGE
Unusual "Hold-up" of Spring Migrants on the Norfolk Coast.	
By Ronald M. Garnett	58
Further Notes on Territory in the Great Crested Grebe. By	
L. S. V. Venables and David Lack	60
The Colouring of the Soft Parts of the Buff-backed Heron. By	
B. W. Tucker	70
Recovery of Marked Birds	74
Notes :—	
Carion-Crow Laying Twice in Same Nest (Capt. G. E. Took)...	80
Return Migration of Jays (C. H. Bryant)	80
Twite as Fosterer of Cuckoo (I. Whittaker)	80
"Injury-feigning" by Wood-Lark (H. F. Witherby)...	81
Pied Wagtails Using Roost in June (Philip A. Clancey) ...	82
Golden Oriole in Suffolk (J. B. Watson)	82
Chitichats in Perthshire (W. Mark Kerr and P. A. D. Hollow)	82
Incubation-Period of Grasshopper-Warbler (F. Fincher) ...	83
The Range of the Hebridean Hedge-Sparrow (C. M. N. White)	83
Young of Normal and Albinistic House-Martins (H. M. Wallis)	84
Woodpecker Nesting Holes and the Compass (G. Marples) ...	84
Tawny Owl taking Prey during the Day (Dr. J. W. Campbell)	86
Spoonbill in Islay (W. B. Alexander)	87
Early Nesting of Sheld-Duck in Kent (N. F. Ticehurst) ...	87
Goosander Nesting in Dumfriesshire (H. S. Gladstone) ...	87
"Injury-feigning" by a Stone-Curlew (G. Brown)	90
Golden Plover and Starlings performing Joint Aerial Move-	
ments (W. Mark Kerr)	90
Lapwing driving Sheep from Nest (Capt. G. E. Took) ...	90
Call Notes of the Spotted Redshank (T. C. Gregory)	91
The Birth of a Curlew (W. S. Cowin)	91
Herring-Gulls feeding on Larvæ of Moths (M. Mitchell) ...	92
Water-Rail in Summer in Inverness-shire (Miss W. M. Ross)	92
Short Notes :—	
Recent Progress in the Study of Bird Migration. Nutcracker	
in Surrey. Young Crossbills in Devon. Field Study of	
St. Kilda Wren. Sitting Blue Tit fed by Two Birds. Large	
Clutches of Mistle-Thrush and Coot. Incubation and	
Fledging Periods of Ring-Ouzel. Snowy Owl recorded in	
Fifeshire. Purple Sandpiper in Somerset. Avocet ringed	
in Rhone Delta found in Essex. Black Terns in Hampshire	
and Shropshire	92
Reviews :—	
<i>De Vogels van Nederland.</i> Door Prof. Dr. E. D. van Oort. ...	95
<i>England's Birds.</i> By W. K. Richmond	96
Letter :—	
Colour of Lesser Black-backed Gull affected by angle of light.	
(G. C. S. Ingram and H. M. Salmon)	96



UNUSUAL "HOLD-UP" OF SPRING MIGRANTS ON THE NORFOLK COAST.

BY

RONALD M. GARNETT.

A VERY unusual "hold-up" of small passerines occurred on the Norfolk coast in early May, 1936, details of which should perhaps be put on record.

LOCAL CONDITIONS AT SALTHOUSE (MAY 5TH-14TH).

Following a period of north-east wind a sea-fret developed on the coast on May 5th and continued until the night of May 9th-10th when the wind backed to north-west and a drizzle began which lasted all day on the 10th. Heavy clouds and some mist prevailed again until the 13th, when the wind changed to south-west and May 14th was fine and warm. The barometer from May 8th to 14th remained steady at approximately 30.00 inches.

CONDITIONS OVER THE NORTH OF FRANCE AND SOUTHERN NORTH SEA (MAY 1ST-10TH).

From details supplied by the Air Ministry it appears that light winds from north or north-east prevailed until May 10th, with large patches of coastal fog gradually extending northwards from the Straits of Dover from the 3rd onwards, land areas being clear on both sides. On May 10th the wind backed to north-west, the fog being then thickest off the Dutch coast, where visibility was given as 100 yards. The barometer from May 1st to 5th fell from 30.36 inches to 29.74 inches and then rose steadily to 30.00 inches.

MOVEMENTS OF BIRDS.

The sea-fret on May 5th brought several Black Terns (*Chlidonias n. niger*) to Salthouse and others were seen on the Broads and at Scolt Head Island on the same date. This, however, is quite a usual occurrence at this season under similar conditions, and it is the hold-up of small birds which is so unusual as to be worth recording. Pied Flycatchers (*Muscicapa h. hypoleuca*) were especially numerous, and were recorded from various places on or near the coast from Lowestoft (Suffolk) (Messrs. F. C. Cook and E. W. C. Jenner) May 5th, Horsey and Hickling (Major A. Buxton and Mr. J. Vincent) May 4th-11th, round to Scolt Head I. (Mr. C. Chestney) May 7th-12th. In this district (Salthouse) many were seen in the cottage gardens and elsewhere from May 10th to 12th, when they were evidently most numerous. Being so conspicuous they naturally attracted more attention than the

Common Redstarts (*Phanxicurus p. phanxicurus*) which accompanied them, but there were many of these also and they seem to have been as widely spread out. It is, of course, well known that these two species travel together in the autumn and become numerous in the coastal bushes during hold-ups at that season. Since May, 1929, when I came to live in Norfolk, I have only two spring records of Pied Flycatchers, both single individuals, nor have I witnessed before anything approaching a passage movement in spring of Common Redstarts. Whinchats (*Saxicola r. rubetra*), which usually pass through in small numbers during the last week of April and the first two weeks of May, were far more numerous at this time, but being birds of the open are easily noticed. A Wryneck (*Jynx t. torquilla*), picked up dead near the coast at Salthouse about May 10th and a female Bluethroat (*Luscinia svecica*) caught and ringed at Salthouse trapping station on the same date, were no doubt brought down by the same adverse conditions while another Bluethroat and two Black Redstarts (*Phanxicurus o. gibraltariensis*) were seen on Scott Head I. two days later (Col. H. W. Madoc).

CONCLUSIONS.

Assuming that a stream of birds started from France for destinations in northern Europe during the first week in May, when the wind was generally north-east, it would have tended to swing towards the English coast and after travelling north to Norfolk would have been prevented from crossing to the Continent, and would be held up on this coast, first by fog, and later to an even greater extent by the drizzle of May 9th to 10th, the stream piling up on itself and the numbers increasing to a maximum from that date.

Since this is what appears to have happened locally from May 10th to 12th it may be that what occurred en route is equally true.

Conditions became normal again on May 13th and no sign of so unusual a check to passage movement was any longer visible.

It so happened that this year I was collecting records of spring migrants in Norfolk for the British Empire Naturalists' Association and consequently I received records from many observers in addition to the above-named, and to all these I am grateful. I heard of no unusual numbers at this time of any passerines other than those mentioned, nor did I notice any myself, and perhaps this fact may be quite as noteworthy as the abundance of so limited a number of species.

FURTHER NOTES ON TERRITORY IN THE GREAT CRESTED GREBE.

BY

L. S. V. VENABLES and DAVID LACK.

RECAPITULATION.

THE writers (6) have previously published an account of territorial fighting in the Great Crested Grebe (*Podiceps c. cristatus*) on Frensham Ponds, Surrey, between 1932 and 1934. On Great Pond (69½ acres) six to seven pairs nested close together with no observed fighting apart from an occasional tussle in the immediate vicinity of a nest ; but one further pair was aggressive not only against other Great Crested Grebes but against all other water birds which tried to enter a bay of $\frac{3}{4}$ acre. Little Pond (37½ acres) has only two suitable nesting sites (see map). The pair in the south-west reed-bed

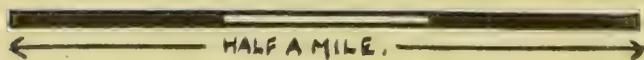
 REEDS, RUSHES ETC.

 HORSETAIL.



N.

 37½ ACRES.


 HALF A MILE.

Sketch map of Frensham Little Pond, S.W. Surrey.

did not come in contact with other Great Crested Grebes but was extremely tolerant of other species. The second pair was aggressive against all other Great Crested Grebes which tried to enter their bottle-shaped bay of $8\frac{1}{2}$ acres, but, unlike the aggressive pair on Great Pond, was completely tolerant of other species. In all cases, the territory was abandoned so soon as the young hatched; the birds going to feed in the open water of the pond.

Venables's further observations in 1935 and 1936 are described below. Not much time was spent observing Great Pond, but events seem to have been very similar to the two previous years. The subsequent narrative concerns Little Pond.

NARRATIVE FOR 1935.

Observations were commenced on March 12th, when an unmated male was defending the bottle-shaped bay, and there were about twelve passage migrants feeding and displaying in the centre of the pond. On March 26th, when most of the passage migrants had left, this male got a mate, a young bird to judge by her incomplete spring plumage, but she disappeared on April 10. On April 11 a late pair arrived, and stayed till the end of the month, making repeated attempts to get into the bay, but being successfully driven off by the male. On April 15th (during this time) the bay male was joined by a fine-plumaged female, with whom he displayed between the fights with the intruding pair. The female did not take part in the fighting, and, though she displayed with the male, left a day later. Until April 30th, when the intruding pair left, the male defended the bay single-handed.

Hence in the Great Crested Grebe a territory is at times defended by an unmated male, though on the other hand many are paired before they take up their territory, and often before they arrive on their breeding lake; but it is curious that a newly arrived female, finding an unmated male with a suitable territory, and herself sufficiently advanced sexually to take part in the elaborate mutual courtship display, should depart again in twenty-four hours. It is also interesting that it is possible for an unmated male successfully to keep out from his territory a mated pair, which, after nineteen days, finally left the lake.

On May 4th another male Great Crested Grebe arrived, with a smaller "ruff" than the bay male, and thus readily distinguished from it. After feeding in the middle of the lake, the newcomer worked towards the bay, from which, surprisingly enough, the bay male made no attempt to drive him,

but fed amicably with him. For nearly fifty days the bay male had been extremely aggressive; during the next four days this could not be tested since there were no trespassing Grebes about; and after this he seems completely to have lost his aggressiveness. During the next three days the two males kept much together, and for the first time that season the bay male was obtaining some of his food outside the bay. The bay male then left, but the new male remained, and on May 23rd was joined by a female. Throughout this day the pair went all over the lake, investigating the island and also the south-west reed-bed, the female usually taking the lead. They indulged in much display, and the next day settled finally in the bay.

Meanwhile, as in previous years, there was also a pair in the south-west reed-bed. They had arrived early in the season, built a nest in mid-May and laid their first egg on May 23rd. On the latter date the new bay pair explored the south-west reed-bed, but were in no way resented or attacked, even though they passed within a few yards of the nest. The 1932 to 1934 observations had suggested that aggressive behaviour might perhaps be correlated with the shape of the lake margin near the nest, since both the markedly aggressive pairs had been defending well-defined bays, which are obvious places to protect; but this new observation shows that nesting in a bay does not necessarily coincide with aggressive behaviour, which is further shown by what follows.

The south-west pair continued to nest and to be robbed by trippers at intervals; on one occasion having a new platform and egg forty-eight hours after their last had been destroyed; but about the middle of June they began to desert their corner and to frequent the rest of the lake. It was thus discovered that, unlike their aggressive predecessors in 1932 to 1934, the new bay pair was not aggressive. Frequently all four birds could be seen feeding together in the narrows or in the bay itself, even though the new bay pair was already building. Hence, of two males successively using the same territory in the same season, the first was extremely aggressive, the second not at all.

The new bay pair built nesting platforms, but, like the south-west pair, was too disturbed by summer crowds to rear a brood. They were noticeably shy birds, and eventually left the lake. The south-west pair, however, finally nested on the island, where they were free from disturbance. As described in our previous paper, the persistent third pair in 1934 nested on this island, which is an unusual nesting site

for the species. But, as pointed out by Lack (5), the restriction of a species to a particular type of nesting site, though it sometimes limits distribution, is often one of behaviour, not of necessity. Two pairs on Frensham Little Pond have now overcome this restriction, though others have not done so.

NARRATIVE FOR 1936.

In 1936 a male arrived in the bay shortly before February 21st. On February 25th there arrived a female in almost complete winter plumage. Despite her plumage, she displayed with the male, and next day was observed doing full weed-shaking display in the narrows of the bay. This display was continued, and on March 5th they were also seen displaying off the south-west reed-bed, quite a new departure for the bay pair. (No other pair had arrived in the south-west reed-bed.)

On March 7th a female in full nuptial plumage was found to have arrived overnight, and was vigorously displaying with the male. The male no longer displayed with the winter-plumaged female, and she was wandering solitarily in the middle of the lake. This is a somewhat curious version of sexual selection. It may be noted that the state of the spring plumage is quite probably an indication of the state of the gonads, and it was noticeable that the new female was more vigorous and continued longer in display than the bird in winter plumage had done, which may be significant in interpreting the male's change of mates. During the rest of the spring a few passage migrants passed through, all apparently females, and the first female took little notice of them, and did not get a mate. The only response from her original mate was when she trespassed in the territory, at which he drove her out as he would any trespassing bird of his species. She finally left about April 20.

The new bay pair behaved quite differently from any previous bay pair in that they defended both the bay and the south-west reed-bed, an indication of which was noted before the male changed mates. They drove out the unmated female and any passage migrants from both these places. Some entries from Venables's notebook illustrate this curious double territory: "March 31st: The pair now building a platform in the south-west reed-bed, and also noted driving the unmated female from the bay. April 3: The female of the pair working at a platform in the bay, the male on guard in the entrance. April 6th: The mated female at the bay platform, and the male in the narrows. She swam out to him, and they displayed. While they were displaying, the unmated female

swam to the south-west reed-bed, but the male pursued and drove her off. She flew up and alighted in the narrows of the bay. At once the mated female attacked her, driving her into the middle of the lake." At the end of the third week in April the pair built a complete platform in the south-west reed-bed and seemed about to lay in it when it was destroyed by trippers. On May 8th the female was seen to chase a late passage migrant from the narrows of the bay. On May 9th a new platform was commenced in the south-west reed-bed, upon which the first egg was laid on May 19th. After this Venables was unable to visit the pond.

It is significant that this double territory was spatially discontinuous. The pair chased out trespassers from both reed-beds, but not from the intervening water. Double territories have rarely been recorded, but Howard (3) describes one in the Skylark (*Alauda a. arvensis*).

THE SIGNIFICANCE OF TERRITORY IN THE GREAT CRESTED GREBE

From our five years' observations it is clear that territory sometimes (but by no means always) plays an important part in the breeding behaviour of the Great Crested Grebe. By "territory" we mean that area within which, as a result of the aggressiveness of the owning pair, no other Great Crested Grebes are allowed to enter. In discussing the possible significance of this territory it must be remembered that it need not have the same significance as in other species; our conclusions apply only to this species and to no other. It should also be noted that our observations are from only one area.

In general, the two main advantages attributed by Howard (2) to territory are that it assists pairing up and that it insures an adequate food supply. The latter function is not attributed to all types of territory; the former function seems more general.

TERRITORY AND PAIRING.

Howard is generally agreed to be correct in his discovery that, in many Passerines and some other birds, the male acquires a territory as a necessary preliminary to obtaining a mate. But this is definitely not the case in the Great Crested Grebe. Our observations show that a territory is at times acquired and defended by a male before it obtains a mate, but on the other hand many birds are paired before they arrive on their breeding grounds and take up a territory. Territory clearly plays no essential part in pairing up.

TERRITORY AND FOOD.

Whether or not Howard is correct in postulating that territory is significant from a food standpoint, he has clearly established that in many Passerines the territory includes the main feeding area of the pair, and that they obtain much of the food for their young from it. But this is not the case in the Great Crested Grebe. One would expect the greatest food pressure to occur after the young have hatched, but at this time the territory is always abandoned, the parents taking their young to the open water to feed. The food of the young is not normally derived from the territory. Occasionally, as in the first aggressive bay pair, the defended territory includes the whole feeding area of the pair up till the time when the young hatch, but this is uncommon. The aggressive pair on Great Pond did not feed exclusively in their territory, and the colonial pairs made no attempt to defend feeding areas. It is also interesting that the pair with the double territory defended only the neighbourhood of the two reed-beds and not the intervening feeding area.

A "food territory" might work in one of two ways: First, the pair could defend a sufficient feeding area; but this, as we have seen, does not occur in the Great Crested Grebe. Secondly, even if a feeding area is not defended, territorial fighting on the breeding ground might prevent overcrowding in the area as a whole, and, as Howard states, "serve so to regulate the number of pairs that the maximum number can be accommodated in the minimum area". Howard postulates this latter alternative for certain species which, like the Lapwing (*Vanellus vanellus*), defend territories but obtain much of their food from common feeding grounds outside the territories. Owing to our present extreme ignorance concerning the quantity and availability of food necessary for birds, this view is very difficult to disprove. It may first be noted that it is at least equally difficult to prove, and, by economy of hypothesis, it should not be introduced without good indirect evidence. Apart from its general plausibility (see Tucker (6a), Lack (6b)) we have found no such evidence. One general objection is that in such species the size of the breeding grounds, and hence, one would have thought, the size of the territory, can bear no constant relation to the size of the feeding grounds.

In the Great Crested Grebe there is a more serious objection. If territorial behaviour is to provide an *advantageous* regulation of the breeding density, the size of territory claimed by each pair must be similar. Exact equality need not be expected

but, at least on the same lake where the birds feed together, one would expect a fair degree of similarity. Howard (4) states this principle clearly when he says that the size of territory is specific, and he gives as an example four Coot (*Fulica a. atra*) territories which were 2,779, 2,770, 2,722 and 2,551 square yards respectively. Howard is, in our opinion, correct in regarding such a similarity as a requirement of a theory of food territory. But it definitely does not occur in the Great Crested Grebes on Frensham Ponds. On Great Pond seven pairs nested close together in a colony, the eighth pair defended a territory of $\frac{3}{4}$ acre, yet all eight pairs *fed over the same area*. On Little Pond one pair seemed completely lacking in aggressiveness whereas the bay pair defended $8\frac{1}{2}$ acres; both fed their young in the same area. Again, of the three pairs successively inhabiting the bay, the first pair was aggressive in the bay, defending $8\frac{1}{2}$ acres; the second pair was not aggressive, allowing another pair to feed in the bay; and the third pair defended both the bay and a remoter reed-bed. One could scarcely have had greater variation, especially since the second pair took over from the first in the same season. These marked variations in the size of territory on the same pond and often at the same time cannot possibly be correlated with local variations in the food supply, since the birds obtained the food for their young from the same area.

Territory undoubtedly limits distribution at times. One case was described for Little Pond in our previous paper, but this limit was to the disadvantage, not advantage, of the species, since it prevented the lake from supporting the maximum number of Great Crested Grebes which, from food and nesting sites, could have bred there. Doubtless, territory may at other times be responsible for an advantageous limitation, but, particularly bearing in mind its great variability, there is no evidence at present for thinking that it has been of advantage from the food standpoint sufficiently often to have been of survival value.

To summarize, on Frensham Ponds the size of Great Crested Grebe territories is not specific but extremely variable, and is not related to the food situation on the lakes. Though territorial behaviour at times limits the number of breeding pairs, this is not necessarily beneficial to the species.

TERRITORY AND THE NEST.

The territory is clearly correlated with the nesting site. It is true that aggressive behaviour is shown before the nesting platform is built, and at times before a mate is

obtained. But the hostility occurs only at and around that area in which the nesting platforms will later be built. Even the colonial individuals at times showed some aggressiveness in the immediate neighbourhood of the nest, and it is significant that the pair with a double territory built nesting platforms in both the defended areas. Aggressive behaviour is maintained (in those birds which exhibit it) until the nesting site ceases to be used, that is, when the young hatch and are taken to the open water, after which it ceases.

This aggressiveness in the area round the actual or future nesting site seems to be of no advantage. Normally the hostility is directed only towards individuals of the same species, and those individuals which do not show it seem at no disadvantage, and are in a majority on Frensham Ponds.

TERRITORY AND DISPLAY.

Often the owner directly attacks a trespasser, but there is also an aggressive display, the bird approaching the intruder with neck horizontal and chestnut ruff expanded. This performance is much less elaborate than, and quite distinct from, the mutual courtship, though full use is made of the colour and size of the secondary sexual characters. We would tentatively suggest that the secondary sexual characters were evolved primarily in connection with the courtship display, and that they only secondarily became attached to the aggressive behaviour. For the mutual courtship seems to play a much bigger part in the life of the species than does territorial fighting.

HAS THE TERRITORY ANY ADVANTAGE ?

So far as we can see, territory is not important in the Great Crested Grebe either in pairing up or from the food standpoint. It seems correlated with the nesting site, but no advantage seems to be associated with this. There seems no other way in which it could be beneficial to the species, but we can see no reason for supposing that it is beneficial, and the fact that, in the Frensham area at least, territorial pairs are in a minority as compared with colonial pairs, strongly suggests that it has no fundamental importance. In Passerine species in which the importance of territory has been definitely demonstrated, no colonial individuals appear to exist.

We therefore hold that territory in the Great Crested Grebe results from an aggressive disposition possessed by some individual Grebes only, and which is of no fundamental

significance to the species. In one pair this hostility was extended to other species of water birds, clearly an individual affair. We consider that the same argument applies to all of the minority of pairs which were aggressive.

Since Howard published his observations showing the undoubted importance of territory in certain Passerine and some other species, there has been a tendency for observers to apply the term "territory" uncritically and without detailed investigation to any form of aggressive behaviour in birds. We consider that the use of the term "territory" in connection with the aggressive behaviour of the Great Crested Grebe has been of doubtful value, especially since, once this term is applied, there is a strong tendency for a number of dubious advantages to be attributed to the behaviour. Had the term not been used, these advantages would probably not have been attributed, and those observers who find it necessary to interpret all the manifestations of bird behaviour in terms of advantage to the species, would have discussed the advantages of colonial, not territorial, behaviour to this species, since colonial individuals are in the majority. We would emphasise that we are not here attacking the general concepts of the territorial theory, but only their application to the Great Crested Grebe.

The only other Grebe whose territorial behaviour seems to have been investigated is the Little Grebe (*Podiceps r. ruficollis*) by Hartley (1). Mr. Hartley has kindly amplified his observations in a letter. The territory is taken up by the pair, and there is a conspicuous vocal display. In the following points the behaviour differs from that of the Great Crested. All the individuals which he watched showed a similar degree of aggressiveness. He saw no colonies, and the size of each territory was approximately the same. The territories were not abandoned when the young hatched, the young remaining in the original territory till full grown and independent. Hence the chief arguments which we brought against food territories in the Great Crested do not apply to the Little Grebe. This suggests that the territorial behaviour of the former is a vestigial remnant of a behaviour which is of value to other species in the same family. It must, however, be kept in mind that both Hartley's and our own observations are from very limited areas, and that one or both may be unusual. Critical observations of both species in other areas are therefore badly needed, particularly where the Great Crested might seem to be strictly territorial and the Little Grebe colonial (if such exist).

SUMMARY.

From five years' observations on the Great Crested Grebe on Frensham Ponds we conclude :

1. Aggressive behaviour resulting in a "territory" is exhibited by only a few individuals, the majority tolerating other individuals close to the nest.

2. One pair exhibited aggressive behaviour against all species of water birds, but the other aggressive pairs attacked only their own species.

3. No intruder which was attacked was observed to resist.

4. Some display is associated with the fighting, but the secondary sexual characters seem primarily associated with the mutual courtship displays.

5. The territory is not of primary significance in pairing up, as many pairs are formed before they acquire a territory; but a male does at times acquire and defend a territory before obtaining a mate.

6. The territory does not usually include the feeding ground of the pair, and is in all cases deserted when the young hatch.

7. There seem no valid grounds for supposing that the territory is normally of advantage in regulating the breeding density, especially since the size of the territory is extremely variable, from over nine acres in the double territory to almost nothing in colonial pairs.

8. The territory is associated with the neighbourhood of the actual or future nesting platforms, but does not seem of benefit to the species in this connection.

9. The territory seems to be an individual affair, of no fundamental significance to the species. Perhaps it is better developed in other areas, and it may be the remains of a type of behaviour of value in other species of Grebes.

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THE COLOURING OF THE SOFT PARTS OF THE BUFF-BACKED HERON.

BY

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(Plate 4.)

ON an ornithological trip to South Spain in April, 1935, I paid particular attention to the colouring of the soft parts of the Buff-backed Heron (*Ardeola i. ibis*), as I found these to be entirely different from the descriptions given in most of the standard works. In general I am well aware of the need for caution in setting field observations on the colouring of the soft parts of birds against descriptions based on the examination of presumably fresh material in the hand. But this general objection can hardly apply in the present case, because my description is based on observations of the birds in a breeding colony, where they were exceedingly approachable and could be examined with binoculars at a few yards range in a perfect light, so that the details of colouring could be observed almost as well as if one had the birds in the hand. Moreover there can be no question of my description being derived from atypical specimens, because it is based on a close examination of scores of birds in the manner described, and I think I may say of hundreds at slightly longer, but still close, range.

There is an impressive unanimity in the leading works in describing the bill and legs as yellow. The *Practical Handbook*, for example, says "legs and feet dull yellow (adult), dark greenish brown (juvenile and first winter)." Dresser says, "beak and legs yellow," while Hartert describes them in detail as follows (translation): "Bill and bare lores dark yellow. Legs in the breeding season yellow or brownish yellow, in winter and sometimes into the breeding season greenish brown to quite black, very variable, toes always brown to quite black, only the upper part of the bare tibia lighter."

It is therefore rather astonishing to find that at any rate in the breeding season the legs of Spanish birds have not the least trace of yellow or yellowish colouring. Those of adults are a moderately dark, dull vinous or faintly purplish red, generally, perhaps always, shading into a dark brownish on the feet. I made my observations on April 23rd-25th just before leaving Spain and as soon as I got back, while my impressions of the colours were still vivid, I looked up Ridgway's *Color Standards and Color Nomenclature* (1912) and found that the



Pair of Buff-backed Herons at nest in reeds, South Spain, April 1935.
(*Photographed by G. K. Yeates.*)



leg colour, or more precisely that of the scutes on the tarsus, where the colour is strongest, appeared to me to come nearest to that called "Ox-blood red" (Plate I) or possibly between this and "Bordeaux" (Plate XII). I mention this as giving a reasonably close indication of the colour and not as implying that one can carry an *exact* hue and shade in one's head with absolute accuracy.

There is also almost complete agreement in the works I have examined in describing not only the bill, but the bare loreal skin and iris as yellow, but this is true only for certain birds. Although the majority have yellow eyes as described, many have the iris a bright pinkish red, a fact which none of the authorities already quoted mentions. In what I take to be fully adult, probably male, birds, the colouring was as follows: Bill orange yellow distally, shading into vinous pink or reddish towards the base; eye red; bare skin round the eye a very striking bright violetty pink, approaching what Ridgway (Plate XII) calls "Mallow Purple." No book that I know of mentions this.

There were many others with legs and bill as described, but with the eye yellow and the bare skin round it showing no definite colour, apparently a pale dull yellowish, while a few had intermediate eyes of a more orange hue, the red colour apparently developing first round the outside of the iris. Others again had entirely yellow bills and a few of these had the legs dark brownish. I take these to be the youngest birds.

As regards the bill, lores and iris it will be seen that the descriptions quoted are incomplete, being true for some birds, but not for others. On the subject of the legs, however, they are completely wrong, at least as applied to Andalusian birds. It may be observed that *Nicoll's Birds of Egypt* (Meinertzhagen) is more accurate than most accounts in describing the bill as "orange-red" in the breeding season and the legs and feet as "deep orange-red," while Howard Saunders's *Manual*, which reads, "lores, orbits and irides golden-pink; beak reddish at the base, yellow at the tip; legs yellowish-red" is more nearly correct than any of the later accounts. It will be noted, however, that even these two authors speak of orange or yellowish red legs, whereas living Andalusian birds at the end of April show, as I have stressed already, no hint of any orange or yellowish tint. The discrepancy may possibly be due to rapid fading after death, though it would be easier to understand a scarlet or orange red fading to yellowish than one with (so far as can be seen) no initial

tendency towards yellowish at all. The very general emphasis on "yellow" has led me to wonder whether some geographical variation in leg colour might afford a partial explanation. However this may be, there can, I think, be very little doubt that the facts as to the colouring of the soft parts described above indicate an actual colour change dependent on age, probably also on season, and possibly on sex. This subject clearly needs further attention, but some light is thrown upon it by an interesting passage in Irby's *Ornithology of the Straits of Gibraltar*, which is the only account I have found agreeing accurately with my own experience and is based, it may be noted, on an Andalucian bird. It reads: "A male bird, which had been kept alive in the patio of the Fonda de Europa, at Seville, during the first week in April (his fifth spring, as far as I could ascertain) began to change the colour of the legs and the basal half of both mandibles to a pinkish red; the irides also changed to a beautiful rich pink colour, with a very slight golden ring round the black pupil". This description is actually quoted by Dresser, but is ignored by him in his own description on the same page, as it seems to have been by all later writers.

Returning to my field observations, it seems likely that the red-eyed birds are the old males and the more numerous yellow-eyed ones the females and young males. The large and hitherto unrecorded colony where my observations were made was only discovered at the end of our trip, the famous ones in the Marismas being abandoned owing to the drought, and I was not able to devote as much time to the birds as I could have wished. I therefore asked my friend and companion on this expedition, Mr. H. J. R. Pease, who remained a few days longer than I was able to do, to make some further observations directed to throwing light on this subject and he has kindly supplied some notes which I now quote: "The colour of the eye varies from lemon to a strong daffodil yellow (rare), through deep orange (rare) and mahogany to almost crimson (a strong cherry red). The bill in most light yellow-eyed birds is yellowish throughout, and in red-eyed birds the basal half is reddish; but the bill appears to redden towards the base sooner (supposing a transition) than the reddening of the eye, some yellow-eyed individuals showing more or less reddish colouring on the bill. The colour of the legs varies from a dark grey (scarce and apparently associated with the light eye and bill) to a rosy puce (in red-eyed birds). The skin between eye and bill in red-eyed birds is violet, but traces of this colour (very dull in hue) can be seen in some light-eyed birds.

“ Of 64 birds seen actually sitting on nests (the majority had not yet laid at the date of our visit—B. W. T.) 49 had light yellow eyes, 14 intermediate (*i.e.*, eyes noticeably darker yellow to a mahogany colour) and one a fully red eye. Of those which (for no very sound reason, I'm afraid) it was possible to consider as 'pairs', two pairs were light-eyed and two pairs intermediate, while several light- or intermediate-eyed birds were apparently paired to red-eyed mates, but in no case could two red-eyed birds be considered definitely a pair, though two were seen quarrelling at the same nest. Difficulty is caused by the nests being close together and more birds than the nests require being usually seen in a tree ”.

The precise extent to which the changes mentioned depend on the respective factors of age, season and sex must remain for further observation to determine, but for the moment it must suffice to have directed attention to them and to have corrected up to a point the manifest inaccuracies of most published accounts.

While dealing with the subject of Buff-backed Herons in Spain it may be opportune also to record that in the large colony referred to, though many nests were built in low willow trees, hundreds were simply untidy platforms of stems of *Scirpus lacustris* built close together in the “ reed-beds ” of this plant, growing in about 18 inches of water, a type of situation which, judging from Mr. Jourdain's note in the *Practical Handbook*, is quite abnormal. Over a considerable area practically every clump of *Scirpus* contained nests, up to occasionally as many as six or eight in one clump. Through the kindness of my friend Mr. George Yeates, the third member of our party, I am able to reproduce one of his photographs of a pair at such a nest.

[The descriptions in the *Practical Handbook*, of the colouring of soft parts were taken from notes made by collectors, and written on labels attached to skins of birds in various plumages, but it must be noted that in many cases detailed notes of this kind are usually insufficient (especially in breeding examples) for an accurate account to be given where changes occur. Sight observations of the kind made by Mr. Tucker are therefore of the greatest value, and I may here suggest that “ ringers ” who trap birds would be doing good work by comparing notes of the colouring of soft parts with published descriptions. The dark grey colour of the legs observed by Mr. Pease may have been due to the skin of the scutes flaking as this may be cast as it is in some of the gulls.

H. F. W.]

RECOVERY OF MARKED BIRDS.

NOTE.—We have to express our gratitude to a very large number of people who have most kindly reported ringed birds and made these records possible and much regret that we are not able, now that the recoveries are so numerous, to insert their names. Ringers' names are given as heretofore as otherwise it would be almost impossible for them to trace recoveries of birds they ringed.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
Carrion-Crow (<i>Corvus c. corone</i>).		
RT.7939	Cobbinshaw (Midlothian), 2.6.34, young, for Midlothian O.C.	Carluke (Lanark), 11.4.36.
R.V.8663	Rye (Sussex), 5.5.35, young, by Brooker and Cawkell.	New Romney (Kent), 24.2.36.
Rook (<i>Corvus f. frugilegus</i>).		
RINGED AS NESTLINGS.		
RS.3430	Caldwell (Ayr), 25.5.30, by T. Kerr.	Dunlop (Ayr), 13.5.36.
RV.8819	Rawdon (Yorks), 2.5.35, by C. Wontner-Smith.	Corwen (Merioneth), 26.1.36.
RT.7580	Chertsey (Surrey), 23.4.34, by P. Hollom.	Yateley (Hants), —.8.34.
RINGED AS FULL-GROWN.		
RR.4364	Leamington (Warwick), 19.3.28, by P. K. Chance.	Where ringed, 30.3.36.
RR.8877	Chipping Norton (Oxon), transp. Oxford [19 m. S.E.], 24.2.33, by Oxford Orn. Soc.	Where caught, 26.5.36.
Jackdaw (<i>Colæus m. spermologus</i>).		
RINGED AS NESTLINGS.		
RT.7731	Rugby (Warwick), 4.6.33, by Rugby Sch.	Where ringed, 19.5.36.
73953	Lenwade (Norfolk), 1.6.30, by J. C. Comer.	Reepham (Norfolk), 7.5.36.
RV.1333	Canterbury (Kent), 17.5.35, by St. Edmund's Sch.	Nether Wallop (Hants), 6.2.36.
RINGED AS FULL-GROWN.		
RV.4062	Wilmslow (Ches.), 5.6.35, by E. Cohen.	Adlington (Ches.), 25.3.36.
Magpie (<i>Pica p. pica</i>).		
RV.2004	Shipley (Yorks), 31.5.34, young, by C. Wontner-Smith.	Where ringed, 11.1.36.
Jay (<i>Garrulus g. rufitergum</i>).		
RS.2905	Bluntisham (Hunts.), 23.1.33, ad., by E. Peake.	Where ringed, 23.10.35.
RT.7326.	Sutton Valence (Kent), 9.6.33, young, by Sutton Valence Sch.	Ditto —.4.35.

No.	Ringed.	Recovered.
Starling (<i>Sturnus v. vulgaris</i>).		
RINGED AS NESTLINGS.		
PF.966	Dundee (Angus), 18.5.33, by E. C. Sharp.	Guthrie (Angus), 2.5.36.
GP.562	Largo (Fife), 21.5.35, by A. H. Eggeling.	Doonbeg (Clare), 26.1.36.
GM.310	Langwathby (Cumb.), —.5.35, by H. J. Moon.	Borgue (Kirkcudbright), 6.4.36.
FR.411	Wigton (Cumb.), 19.6.35, by Friends' School.	Thursby (Cumb.), 13.4.36.
RINGED AS FULL-GROWN.		
AR.6879	York, 4.2.36, by Bootham Sch.	Flamborough (Yorks.), 26.2.36.
AS.7420	Ditto 5.2.36.	Harstad, Norway, <i>ca.</i> 69°N., 17°E., 12.5.36.
GL.849	Wilmslow (Ches.), 6.10.34, by E. Cohen.	Adlington (Ches.), —.2.36.
ZF.355	Gt. Budworth (Ches.), 19.12.35, by A. W. Boyd.	Warrington (Lancs.), 11.2.36.
ZF.312	Ditto 19.12.35.	Wigan (Lancs.), 23.12.35.
ZT.995	Ditto 17.1.36.	Chorley (Lancs.), 16.3.36.
GT.406	Ditto 21.11.35.	Warmingham (Ches.), 9.3.36.
ZF.262	Ditto 18.12.35.	Crewe (Ches.), 25.2.36.
ZV.193	Ditto 15.1.36.	Chester, 4.2.36.
YF.677	Ditto 18.12.33.	Gadbjerg, Jylland, Denmark, 17.6.36.
ZT.915	Ditto 16.1.36.	Ringe, Fyen, Denmark, 20.4.36.
GX.923	Malvern (Worcs.), 2.11.35, by P. Morshead.	Llanarth (Cardigan), 29.1.36.
GX.452	Ditto 9.6.35.	Mount Mellick (Queen's Co.), 15.3.36.
FT.894	Ditto 30.10.34.	Nieuw Weerdinge, Groningen, Holland, 8.4.35.
GN.126	Ditto 18.11.34.	Rossitten, E. Prussia, 25.4.36.
ZA.63	Ditto 19.11.35.	Nowemiasto, Poland, 53°26'N., 19°36'E., —.5.36.
FL.802	Evesham (Worcs.), 22.1.34, by A. J. Harthan.	Woodford (Northants.), 28.3.36.
GT.608	Birmingham (Warwick), 22.12.35, by W. E. Kenrick.	Tipton (Staffs.), —.1.36.
ZB.691	Stanway (Glos.), 19.1.36, by G. Charteris.	Evesham (Worcs.), 19.3.36.
OC.288	Moreton-in-Marsh (Glos), 21.2.36, by G. Charteris	Ascott-u.-Wychwood (Oxon) 24.3.36.
OC.223	Ditto 21.2.36.	Brailes (Warwick.), 6.4.36.
OC.219	Ditto 21.2.36.	Yarmouth (Norfolk), 27.2.36.
OC.271	Ditto 21.2.36.	Bassum, Hanover, 3.5.36.
AN.6934	Oxford, 11.2.32, by Orn. Soc.	Chipping Norton (Oxon.), —.3.36.
GR.597	Ditto 7.12.34.	Ledbury (Hereford), 5.3.36.
GV.109	Ditto 4.3.35.	Watlington (Oxon.), 14.2.36.
GR.611	Ditto 2.11.34.	Faringdon (Berks.), 10.2.36.

No.	<i>Ringed.</i>	<i>Recovered.</i>
Starling (<i>continued</i>).		
RINGED AS FULL-GROWN (<i>continued</i>).		
ZR.891	St. Neot's (Hunts.), 21.12.35, by C. F. Tebbutt.	Bradfield (Suffolk), 10.5.36.
EF.206	Alton (Hants.), 27.12.33, by M. H. Williams.	Gardelegen, Prussian Saxony, 18.3.36.
FJ.237	Winchelsea (Sussex), 21.10.33, by P. Hollom.	Nowemiasto, Poland, 53°26'N., 19°36'E., —.5.36.
RF.510	Seaton (Devon), 1.1.33., by A. Mayo.	Salisbury (Wilts.), 10.1.36.
XF.13	Ditto 7.12.33.	Swindon (Wilts.), 2.2.36.
FJ.983	Branscombe (Devon), 28.12.33, by P. Morshead.	Sidford (Devon), 14.1.36.
ZS.159	Ditto 23.12.35.	Leiden, Holland, 24.5.36.

Greenfinch (*Chloris ch. chloris*).

RINGED AS FULL-GROWN.

ZV.206	Gt. Budworth (Ches.), 19.2.36, By A. W. Boyd.	Garstang (Lancs.), 20.4.36.
WF.212	Ditto 14.2.33.	Bay Horse (Lancs.), 12.4.36.
GT.322	Ditto 27.10.35.	Meaux (S. et M.), France, 12.3.36.
ZT.291	Evesham (Worcs.), 16.2.36, by A. J. Harthan.	Kidderminster (Worcs.), 15.5.36.

Linnet (*Carduelis c. cannabina*).

LE.800	Malvern (Worcs.), 14.10.34, juv., by P. Morshead.	St. Nazaire, France, 15.3.36.
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Bullfinch (*Pyrrhula p. nesa*).

GD.565	Shipley (Yorks), 20.6.34, ad., by C. Wontner-Smith.	Where ringed, 29.3.36.
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Chaffinch (*Fringilla c. cœlebs*).

RINGED AS FULL-GROWN.

FF.862	Redditch (Worcs.), 10.2.34, by G. Charteris.	Valer (Ostfold), Norway, —.5.36.
LM.145	Evesham (Worcs.), 1.3.35, by G. Charteris.	Stanway (Glos.), 23.12.35.
LM.209	Moreton-in-Marsh (Glos.), 2.3.35, by G. Charteris.	Ditto 25.1.36.
LJ.888	Toddington (Glos.), 23.2.35, by G. Charteris.	Colwyn Bay (Denbigh), —.2.36.
ZA.307	Coedcanlas (Pem.), 1.3.35, by Skokholm B.O.	Hengoed (Glam.), 9.6.36.
KA.978	Brent Knoll (Som.), 12.7.35.	Clevedon (Som.), —.5.36.

Yellow Bunting (*Emberiza c. citrinella*).

RINGED AS FULL-GROWN.

LT.169	Gt. Budworth (Ches.), 8.1.36, by A. W. Boyd.	Knutsford (Ches.), 12.5.36.
ML.700	Ascott - under - Wychwood (Oxon), 8.12.34, by Oxford Orn. Soc.	Watlington (Oxon), —.4.35.

No.	<i>Ringed.</i>	<i>Recovered.</i>
Reed-Bunting (<i>Emberiza s. schoeniclus</i>).		
RINGED AS FULL-GROWN.		
LE.236	Wilmslow (Ches.), 8.1.35, by E. Cohen.	Where ringed, 2.2.36.
LE.239	Ditto	18.1.35. Ditto 5.2.36
LE.246	Ditto	3.2.35. Ditto 19.1.36.

Sky-Lark (*Alauda a. arvensis*).

FP.180 Malvern (Worcs.), 5.2.34, ad., Chepstow (Mon.), 28.3.36.
by P. Morshead.

Meadow-Pipit (*Anthus pratensis*).

RINGED AS FULL-GROWN.

LE.697	Malvern (Worcs.), 1.10.34, by P. Morshead.	Bayonne, France, 30.10.35
LL.765	Skokholm Bird Obs. (Pem.), 25.8.35.	Jerez de la Frontera (Cadiz) Spain, 17.1.36.

Pied Wagtail (*Motacilla a. yarrellii*).

LB.526	Dalemain (Cumb.), 30.5.35, by H. J. Moon.	Porto de Mós, (Estremadura) Portugal, 26.2.36.
NX.127	Romsey (Hants.), 24.5.35, by C. Dalgety.	Redlynch (Wilts.), 17.4.36.

Spotted Flycatcher (*Muscicapa s. striata*).

MR.403 Skokholm (Pem.), 28.5.34, ad., Birr (King's Co.), 22.5.36.
by R.M. Lockley.

Mistle-Thrush (*Turdus v. viscivorus*).

ZM.448	Lowther (Westmor.), 18.6.35, young, by H. J. Moon.	Newbiggin (Westmor.), 6.5.36.
AS.1902	Shipley (Yorks.), 27.4.35, young, by C. Wontner-Smith.	Bolton (Lancs.), 14.3.36.
AS 3002	Wilmslow (Ches.), 3.2.36, ad., by E. Cohen.	Disley (Ches.), 7.2.36.

Song-Thrush (*Turdus c. ericetorum*).

RINGED AS NESTLINGS.

GP.809	Stirling, 21.4.35, by Rugby Sch.	Slyne Hd. (Galway), 19.1.36.
FD.715	Penrith (Cumb.), —, 6.33, by H. J. Moon.	Kirkby-in-Furness (Lancs.), 15.1.36.
GJ.943	Clapham (Yorks.), 9.6.34, by H. J. Moon.	Dublin, 8.3.36.
NF.443	Arnside (Westmor.), 18.4.33, by Bootham School.	Tubbercurry (Sligo), 4.2.36.

RINGED AS FULL-GROWN.

GT.598	Birmingham (Warwick), 22.12.35, by W. E. Kenrick.	Soestdyk (Utrecht), Holland, 12.3.36.
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No. Ringed. Recovered.

Blackbird (*Turdus m. merula*).

RINGED AS NESTLINGS.

- GA.372 Ullswater (Cumb.), 15.5.34, by Oughterard (Galway), 15.1.36
H. J. Moon.
GG.266 Kirkby Lonsdale (Westmor.), Lucan (Dublin), 5.1.36.
—.5.34, by H. J. Moon.

RINGED AS FULL-GROWN.

- GW.528 Moreton-in-Marsh (Glos.), Stanway (Glos.), 23.1.36.
2.3.35, by G. Charteris.
ZA.460 Strumble Hd. (Pem.), 5.11.35, Boncath (Pem.), 22.4.36.
by Skokholm Bird Obs.

Stonechat (*Saxicola t. hibernans*).

- LN.644 Aberlady (E. Lothian), 6.5.35, Riggend (Lanark), 21.12.35.
young, by Bryson and Serle.

Hedge-Sparrow (*Prunella m. occidentalis*).

- LL.706 Skokholm Bird Obs. (Pem.), Marloes (Pem.), 6.3.36.
young, 3.7.35.

Swallow (*Hirundo r. rustica*).

RINGED AS NESTLINGS.

(a) RECOVERED AWAY FROM WHERE RINGED.

- KC.224 Langwathby (Cumb.), —.7.35. East London, Cape Prov.,
by H. J. Moon. S. Africa, 7.2.36.
NK.643 Bluntisham (Hunts.), 27.8.32, Ladybrand, O.F.S., S. Africa,
by E. Peake. 15.2.36.

(b) RECOVERED WHERE RINGED.

- KC.546 Ashley (Ches.), 20.7.35, by Cheltenham Coll. 20.5.36.
LM.921 Stanway (Glos.), 23.6.35, by G. Charteris. —.6.36.
LW.239 Salthouse (Norfolk), 4.7.35; by R. M. Garnett. 19.5.36.

RINGED AS FULL-GROWN.

- MH.943 East Norton (Leics.), 5.8.34, by Bethlehem, O.F.S., S. Africa,
P. Morshead. —.2.36.

Martin (*Delichon u. urbica*).

- M.4735 Bottesford (Leics.), 2.8.31, Where ringed, Summer 1935.
young, by F. K. Staunton.

Swift (*Apus a. apus*).

- LB.801 Brede (Sussex), 23.6.34, ad., by Where ringed, 13.5.36.
P. Allen.

Kingfisher (*Alcedo a. ispida*).

- LT.259 Eynsham (Oxon), 22.5.35, Chepstow (Mon), —.1.36.
young, by Oxford Orn. Soc.

No. Ringed. Recovered.

Great Spotted Woodpecker (*Dryobates m. anglicus*).

S.2047 Ullswater (Westmor.), 13.2.31, Where ringed, 24.12.35.
ad., by H. J. Moon. 19.1.36.

Little Owl (*Athene n. vidalii*).

RS.846 Malvern (Worcs.), 3.6.31, young Earl's Croome (Worcs.),
by P. Morshead. 8.5.36.
RV.8657 Rye (Sussex) 8.6.35, ad., by Where ringed, 3.5.36.
Brooker and Cawkell.

Tawny Owl (*Strix a. sylvatica*).

AG.451 Gt. Budworth (Ches.), 17.5.34, Where ringed, 18.1.36.
young, by A. W. Boyd.

Barn-Owl (*Tyto a. alba*).

AA.9199 Skirwith (Cumb.), —.8.34, Plumpton (Cumb.), 20.7.35.
young, by H. J. Moon.
400292 Market Weighton (Yorks.), Sancton (Yorks.), 28.1.36.
26.6.35, young, by Bootham
School.

Sparrow-Hawk (*Accipiter n. nisus*).

RT.7334 Sutton Valence (Kent), 8.7.35, Biddenden (Kent), 4.9.35.
young, by Sutton Val. Sch.

Heron (*Ardea c. cinerea*).

RINGED AS NESTLINGS.

(a) RECOVERED AWAY FROM WHERE RINGED.

105022 Almondbank (Perths.), 19.5.33, Stanley (Perths.), 26.11.35.
by Lord Mansfield.
103325 Ditto 17.5.35. Trossachs (Perths.), 25.3.36.
114526 Crofton (Cumb.), 9.5.35, by Powfoot (Dumfries.), 3.1.36.
R. H. Brown.
112037 Mepal (Cambs.), 16.5.34, by Heyst, W. Flanders, Belgium
C. S. Clarke. 19.1.36.
114583 High Halstow (Kent), 23.5.35, Corringham (Essex), 23.1.36.
by P. Hollom.
114916 Ditto 23.5.35. Bampton (Oxon), 25.4.36.
114912 Ditto 23.5.35. Warminster (Wilts.), 14.11.35
113363 Ditto 5.5.35. Epernon (Eure et Loir),
France, 22.12.35.
114541 Beckley (Sussex), 11.5.35, by New Romney (Kent), —.1.36
P. Hollom.
114570 Ditto 11.5.35. Gouda, Zuid Holland, 16.1.36

(b) RECOVERED WHERE RINGED.

114575 Beckley (Sussex), 11.5.35, by P. Hollom. 10.2.36.

To be continued.

NOTES

CARRION-CROW LAYING TWICE IN SAME NEST.

A NEST of a Carrion-Crow (*Corvus c. corone*) in a willow tree in Walland Marsh, Kent, had a clutch of eggs which was taken on April 12th, 1936. On May 17th, the nest contained another clutch of eggs which were exactly like the first. The nest did not appear to have been repaired or altered in any way.

G. E. TOOK.

[The long replacement period (about 35 days) seems to indicate that the Crow may have made an unsuccessful attempt to breed in the interim and then returned to the original site.—F.C.R.J.]

RETURN MIGRATION OF JAYS.

LAST autumn several observations of a westward movement of Jays (*Garrulus glandarius*) were reported (*cf. antea* Vol. XXIX, pp. 174, 212, 324). One day in November, 1935, over thirty Jays flew over my garden near Horsham, Sussex, in a south-west direction in loose formation, flying about 100 feet up in the air. They were certainly not just making a local movement but disappeared out of sight.

On three occasions this spring I have seen Jays, two, five and lastly eight together appear as specks in the western sky and fly straight over some four or five hundred feet up to disappear in the east. The last eight were seen about May 12th when the Jays in my wood had eggs.

C. H. BRYANT.

[In *The Field* (11, vii., '36, p. 106) Lt.-Col. W. R. Thompson records that his brother, Lt.-Col. R. N. Thompson, saw a flock of at least 33 Jays come in off the sea at Fairlight Cove, Sussex, on the morning of May 22nd, 1936, and continue their flight on a south to north course.—EDS.]

TWITE AS FOSTERER OF CUCKOO.

ALTHOUGH the Twite (*Carduelis flavirostris*) is locally abundant on the moorlands of south Lancashire, it is a very rare fosterer of the Cuckoo (*Cuculus c. canorus*). It was therefore with considerable interest that I found a Twite's nest containing a nestling Cuckoo not more than four or five days old, on the Heywood uplands on June 10th, 1936. I watched the birds for nearly two hours and saw both the hen and the rosy-rumped cock visit the nest, which was in heather,

on countless occasions. Though I observed them closely however, I was struck by the fact that I could never detect them carrying food in their bills. Being curious to learn whether a pair of Twites would rear a Cuckoo, I journeyed again three days later to see how things were faring, but on arrival found the youngster dead in the nest. It is of course impossible to say with certainty that it had perished from lack of suitable food, but the occurrence seems suggestive, and would explain the rare victimization of the Twite.

IRVINE WHITTAKER.

“ INJURY-FEIGNING ” BY WOOD-LARK.

To the June, 1936, issue of *The Oologists' Record* the Rev. F. C. R. Jourdain contributes an interesting article on the so-called injury-feigning by birds and recounts how far this habit is prevalent among Palaearctic species. As Mr. Jourdain quotes no good case among Larks it may be worth noting that a Wood-Lark (*Lullula a. arborea*) nesting in one of my fields at Chobham, Surrey, in April, 1936, performed this act on every occasion that one put it off the nest when it was incubating. I was unable to visit the nest when the young hatched and shortly afterwards they were found dead.

I may note that this particular bird did not sit so closely as most Wood-Larks I have known, and always left the nest when one approached within three or four yards of it.

Each time she left the nest along the ground with a great fluttering of wings. She crouched low, as though dragging herself along, and trailed her tail which was widespread with the feathers separated. The wings were half open and fluttering rapidly. Every few yards she stopped with her breast on the ground, the tail spread and depressed and the wings quivering, and meanwhile turned her head and watched me as I stood by the nest (unfortunately I never tested the effect of following her). These pauses were short, but when she had progressed twenty yards at an oblique angle from me she stopped for a considerable time in the same attitude with the wings still quivering and with her head turned to watch me. Then she disappeared into some thickish undergrowth and flew up and away farther on. On each occasion the bird went through the same actions, proceeded in the same direction and stopped finally at approximately the same spot. The ground over which the bird went was partly with short grass and partly bare. The direction taken may have been due to the fact that I approached the nest each time from the same point.

“Injury-feigning” has often been observed among the warblers but I may add a few notes in the case of a Lesser Whitethroat (*Sylvia c. curruca*) with young in the nest, which I frequently watched, because the actions though similar to those of the Wood-Lark had small differences. The tail was widely spread in the same way and the wings were trailing and fluttering, but in this case the bird flopped from side to side and often spread one wing more than the other and it appeared more “incapable” than the Wood-Lark. This bird varied its direction, but it always had to proceed through long grass and this may have made its actions more exaggerated. Its final stopping place varied from twenty to thirty yards, sometimes in a wood stack and sometimes in a small birch tree where it continued the actions described. On one occasion its mate came down to it with much concern but without joining in the performance. Then they disappeared behind some cover and almost immediately afterwards the male uttered the short, loud song.

H. F. WITHERBY.

PIED WAGTAILS USING ROOST IN JUNE.

ON June 25th, 1936, while staying at Galashiels, Roxburghshire, I discovered a small roost of Pied Wagtails (*Motacilla a. yarrellii*) in a clump of willow shrubs on the outskirts of the town.

I was able to count between twenty and thirty birds, most of which were adult although I noted one or two juveniles among them. The first birds arrived at the roost at about 8.45 p.m. They usually came in small batches of two or three and frequently perched on the neighbouring telegraph wires before going to the roost for the night. Although the character of the roost was normal, its occupation in the summer seems worth noting.

PHILIP A. CLANCEY.

GOLDEN ORIOLE IN SUFFOLK.

ON a visit to a mere in east Suffolk on July 4th, 1936, Mr. J. P. Hardiman and I heard a Golden Oriole (*Oriolus o. oriolus*). The bird was in full song for upwards of an hour but kept out of view in a belt of poplars and alders. J. B. WATSON.

CHIFFCHAFFS IN PERTSHIRE.

ON June 7th, 1936, in Strath Bran, Dunkeld, Perthshire, between the Hermitage and Rumbling Bridge, I was astonished to hear the song of a Chiffchaff (*Phylloscopus collybita*) in the distance, when I was in a plantation watching Jays. I found the bird feeding on tall deciduous trees on the edge of a larch

plantation. It was singing very frequently and was possibly breeding.

The bird is rare in eastern Scotland and has not previously been recorded, so far as I am aware, in north Perthshire.

W. MARK KERR.

On July 7th, 1936, a Chiffchaff was singing at Fearnan (Perthshire), near the north-east end of Loch Tay. The bank of the loch here is wooded down to the water's edge with plentiful undergrowth and some larger forest trees. The song was also identified by my companion. P. A. D. HOLLON.

INCUBATION-PERIOD OF GRASSHOPPER-WARBLER.

On May 24th, 1936, I flushed a Grasshopper-Warbler (*Locustella n. naevia*) from a nest containing four eggs. On May 26th there were five eggs in the nest. On June 6th at 11.45 a.m. I found four young had hatched out and by 10.30 a.m. on the 7th all five were hatched. This appears to indicate 12 to 13 days as the incubation-period as the fifth egg was probably laid on May 25th since it was quite 4 p.m. when I first found the nest.

Unfortunately the nest was empty on the 9th. I rather suspect a neighbour's cat which I saw near the nest. The nest itself was in cleared woodland amongst rush and bramble only about 50 yards from my house. I first heard the male singing on May 13th from about 5.30 a.m. to 8 a.m. From then up till May 22nd he sang very frequently but less so towards the end of that period. I heard no song at all while incubation was proceeding but on June 7th a few scraps of song were heard and occasionally up till June 20th. The male usually sang about 20 yards from the nest. F. FINCHER.

THE RANGE OF THE HEBRIDEAN HEDGE-SPARROW.

Since this race (*Prunella modularis hebridum*) was described in 1934 from South Uist, I have been able to examine material from other localities which proves referable to it.

A male and female from Antrim, Northern Ireland (November, 1934) agree well with Hebridean birds and in fresh autumn plumage the race appears well defined. Whether the breeding bird of this locality is *hebridum* or not remains to be shown.

I have also examined in the Edinburgh Museum a bird from the Clyde area (Cardross) obtained in autumn which shows the characters of *hebridum*.

Finally, through the kindness of the Forestry Commission, I was, in April, 1936, able to collect a few examples during a brief trip to Knapdale, Argyllshire. These were birds shortly to breed and certainly the breeding form of the locality. They are somewhat more worn than winter birds and agree with spring birds in the British Museum (two from South Uist, one from Skye). These spring examples of *hebridium* compared with spring Hedge-Sparrows from Southern England show the characters of the race though to a distinctly less marked degree than autumn birds, and it would seem that in worn plumage *hebridium* could not be distinguished. The wing formula of *hebridium* seems quite inconstant, the second primary being longer or shorter than the seventh, or sub-equal.

CHARLES M. N. WHITE.

YOUNG OF NORMAL AND ALBINISTIC HOUSE-MARTINS.

MR. MILLER of School House, Tadley, Hampshire, reports to Reading Museum the mating of a House-Martin (*Delichon u. urbica*) in normal plumage with one in which all the dark feathers were replaced by pale sandy-buff. The result was four young, two normal, two resembling the pallid parent.

One young bird fell from the nest and died, and was received by Mr. L. R. A. Grove, Assistant Curator, Reading Museum.

I could find no trace of strongly pigmented feathers upon the young bird. Its coloration in mantle, wings and tail is considerably fainter than that upon a Sand-Martin.

H. M. WALLIS.

WOODPECKER NESTING HOLES AND THE COMPASS.

WHILE investigating the breeding habits of Woodpeckers, I was struck by a seeming frequency with which the entrance to the nesting-chamber faced in a northerly direction. This was intriguing. I followed the matter up by noting the compass bearing of each of the first hundred nesting-holes I came upon with the interesting result shown in the accompanying diagram. From this illustration it will be seen that my initial impression was not incorrect for I found that the aspect of fifty-nine holes lay in the northern half of the compass-card, twenty-six in the southern half, while seven fronted the east and eight, the west; these latter could be said to be neutral. By far the greater number of holes—twenty-five—faced exactly north but less than half this number were found with a south aspect.

The compass-card in the diagram may be taken to represent the tree-trunks ; the dots indicate the positions of the nesting-holes in relation to the cardinal and other compass points, each dot representing one of the holes.

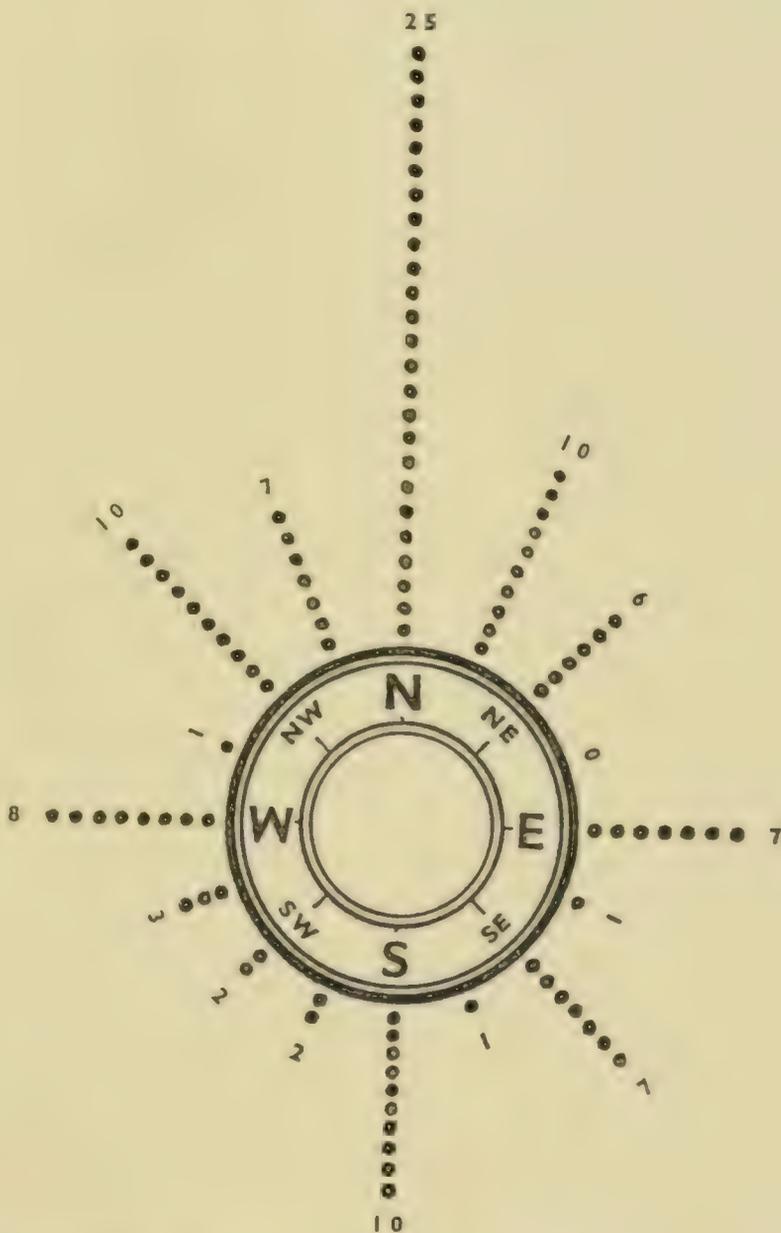


Diagram showing the relation of Woodpecker nesting holes to the points of the compass.

With few exceptions the holes examined were the work of Green Woodpeckers (*Picus v. virescens*) ; they were found, most of them, in the New Forest and in Savernake Forest.

Of the trees in which the holes had been excavated, one was an apple, one an elm, four were ash trees, thirty-seven were beech, and fifty-seven were oak trees.

It may possibly be said that decay attacks a tree more frequently on the northerly side which thus offers a more vulnerable and so inviting opportunity to the beak of the Woodpecker. Whether that is the case some forestry expert might be able to say. However this may be, it was curious to observe how often the holes had been excavated in what seemed quite sound timber.

But there is another implication. Some time ago an article of mine appeared in *British Birds* (Vol. XXV., p. 40), offering observations made on the positions occupied by eggs in nests of Ringed Plovers (*Charadrius h. hiaticula*) and the relation of these positions to the cardinal points of the compass, and describing how the eggs were replaced on the cardinal points by the owner-birds after dis-arrangement. The evidence for the Plovers was not entirely conclusive; neither do my observations prove that the Woodpeckers make any, what I may call, "compass choice" in the positions chosen for their nesting-holes. But may we not consider that there is, at least, a suspicion, a *prima facie* case perhaps, that with the Woodpeckers as with the Plovers the "call of the North" is to some extent obeyed. For what evidence there is does seem to indicate that there is the possibility of an influence of some sort being exerted over the birds by the North.

After the above had been set up in type I noted the position of nesting-holes in another section of woodland finding six holes facing north, four north-east, one north-north-east, one north-north-west, six east, three west, one south-east and one south. This brings the total facing exactly north to 31 as against 11 facing exactly south and 71 in the northern half of the compass card against 28 in the southern; 24 being neutral. As it has been found impossible to alter the diagram may I suggest that readers might place dots on their diagrams representing these additions.

GEORGE MARPLES.

TAWNY OWL TAKING PREY DURING THE DAY.

WITH reference to Mr. J. S. Elliott's note (*antea*, p. 47), I have observed Tawny Owls (*Stria a. sylvatica*) with prey in the early afternoon on several occasions, during August and September in Strathtay, near Aberfeldy, Perthshire. Curiously, although I have watched Tawny Owls in other parts of the country and have had a pair nesting each year close to the

house here, at Kelvedon in Essex, Strathtay is the only place where I have seen them taking prey in full daylight.

JAMES W. CAMPBELL.

SPOONBILL IN ISLAY.

DURING a recent visit to Islay with members of the Oxford Ornithological Society I was informed that a Spoonbill (*Platalea leucorodia*) had recently been captured on the island. Some of us inspected the bird in the house of its captor, Mr. Macindur of Bowmore. It had just been returned by the Glasgow taxidermist and was not yet cased so we could examine it closely. It was in very fine plumage with a long crest and no sign of having been in captivity. Mr. Macindur found it in a drain in the peat about two miles south of Bowmore and caught it alive, but it died shortly afterwards, presumably of starvation as he could not get it to feed. He was rather vague as to the date of capture but thought it was in May. It seems to me probable that this was the bird seen making for the coast of Co. Down on May 24th (*cf. antea*, p. 47). The coast of Antrim is plainly visible from Islay.

W. B. ALEXANDER.

EARLY NESTING OF SHELD-DUCK IN KENT.

WITH reference to my note on the early nesting of Sheld-Duck (*Tadorna tadorna*) (Vol. XXIX, p. 85) in the Dungeness area, by a curious coincidence ducklings were seen on the pools on exactly the same date (May 12th) in 1936 as in 1935. This year there were two broods of ten each. I saw them myself on the 17th, and nearby a third brood of at least three that were distinctly larger birds and so must have been several days older than the larger broods. It begins to look as though the first week of April is the normal date for laying to commence in this part of England.

N. F. TICEHURST.

GOOSANDER NESTING IN DUMFRIESSHIRE.

IT is very satisfactory to be able—at long last—to state definitely that the Goosander (*Mergus m. merganser*) has nested in Dumfriesshire. (See *British Birds*, Vol. XX, p. 252, and Vol. XXIII, p. 232.)

On June 18th, 1936, a student at Wallace Hall Academy brought his science master, Mr. O. J. Pullen, a dead duckling which attracted his attention because of its serrated beak. The student informed Mr. Pullen that his father had found a nest containing nine eggs which he had taken home; placing them under a hen he hatched eight (one egg proved to be addled) but all the ducklings died.

Mr. Pullen most kindly sent me the duckling which I at once forwarded to Mr. Witherby who identified it as a Goosander but who—to be doubly sure—sent it to the authorities at the British Museum (Natural History) who independently arrived at a similar decision. At a later date I was able to send the down from the nest to Mr. Witherby who had no hesitation whatever in identifying it as that of a Goosander. The duckling and some of the down are now deposited in the above-mentioned Museum.



Site of Goosander's Nest, Dumfriesshire, 1936.

The nest was in a hollow at the base of a rowan tree beside the Capel burn, near Mitchellslacks in the parish of Closeburn, Dumfriesshire, and—thanks again to the assistance of Mr. Pullen—I am able to give a photograph of the site.

H. S. GLADSTONE.

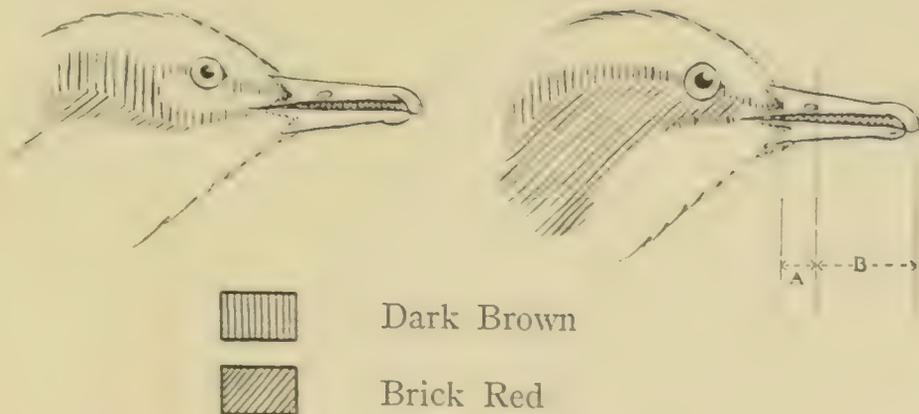
[In *A Practical Handbook of British Birds* the late Mrs. Meinertzhagen stated that the nestlings of the Goosander

and Red-breasted Merganser were alike and Phillips in his *A Natural History of the Ducks* states that they are probably not to be distinguished except by the more basal position of the nostril in the Merganser. From the material available it would seem, however, that the brown streak running from the gape, below the eye and merging with the same colour behind the eye is darker and more clearly defined in the Goosander than in the Merganser. There is a good deal of individual variation, but this streak in the Merganser is usually short and fades into the general colour of the sides of the head, which is generally more rufous than it is in the Goosander.

The position of the nostrils as is well known differs in adults of the two species and to test this in ducklings in down it is necessary to obtain measurements comparative with the length of the bill which, of course, varies according to the age of the bird. Mr. J. D. Macdonald has made such comparative measurements of the specimens in the Natural History Museum and a note by him with figures which he has kindly supplied are appended. These should be useful as a guide in distinguishing ducklings of the two species, but it must again be noted that the markings on the sides of the head are subject to individual variation.

The nest down and feathers sent by Mr. Gladstone are very characteristic of the Goosander, which, as pointed out by Heatley Noble (*British Birds*, Vol. II) has down much paler and feathers considerably larger and more creamy coloured than in the Merganser.—H.F.W.]

[The relation between the lengths A and B (see Fig.) in the same species should be more or less constant throughout any reasonable variation in age, but should be quite distinct



GOOSANDER MERGANSER.

from that of the other species at the same age if there is any difference in the position of the nostril in the culmen.

Twelve Merganser chicks were measured and the value of the ratio A/B lay between .35 and .45 with a mean of .42. Only three Goosanders were measured and gave .5, .5 and .6. Mr. Gladstone's specimen gave a value of .5.—J. D. MACDONALD.]

“INJURY-FEIGNING” BY A STONE-CURLEW.

OF all the number of times I have seen the young of Stone-Curlew (*Burhinus æ. ædicnemus*) in Berkshire for the purpose of ringing, I had never, until the other evening (June 10th, 1936), seen an old bird, probably the hen, feign being hurt in order to distract my attention from her young. She lay quite close to me, flapping one wing, with the other wing half spread out, as though broken, and so realistic was it that I half believed the bird had really met with an accident of some sort and so I went towards it, when it immediately jumped up and ran round me, flew a few yards and then returned to sham being hurt again. It was more realistic in its shamming performance than I have ever seen a Partridge behave.

GEORGE BROWN.

GOLDEN PLOVER AND STARLINGS PERFORMING JOINT AERIAL MOVEMENTS.

ON April 11th, 1936, when in Glen Esk near Edzell, Angus, I was watching a flock of about 30 to 40 Golden Plover (*Charadrius apricarius*) feeding on a ploughed field and was surprised when a flock of 20 to 30 Starlings (*Sturnus vulgaris*) which had been feeding close by, rose with the Golden Plover. The two flocks blended and together carried out the usual wheeling movements of Golden Plover. It was only on landing that the Starling flock separated again and continued feeding near the Golden Plover.

W. MARK KERR.

LAPWING DRIVING SHEEP FROM NEST.

WHILST in Sutherlandshire in May, 1936, I saw a Lapwing (*Vanellus vanellus*) continually jumping on to the back of a sheep and pecking at it in an effort to drive the sheep from the nesting site. Whilst on the ground the bird followed the sheep around, keeping in front of its face with wide open wings. The vacant look of surprise on the face of the sheep was amusing to see.

G. E. TOOK.

CALL NOTES OF THE SPOTTED REDSHANK.

I HAVE always found the Spotted Redshank (*Tringa erythropus*) a very wary and difficult bird to approach.

During the past two years I have been fortunate enough to have a number of these birds under close observation—on both the vernal and return migrations.

As most authorities ascribe to this bird the single call of "tjeuty," perhaps the following notes may be of interest. On rising a call of "tjeuty"—if startled a moderately loud and clear "chooeee." When in flight in small parties (round the feeding ground) a conversational "chee" or "chee-cheet". The feeding call is a mild "chu," which is usually answered by a dissyllabic "chu-chu".

This spring I had five birds under observation in East Kent, on May 4th, two in full summer dress, three in transitional plumage. From the actions of these birds three appeared to be males and two females. The males apparently display to the females by throwing back the head and strutting about in a pigeon-like manner—a rather ludicrous performance.

T. C. GREGORY.

THE BIRTH OF A CURLEW.

ON the evening of June 21st, 1936, my brother, Mr. H. S. Cowin, and I visited the nest of a Curlew (*Numerius a. arquata*) which when last seen had contained two eggs. To our surprise instead of the full clutch of four eggs, the nest still contained only two eggs which were on the point of hatching.

Towards the larger end of one egg was a cracked flake about a quarter of an inch in diameter from which a number of cracks radiated.

The other egg contained two holes of the same size, about a quarter of an inch apart and from the lower of these the beak of the young bird protruded and its faint cheeping was heard. The white egg-tooth on top of the beak was clearly visible as were the upward taps of the beak since it was noticeable that all the time the bird was working at the hole the point of the beak protruded which would not have been the case if the bird had endeavoured to break out by pecking at the shell with the point of the beak. While we were there the bird broke through the piece of shell separating the two holes but unfortunately the lateness of the hour (9.30 p.m.) and the approach of a thunderstorm prevented us from staying to witness the end of this interesting episode.

The whole process agreed closely with that described by Mr. F. B. Kirkman in "The Birth of a Black-headed Gull"

(*British Birds*, Vol. XXIV., pp. 283-291) but one point not mentioned therein was that in the case of the young Curlew the tapping with the egg-tooth was not continuous but intermittent, a few minutes tapping being followed by a rather shorter pause during which the bird lay quiet with the beak motionless. Can this be reconciled with Mr. Kirkman's statement that in the case of the Black-headed Gull the tapping is automatic and an involuntary act; though he says that it remains to be ascertained whether this is true of wild species generally? In all other respects Mr. Kirkman's description of the birth of the Gull held good for the Curlew, even down to the cheeping of the chick and the occasional opening and shutting of the mandibles which, however, were never withdrawn within the shell.

W. S. COWIN.

HERRING-GULLS FEEDING ON LARVAE OF MOTHS.

It may be of interest to record that larvae identified by Mr. W. Mansbridge, F.R.E.S., who was kind enough to examine a specimen I sent to him, as the Noctuid moth *Cerapteryx* (*Charaeas*) *graminis*, L., were disgorged in large quantities by young Herring-Gulls (*Larus a. argentatus*) on June 18th, 24th, and 29th, 1936, on Puffin Island, Anglesey.

With few exceptions the young birds appeared to have been fed exclusively on these larvae, and at a rough estimate I should say that from 50 to 150 were disgorged at a time.

M. MITCHELL.

WATER-RAIL IN SUMMER IN INVERNESS-SHIRE.

A FEMALE Water-Rail (*Rallus a. aquaticus*) was picked up dead near Dulnain Bridge, Inverness-shire, on June, 25th 1936, by D. Stubbert. I saw one on April 2nd, 1936, about half a mile from where this specimen was found. There are several winter records of the bird but so far as I know none in summer for Inverness-shire.

WINIFRED M. ROSS.

RECENT PROGRESS IN THE STUDY OF BIRD-MIGRATION.—In an important paper under this title appearing in the July, 1936, number of *The Ibis* (pp. 472-530), Dr. A. Landsborough Thomson gives a masterly review of the literature of Bird Migration published between 1926 and 1935. The aim of the review, as Dr. Thomson remarks, is selective rather than exhaustive, and the matter is arranged and discussed with such great knowledge of the subject that the reader gets a good general idea of the progress made in various branches without the necessity of consulting the numerous original

publications, though many pages of references at the end of the article are no less valuable to those who desire to go farther into detail. Following introductory sections on "general works" and "methods of study", Dr. Thomson divides the review into two main headings "General features of Migration" and "Theoretical Problems of Migration". The first is subdivided into the following sub-headings: "Types of Movement", "Geographical Aspects", "Behaviour of Migrants", "Routes and Flight-lines" and "Weather Influences". The theoretical side is discussed under sections entitled: "Ends served by Migration", "Origin of Migration", "Annual Stimuli to Migration" and "Path and Goal of Flight: Orientation".

Dr. Thomson dates his "Review" from 1926 because in that year three books on the subject were published: in this country *Problems of Migration* by Dr. Thomson himself, in America *The Migration of Birds* by Dr. A. Wetmore, and in Germany *Die Wanderungen der Vögel* by H. Wachs.

The "Review" is one which no ornithologist can afford to miss since it forms an authoritative record of work in the last ten years on a subject which must interest everyone.

NUTCRACKER IN SURREY.—Mr. W. N. Greenwell informs us that on July 6th, 1936, near Kew Green, he observed a bird which he identified as a Nutcracker (*Nucifraga caryocatactes*) and from the careful description he has given us there can be no doubt that his identification is correct. The bird was feeding on the ground within a dozen yards of Mr. Greenwell and then flew up into an oak and disappeared into Kew Gardens. The date makes it unlikely that this was a wild migrant and it seems more probable that it was an escape from captivity.

YOUNG CROSSBILLS IN DEVON.—Mr. J. F. D. Scott informs us that on May 10th, 1936, he watched an adult hen Crossbill (*Loxia c. curvirostra*) and two young birds in brown plumage near Kingswear. The young were full grown and feeding on cones so that they may not have been reared in the immediate neighbourhood.

FIELD STUDY OF ST. KILDA WREN.—In the *Scottish Naturalist* (1936, pp. 9-41) Messrs. T. H. Harrisson and John N. S. Buchan give a very full account of their detailed observations of *Troglodytes t. hirtensis* during a visit to St. Kilda in the summer of 1931. The paper deals with habits connected with feeding the young, nest materials and measurements, song

periods, song and notes, plumage and other points. The song in the opinion of the authors has a finer, yet weaker, tone, more musical and continuous, less throaty, than the mainland bird. It is stated that the *Practical Handbook* does not indicate any individual plumage variation in the St. Kilda Wren, but as the description is comparative with the Common Wren, whose variability is described, surely similar variation in the St. Kilda Wren is clearly implied, the comparison being obviously of a series and not of one individual. The nestling is described as being like that of the Common Wren, but with slightly paler down and in four examined there was no down in the spinal tract.

SITTING BLUE TIT FED BY TWO BIRDS.—Mrs. M. R. O'Hanlon informs us that in a nesting-box close to her house windows at Alderley Edge where a Blue Tit (*Parus c. obscurus*) had a nest, she noticed that the sitting bird was fed by two Blue Tits and that this continued until shortly after the young were hatched; when the hen and her mate began to feed the young the third bird disappeared.

LARGE CLUTCHES OF MISTLE-THRUSH AND COOT.—Mr. B. T. Brooker informs us that in May, 1936, he and Mr. H. Cawkell found a nest of a Mistle-Thrush (*Turdus v. viscivorus*) in Sussex with six eggs, which were uniform in size and markings. The same observers also record the finding of a nest of a Coot (*Fulica a. atra*) with thirteen eggs in a reed-bed in Romney Marsh, Kent, in May, 1935, and a nest with the same number of eggs in the same reed-bed in May, 1936.

INCUBATION AND FLEDGING PERIODS OF RING-OUZEL.—Mr. W. S. Medlicott informs us that a nest of a Ring-Ouzel (*Turdus t. torquatus*) in Goathland, Yorkshire, contained one egg on May 30th, 1936 at 6 p.m. The hen bird was then on the nest. Assuming that the eggs were laid on consecutive days this would give June 2nd, as the date of the full set, and she was sitting on four eggs a few days later. At 6 p.m. on June 14th, two young and two eggs were in the nest and about three days later, the four young were seen in the nest. This would give an incubation period of 12 to 13 days if incubation only began with the full clutch. The young had all left the nest, apparently quite recently at 8.30 p.m. on June 29th. This agrees with previous estimates of not more than 14 days.

SNOWY OWL RECORDED IN FIFESHIRE.—Mr. D. M. Wilson states (*Scot. Nat.*, 1936, p. 45) that a Snowy Owl (*Nyctea scandiaca*) "was clearly seen" by Mr. Harold Wilson and others

on January 31st, 1936, within ten miles of St. Andrews. No further particulars being given it is impossible to judge of the accuracy or otherwise of the observation.

PURPLE SANDPIPER IN SOMERSET.—Mr. A. R. Sumerfield informs us that he saw a Purple Sandpiper (*Calidris maritima*) with a party of six Turnstones at Watchet on May 10th, 1936. Mr. B. W. Tucker informs us that the bird is very rarely seen on the Somerset coast and that he has only one record of it in the last twenty years.

AVOCET RINGED IN RHONE DELTA FOUND IN ESSEX.—With reference to the note on this subject (*antea* p. 50) we are informed from another source that four (not five) birds were shot and that two of them were adults and two young (one with the ring) and that they appeared to be a family party. They had been first observed about July 10th. Another party of four was seen at the same time and we are glad to say escaped. Several readers have quite rightly protested about the shooting of these birds and we understand that this matter was taken up locally and by the R.S.P.B. It is said that the shooter (one of a duck shooting party) thought they were young Sheld-Ducks and it seems a pity that people so ignorant of birds as to confuse an Avocet with a duck are allowed to shoot at all.

BLACK TERNS IN HAMPSHIRE AND SHROPSHIRE.—Mr. C. H. Kaye and Mr. C. W. Heycock report seeing a Black Tern (*Chlidonias niger*) near Winchester on May 8th, 1936, and Mr. Philip Rickman saw one over the lake at Walcot Hall, Lydbury North, Shropshire, on May 23rd, 1936. The bird is not frequently recorded from either county.

REVIEWS.

De Vogels van Nederland. Door Prof. Dr. E. D. van Oort. ('SGravenhage, Martinus Nijhoff.)

DR. VAN OORT, whose death occurred in 1933, did not live to see his great work on Dutch birds completed and the last parts have been issued under the editorship of Dr. G. A. Brouwer. The whole work makes five very handsome large quarto volumes. Every bird on the Dutch list is figured in colour and the text includes besides names (scientific, synonyms, Dutch, English, German and French), a brief description and an account of the bird's general range, its status in Holland, habitat, and breeding and other habits. The plates are a feature of the work. The birds are accurately drawn though in somewhat stiff and formal poses, but the great value of the plates lies not so much in their artistic merit as in the fact that several figures are given of each species, depicting both sexes and the juvenile and in a good many

cases other phases of plumage. Thus there are rarely less than three figures on a plate and often four, while in many cases two plates are devoted to one species. Three hundred and sixty-two forms are described and there are four hundred and two plates.

All concerned are to be greatly congratulated on the completion of so magnificent and useful a work.

England's Birds. By W. K. Richmond. (Faber & Faber). Illustrated. 10s. 6d.

This is frankly a popular book. Each of the seventeen chapters is devoted to a description of a different and contrasting type of terrain and some of the birds that might be considered characteristic of each. This has been done a good many times before and it must be difficult to find anything new to say about many of them. The author's descriptions are certainly good and he has broken more or less fresh ground in several respects. His voyage in a coasting collier from the Forth to Rouen and back is the most notable and his observations on the distribution of sea birds at sea were worth making, as this is a subject upon which little work has been done as yet. If this chapter should stimulate others to follow his example, it will not have been written in vain. That he should have struck a migrating party of Cross-bills lost in fog was, of course, sheer luck, but must have added fresh interest to the voyage. There are but few other points that concern the ornithologist. We are glad to note the increase of the Raven in our northern counties, where the author mentions that several old nesting sites have become retenanted. He asserts positively that the Twite is unknown as a nesting species in the northern Pennines where it is supposed to be found, while Curlews have increased to such an extent that the moorland has become over populated and they are now nesting in many lowland meadows, where they were unknown twenty years ago.

As pleasant reading for beginners and general bird-lovers the book is to be recommended, while the illustrations, the work of a number of photographic and other artists, are adequate and good. N.F.T.

LETTER.

COLOUR OF LESSER BLACK-BACKED GULL AFFECTED BY ANGLE OF LIGHT.

To the Editors of BRITISH BIRDS.

SIRS,—The Rev. J. M. McWilliam in his letter on the above (*antea*, p. 56) remarks in his closing paragraph that he "cannot remember seeing any notes on the effect of the angle of sunlight on the apparent colour of birds."

We would refer him to our note, "Lesser Black-backed Gulls in Glamorgan," which appears in Vol. XXIII, pages 250-252, where we draw attention to this fact.

We agree that probably the best and safest test to determine the races of the Lesser Black-backed Gull in all angles of lighting is that mentioned in the editorial note.

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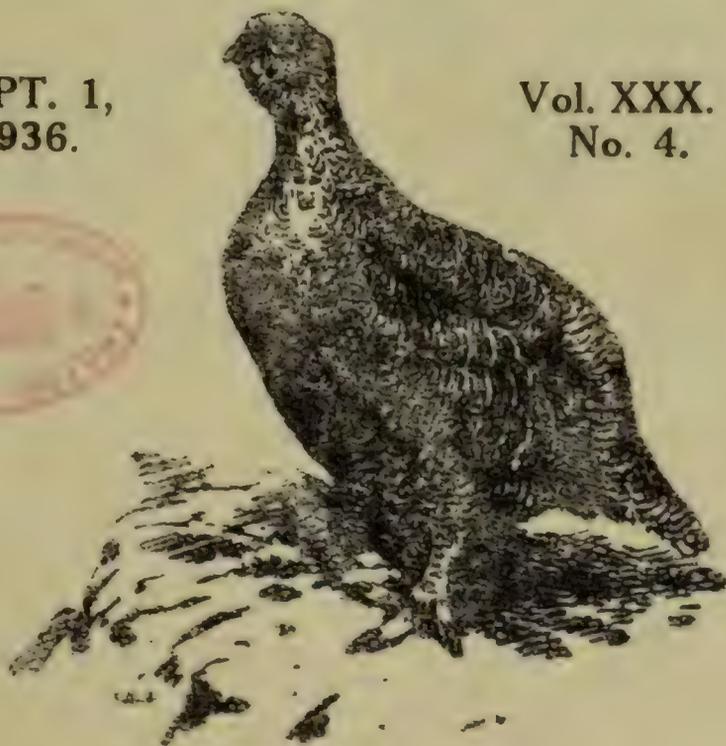
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CONTENTS OF NUMBER 4, VOL. XXX., SEPTEMBER 1, 1936.

	PAGE
Report on the Swallow Enquiry, 1935. By A. W. Boyd ...	98
Proportion of Sexes in Roosting Chaffinches. By the Hon. Guy Charteris	117
The Winter Behaviour of Moorhens. By Miss Averil Morley ...	120
Recovery of Marked Birds	125
Notes :—	
Chiffchaff and Grasshopper-Warbler Association (Mrs. E. MacAlister)	131
Summer Passage Movements of Swifts (B. Lloyd)	131
Hobby and Grey Squirrel (D. H. Meares)	132
Flock of Gadwall in Sutherlandshire (E. Cohen)	132
Fulmar Petrels Breeding in Pembrokeshire (W. A. Cadman)	133
Early Breeding of Stone-Curlew (Rev. F. C. R. Jourdain and H. J. K. Burne)... ..	133
"Injury-feigning" by Stone-Curlew (G. K. Yeates)	134
The Food of Young Lapwings (R. H. Brown)	134
Notes on Waders in Cumberland (R. H. Brown)	134
Short Notes :—	
Common Buzzard and Osprey in Kent. New Heronry in Montgomeryshire. Young Oyster-Catcher swimming under water	135
Letter :—	
Coloration of Soft Parts in the Herodiones during the Breeding Season (J. K. Stanford)	136

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BY

A. W. BOYD.

THIS, the result of the second year's enquiry into the average size of the broods of the Swallow (*Hirundo r. rustica*) and other questions connected with their nesting-habits (to which is added a census of Swallows and House-Martins nesting in a number of widely separated localities) brings the enquiry to a close at any rate for the present. The results of the enquiry in 1934 were published in *British Birds* XXIX, pp. 3-21, and these two papers should be examined together. An attempt has been made in the summary to draw conclusions from the two. In 1935 we had the advantage of receiving data from the twenty-two localities of 1934, with the exception of six; from two of these the information we got had been only slight; in 1935 reports were sent from three new localities (one in N. Wales and two in Sussex) which to some extent compensate for the loss; the lack of all data from the south-west of England is, however, unfortunate.

The following are the localities from which reports were sent; they are numbered exactly as in the 1934 Report so that comparison can more easily be made.

In those marked C a census was made.

1. Baldernock Parish, Stirling (J. Bartholomew,) 200/300 feet; limestone; rural; dairy farming and agriculture.
2. N.E. of Isle of Man (F. A. Craine), slightly above sea-level; crops by rotation.
3. Cumdivock, Dalston, 7 miles S.W. of Carlisle, Cumberland (R. H. Brown), 300 feet; clay sub-soil; rural; stock-breeding with good grazing. C.
4. An area of one mile from Ullswater (Dr. H. J. Moon), Cumberland-Westmorland boundary; 476 feet; two geological formations—igneous rock and limestone; rural; pastures. C.
6. Near Huddersfield, Yorkshire (W.R.) (J. C. S. Ellis), 300 to 800 feet; lower coal measures; increasingly urban; upland pastures. C.
8. Myddleton and Houghton Green, near Warrington, Lancashire (W. Ritson), 25/50 feet; boulder clay; rural; arable farms.
10. Four miles radius from Alderley Edge, E. Cheshire (E. Cohen), 200/300 feet; red marl and Keuper sandstone; rural and suburban; mainly pastures for cattle.
11. Antröbus and Sevenoaks, N.W. Cheshire (A. W. Boyd), 150 to 284 feet; Keuper marl; rural; arable and grazing land—small farms. C.
- 11A. Near Old Colwyn, Denbighshire (Miss M. Mitchell); sea-level to 400 feet; limestone; rural; sheep and cattle.

12. S.E. corner of Anglesey (R. R. M. Jones), sea-level to 60 feet ; limestone ; pastures with a little arable. C.
13. Parishes of Laugharne, Llansadwren and Llandawke, Carmarthen-shire (J. F. Thomas), 10 to 480 feet ; old red sandstone and " blown sand " ; rural ; small farms—dairy and cattle raising. The average size of 23 farms is 78 acres. C.
14. Skokholm, Pembroke (R. M. Lockley), 50 to 150 feet ; old red sandstone island of 240 acres (3 miles at sea) ; rough grazing, heather and bracken. C.
17. Staunton, S.E. Notts. (Miss F. K. Staunton), 75 feet ; clay soil ; rural ; mainly pasture with some arable.
18. N. Norfolk (R. M. Garnett), sea-level to 150 feet ; sandy overlying chalky marl ; rural ; marsh, heath-land and arable (barley and sugar-beet). C.
19. Hemsby, near Gt. Yarmouth, E. Norfolk (Miss J. M. Ferrier), 100 feet ; subsoil clay ; rural ; cereal crops. C.
20. S.E. Suffolk (A. Mayall), 100/120 feet ; sandy ; rural ; some arable.
21. Seaford, Sussex (J. F. Thomas), sea-level to 700 feet ; chalk ; rural ; valleys and downland. C.
23. Stoughton, 5 miles N.W. of Chichester, Sussex (The Rev. H. J. Emmet), 200 feet ; mostly chalk ; rural ; mainly grassland with some arable and woodland.
24. Thorney Island, Chichester Harbour, Sussex (P. A. D. Hollom), sea-level ; rural ; pasture and arable. C.

AVERAGE SIZE OF BROODS, 1935.

596 broods in all were examined ; of these (taking all months together) :

				In 1934 (664 broods)
12 or 2	per cent.	contained	one young each	2.1
35 or 5.87	"	"	two " "	6.47
94 or 15.77	"	"	three " "	17.3
221 or 37	"	"	four " "	39.3
212 or 35.7	"	"	five " "	31.6
21 or 3.5	"	"	six " "	3.6
1 or 0.16	"	"	seven " "	—

2,441 young were ringed or counted giving an average of 4.09 for all broods recorded.

These figures differ only slightly from those recorded in 1934 when the average for the whole year for all broods was 4.01 ; the percentages given above were within 1 per cent. except for the broods of 4 and 5 which were over 2 per cent. smaller, and 4 per cent. larger respectively than in 1934.

Local weather reports have been kindly supplied by the Meteorological Office when they were not supplied by the observers.

In considering the figures given in the following table it will perhaps be wisest to disregard those for Denbighshire (11A) and Sussex (23) ; in each case only 11 broods were counted and it would probably be dangerous to draw any conclusions from so small a number.

AVERAGE SIZE OF BROODS, 1935.

Locality.	Total Broods Examined.	Month.	Number Containing							Total Young	Average for Broods	Total No. of Broods	Average for Year	Nearest Recording Station	WEATHER		Total Inches Rain	Sun hours daily mean			
			1	2	3	4	5	6	7						Max.	Min.					
1. Baldernock, Stirling.	8	June	—	—	2	1	3	—	37	4.62	20	4.25	Renfrew (Circ. 7 miles S.W.)	59.9	40.1	0.5	6.68				
	5	July	—	—	—	1	4	—	24	4.8				62.5	49.1	4.06	4.24				
	5	Aug.	—	—	1	3	1	—	20	4.0				66.9	49.9	1.38	6.56				
	2	Sept.	1	—	1	—	—	—	4	2.0				67.1	51.4	1.66	4.11				
2. N.E. of Isle of Man.	12	June	—	1	1	3	7	—	52	4.33	17	4.23	Douglas	57.3	44.1	1.06	9.45				
	5	July Aug.	—	—	—	5	—	20	4.0	60.2				50.7	3.96	5.93					
3. Dalston, Cumberland.	8	June	—	—	1	3	4	—	35	4.37	41	4.41									
	13	July	—	1	—	4	8	—	58	4.46								60.2	50.7	3.96	5.93
	20	Aug.	1	—	—	9	9	1	88	4.40								64.8	53.4	1.46	8.09
4. Area 1 mile from Ullswater Westmorland-Cumberland boundary.	1	May	—	—	—	—	—	—	6	6.0	34	4.88	Ambleside (8/9 miles S.)	60.9	40.6	0.46	9.61				
	12	June	—	—	2	3	3	4	57	4.75				65.3	46.8	5.44	3.84				
	15	July	—	—	2	4	4	7	76	5.00				71.2	51.3	2.73	5.81				
	5	Aug.	—	—	—	3	2	—	22	4.4				68.3	49.4	2.19	4.12				
	1	Sept.	—	—	—	—	1	—	5	5.0				60.8	46.8	12.09	2.44				
6. Near Huddersfield, W. Yorkshire.	6	June	—	—	—	3	3	—	27	4.5	15	4.33	Ravens Knowle Meteor. Station	58.0	40.1	0.63	6.4				
	4	July	—	—	2	1	1	—	15	3.75				68.0	50.3	2.14	5.83				
	5	Aug.	—	—	—	2	3	—	23	4.6				72.4	52.5	0.92	6.91				
8. Warrington, Lancashire.	2	May	1	—	1	—	—	—	4	2.0	35	4.05	Warrington	—	—	—	—				
	12	June	—	2	—	3	7	—	51	4.25				—	—	—	—	—	—		
	11	July	—	—	—	4	7	—	51	4.63				—	—	—	—	—	—		
	7	Aug.	—	—	1	2	1	1	27	3.85				—	—	—	—	—	—		
3	Sept.	—	1	1	1	—	—	9	3.0	—	—	—	—	—	—	—					

AVERAGE SIZE OF BROODS, 1935.

Locality.	Total Broods Examined	Month	Number Containing							Total Young	Total No. of Broods	Average for Year	Nearest Recording Station	WEATHER		Sun hours daily mean
			Containing											Mean Max.	Temp. Min.	
			1	2	3	4	5	6	7							
10. Alderley Edge, Cheshire.	6	June	—	—	2	2	2	—	—	24	1.0	Macclesfield (5 miles S.E.)	58.0	40.6	—	
	16	July	—	4	2	3	6	—	—	65	2.03		67.2	51.4	—	
	24	Aug.	1	3	6	8	6	—	—	87	3.02		70.5	53.5	—	
	4	Sept.	—	1	1	1	1	—	—	11	3.5		70.9	52.9	—	
11. Antrobus, N.W. Cheshire.	27	June	—	2	3	10	11	1	—	114	4.22	Hartford (4 1/5 miles S.)	61.3	40.4	5.0*	
	42	July	—	2	10	11	18	1	—	174	4.14		68.0	52.8	4.06	
	22	Aug.	4	1	3	11	5	—	—	82	3.72		70.4	55.0	0.63	
	6	Sept.	—	3	—	3	—	—	—	18	3.0		73.4	51.9	1.49	
11A. Old Colwyn, Denbighshire.	2	June	—	—	—	1	1	—	—	9	4.5	Colwyn Bay (Approx. figures)	57.3	46.7	7.30	
	1	July	—	1	2	—	1	—	—	13	3.25		63.8	52.5	2.0	
	5	Aug.	—	1	2	2	—	—	—	16	3.2		67.1	56.5	0.30	
	12. S.E. Anglesey.	24	June	—	1	5	7	10	1	—	101		4.2	S.E. Anglesey	—	—
23		July	1	1	—	8	13	—	—	100	4.01	64.0	54.0		4.53	
13		Aug.	—	1	4	2	6	—	—	22	4.0	71.0	58.0		0.59	
6		Sept.	—	—	1	3	1	1	—	26	4.33	70.0	57.0		1.81	
13. Laughton, Carmarthen-shire.	62	Aug.	1	2	11	27	20	1	—	252	4.06	Swansea (27 miles S.E.)	60.0	50.0	7.2	
	17. Staunton, S.E. Nottinghamshire.	8	June	—	2	4	4	2	—	—	32		4.0	57.2	40.2	0.59
9		July	—	3	5	1	—	—	—	34	3.77	68.8	50.8	2.57		
9		Aug.	—	1	4	4	—	—	—	30	3.33	74.2	53.0	0.20		
												74.0	52.7	1.39		
												63.6	48.3	4.23		

* approx. figures only.

AVERAGE SIZE OF BROODS, 1935.

Locality.	Total Broods Examined	Month	Number Containing							Total Young	Average Age	Total No. of Broods	Average for Year	Nearest Recording Station	WEATHER			Total Inches Rain	Sun hours daily mean
			1	2	3	4	5	6	7						Max.	Temp. Min.			
18. Salthouse, etc., Norfolk.	8	June	—	—	—	5	3	—	—	—	—	—	—	Cromer (6/9 miles E.)	54.3	42.9	0.78	7.36	
	28	July	1	2	3	11	11	—	—	—	—	—	—	June	67.8	51.9	2.45	7.36	
	10	Aug.	1	—	1	6	2	—	—	—	—	—	—	July	70.0	56.0	0.96	9.29	
	3	Sept.	1	—	—	—	—	—	—	—	—	—	—	Aug. Sept.	70.4	55.8	1.83	7.02	
19. Hemsby, Norfolk.	6	June	—	1	1	2	2	—	—	—	—	—	—	Yarmouth	53.2	44.9	1.25	8.53	
	11	July	—	—	—	2	9	—	—	—	—	—	—	June	64.3	53.1	2.56	7.82	
	12	Aug.	—	1	2	9	—	—	—	—	—	—	—	July	68.8	56.0	1.18	9.96	
	5	Sept.	—	—	1	3	1	—	—	—	—	—	—	Aug. Sept.	69.6	56.0	1.52	7.30	
20. E. Suffolk.	5	June	—	—	3	—	2	—	—	—	—	—	—	Felixstowe (6 miles S.)	56.6	43.6	1.76	7.91	
	13	July	—	1	—	6	6	—	—	—	—	—	—	May	65.4	54.0	2.56	7.66	
	7	Aug.	—	—	1	4	2	—	—	—	—	—	—	June	71.3	56.6	0.92	10.10	
	3	Sept.	—	—	—	2	1	—	—	—	—	—	—	July	70.3	56.6	1.69	7.51	
23. Stoughton, Sussex.	4	June	—	—	—	2	2	—	—	—	—	—	—	Bognor Regis (11½ miles S.E.)	59.4	45.3	2.79	5.92	
	1	July	1	—	—	—	—	—	—	—	—	—	—	May	63.7	55.1	2.52	7.22	
	6	Aug.	—	—	1	5	—	—	—	—	—	—	—	June	72.2	58.2	0.41	8.77	
														July					

Once again we see that the first broods are the largest and this is shown in practically every case where a large enough number of broods for fair comparison was examined.

Again we find that broods in the localities furthest to the North have the largest numbers of young, notably those in Stirling and Cumberland; in fact, the three localities in these counties from which records were sent show a considerably larger average for June, July and August than any others. This bears out the Rev. F. C. R. Jourdain's report that the largest clutches of eggs recorded usually have been found in the northern counties.

It seems reasonable to suggest once more that longer hours of daylight contribute to this result. Actual hours of sunshine do not appear to have the same effect, for though they were specially high in the north in May, the figures for June were very low. The Ullswater area on the border of Cumberland and Westmorland shows quite remarkable figures: of 28 broods in May, June and July, no fewer than 12 were broods of 6 (only 21 broods of 6 were recorded in all localities); the average of 5.06 for 15 broods in July is outstanding. Heavier rainfalls coincide with larger broods and certainly cannot be shown to have any effect in reducing them; the greatest number of inches of rain was recorded from the Lake District where the largest broods were found and it is interesting to note that Anglesey provided a heavier rainfall and a larger brood average than any locality south of the northern counties.

The broods in the southern half of the country are throughout slightly smaller on the average; it is noteworthy that of the 21 broods of 6 only one was found south of Anglesey and that was in Carmarthenshire; 11 broods in July in E. Norfolk with an average of 4.8 and 62 broods in Carmarthenshire with an average of 4.06 show higher figures than any other southern localities.

FIRST AND LAST EGGS AND BROODS.

First eggs were laid rather earlier than in 1934. The earliest record of all was of an egg laid in April, near Warrington, Lancashire; the observer reported that it was laid on April 28th-29th and was hatched on May 11th-12th.

First eggs laid in other localities: May 3rd, Seaford, Sussex; about May 3rd, Alderley, E. Cheshire (5 eggs May 8th); May 7th-8th, Antrobus, N.W. Cheshire, and Rowsley, Derbyshire (4 eggs May 11th); May 8th, Stoughton, Sussex; about May 11th, N. Norfolk; May 14th-15th, Huddersfield (the first

to hatch were at 600 feet) ; May 17th, Anglesey ; May 20th, E. Norfolk ; May 21st, Colwyn Bay, N. Wales ; May 26th, Ullswater and Isle of Man. In 9 localities in which the first egg was recorded in 1934 it was recorded again in 1935—2, 3, 7, 7, 8, 11 and 30 days earlier ; in the other two (both in Norfolk) it was found on the same day and two days later.

Last broods : the last brood at Dalston, Cumberland, flew on August 23rd ; at Huddersfield, hatched on August 21st ; at Colwyn Bay, flew on September 11th ; at Alderley, Cheshire, hatched on September 3rd ; in N.W. Cheshire at least three pairs had third broods and the young were ringed : (1) June 4th, July 24th, September 3rd ; (2) last brood, September 9th ; (3) June 17th, July 29th, September 9th ; in Anglesey the last egg was laid on August 25th and the young flew on September 25th ; in Carmarthen the first egg of the latest nest was laid on August 22nd.

A very late third brood was noted at Cockermouth, Cumberland, which left the nest on October 22nd and did not depart till November 9th (G. W. Muller) ; another third brood at Kirby Muxloe, Leicestershire, flew in October, but two young stayed there till the first week of January, 1936 (Miss O. S. Wilshere).

PROPORTION OF NESTS USED MORE THAN ONCE IN A SEASON.

To keep an accurate account has proved difficult to most observers particularly so where a large area has been covered. Stirling—20 broods : 4 nests used twice (7 of last year's nests used—3 of them twice).

Isle of Man—17 broods : 1 nest used twice.

Dalston, Cumberland—41 broods : all nests used twice except two.

Ullswater—Usually a new nest made ; in two cases same nest used, but one of these was not used again by the original pair.

Huddersfield—5 per cent. used twice.

Warrington—35 broods : 7 nests used twice (20 per cent.).

Alderley, E. Cheshire—No definite record of any nest used twice ; 28 were not used twice ; 17 other broods observed, but no record taken.

Antrobus, Cheshire—Use of nests by 25 pairs noted accurately : the same nest was used twice 11 times ; and in 14 cases another nest was used. One pair used a different nest for each of 3 broods.

Colwyn, N. Wales—11 broods : no nests used twice.

Anglesey—66 broods : 4.54 per cent. nests used twice.

Laugharne, Carmarthen—4 pairs made new nests for second broods ; no precise information in other cases.

N. Norfolk—45 nests used once, 5 used twice, but records could not be made complete.

Hemsby, E. Norfolk—17 pairs examined ; all double brooded ; of these 17 pairs 8 built new nests for first brood and 9 used old nests ; all built new nests for second broods.

Stoughton, Sussex—11 broods : two nests used twice.

In the great majority of cases it is obvious that a second nest is used though these are often old nests used in earlier years. As in 1934 the Swallows at Dalston, Cumberland, showed greater consistency in using the same nest a second time than in any other locality from which records were sent.

SIZE OF CLUTCH AND SUBSEQUENT SIZE OF BROOD.

Few observers found it possible to keep adequate records on this point. The following are the results obtained :

Dalston, Cumberland. One clutch of 6 produced 4 young ; in other nests all eggs hatched.

	<i>Nests.</i>	<i>Clutch.</i>	<i>Brood.</i>
Huddersfield	15	4.4	4.33
Alderley, Cheshire... ..	43	4.18	3.83
Antrobus, Cheshire	19	4.6	4.1
Laugharne, Carmarthenshire	17	4.47	4.12
Anglesey	6	4.6	4.3
Staunton	7	5.0	4.0
Stoughton, Sussex	10	4.5	3.5

One clutch of 7 eggs produced 7 young (Alderley, Cheshire); another clutch of 7 eggs (High Legh, Cheshire) produced only 4 young.

An average of the records from the last seven of the localities quoted show that in 117 nests from all districts the average clutch was about 4.4 and the average brood 4 ; roughly about 10 per cent. of the eggs failed.

RELATION TO DOMESTIC ANIMALS.

The following figures have been given in answer to a series of questions in an attempt to trace the extent of the association between Swallows and domestic animals.

Stirling :

In byre 7 ; in styre 4 ; in fowl shed 3 ; unused sheds 3 ; boilerhouse 2 ; dwelling house 1.

Isle of Man :

In unoccupied buildings 15 ; 1 associated with animals and 1 with fowls.

Dalston, Cumberland :

All nesting pairs associated with animals or fowls.

Ullswater :

With animals 18 (cattle 13, pigs 4, horse 1) ; with fowls 3 ; dwelling houses 4 ; unoccupied buildings 19.

Huddersfield :

With animals 9 ; fowls 1 ; unoccupied buildings 4.

Near Warrington, Lancashire :

With animals 7 ; fowls 3 ; unoccupied buildings 25.

Near Alderley, Cheshire :

With domestic animals 32 ; fowls 2 ; dwelling houses 4 ; not associated with animals or man 1.

N.W. Cheshire :

With domestic animals 66 pairs ; directly associated with fowls 19 pairs ; dwelling houses 8 ; unoccupied buildings 3.

Colwyn Bay :

With cattle 7 ; with pigs 3 ; indirectly associated with farm animals 1.

Anglesey :

With animals 24 (cattle 16, pigs 4, horses 2, dogs 2) ; with fowls 5 ; dwelling houses 4. In unoccupied buildings unassociated with animals or man 58.

Carmarthenshire :

With animals and fowls 101 ; dwelling houses 7 ; unoccupied buildings 3.

Staunton, Notts. :

Of 9 pairs 7 were in coalsheds, etc., in use by man ; only 2 associated with animals.

N. Norfolk :

With animals 28 ; dwelling houses 6 ; unoccupied buildings 22.

E. Norfolk :

With animals 3 ; with fowls 3 ; dwelling houses 5 ; unoccupied buildings 6.

S.E. Suffolk :

With animals 6 ; with fowls 2 ; dwelling houses 6 ; unoccupied buildings 14.

Seaford, Sussex :

With animals 14 ; dwelling houses 2 ; unoccupied buildings 1.

Stoughton, Sussex :

Dwelling houses 2 ; unoccupied buildings (disused stables, etc.) 9 ; there was no association with animals.

Thorney Island, Sussex :

With animals 10 ; unoccupied buildings 6.

In framing the questions to which these figures are the replies it was specially asked that figures should be given for nests "in unoccupied buildings, etc., where there is no association with animals or man."

Once more we are brought to the conclusion that it is the nesting-site rather than animals present that is the decisive factor. Association with animals is obvious and (with an increase in the number of fowls kept) a growing association with fowls, but we cannot overlook their frequent nesting in unoccupied buildings as in the Isle of Man, Ullswater, Warrington, particularly in Anglesey, and in Norfolk and Suffolk.

It is perhaps noteworthy that on Skokholm Island Swallows did not nest till sheep were kept on the island ; in September, 1934, the sheep (about 200) were removed and though Swallows returned in 1935 they did not stay to breed. Evidence of one pair only, it is true, but possibly evidence of some value.

USURPATION OF SWALLOWS' NESTS BY OTHER BIRDS.

House-Sparrows and Wrens occupy Swallows' nests far more frequently than other birds, but usually the nests they use are old Swallows' nests, so that there are few cases of eviction as often happens with House-Martins.

House-Sparrows built in two old nests at Dalston, Cumberland, in three in N.W. Cheshire (in two of which the House-Sparrows built an undomed nest, for, as the Swallows' nests were close to the roof, they let the roof of the sheds take the place of their usual domes) ; in Anglesey they built in five nests and in Carmarthenshire in seven old nests ; in one nest at Staunton, Notts. In Anglesey a nest with three well-incubated eggs was actually pulled down and destroyed. At Ullswater House-Sparrows roosted in two Swallows' nests and evicted the owners ; at Tabley, Cheshire (D. J. Hemming), they drove Swallows away from a completed nest and in N. Norfolk House-Sparrows drove away a pair that had successfully reared one brood and built a new nest. Wrens used a half-built Swallows' nest as a foundation for their own at Ullswater ; they built but did not lay in an old nest at Tabley, Cheshire (D. J. Hemming) ; at Colwyn Bay they occasionally use old nests ; in Anglesey they built in 4 nests, in Carmarthenshire in 3 old nests and in Notts. in one nest.

A Robin's use of an old Swallows' nest at Tabley, Cheshire, as reported by Mr. D. J. Hemming is worth giving in full. The Redbreast built in one of two old nests (the other was occupied by a Wren) and had hatched four young when the Swallows came; the Swallows drove the Redbreasts away and each of the dead young was found to have a wound over the eye like a peck, but it was not possible to say that this was done by the Swallows. All the nests were then removed and the Redbreasts built a new nest on a board that had been fixed under the Swallows' nest and reared four young again for eight or nine days ; once again the Swallows caused them to desert.

A pair of Swallows built a nest on the top of an old Song-Thrush's nest in a shed in N.W. Cheshire.

It was reported from Ullswater that Starlings disturbed Swallows and caused two pairs to desert.

INTERFERENCE BY DESTRUCTIVE ANIMALS AND BIRDS.

Few reports received.

House-mice destroyed eggs in two nests at Ullswater ; Dr. Moon states that rats rarely seem to trouble Swallows there, but that he has suspected weasels (but not stoats). At Warrington a brood four to five days old was almost certainly taken by rats and in N. Norfolk rats or mice are believed to have taken the eggs from one nest.

At Ullswater a Tawny Owl took a sitting bird in a byre.

From Carmarthenshire the only interference was from a man who objected to a nest in a garage ! The superstition that cows will give bloody milk if the Swallows' eggs are taken is found to be held at Weaverham in mid-Cheshire as well as in Derbyshire, and in Swainson's *Provincial Names of British Birds* this belief is recorded from the N. Riding of Yorkshire. This and the belief that they bring luck protect them from much human interference.

RELATION TO HOUSE-MARTINS.

Once more we find little or no trace of competition between Swallows and House-Martins and in many localities from which reports have been sent Martins are scarce or absent.

Thus in Stirling only one Martin's nest was known in the area covered ; in the Isle of Man the two species nested together in only one farm (five pairs Martins and one pair Swallows) ; at Dalston, Cumberland, none nested together (only four pairs Martins to twenty pairs Swallows) ; at Ullswater none nested together, but in four cases Martins built outside the same buildings ; near Huddersfield, Yorks, there were none and near Warrington, Lancs., no nests were found. In N.W. Cheshire in the census area Swallows nested in 49 farms, in 5 of which Martins also nested, and Martins also nested in 4 farms from which Swallows were absent ; the sites seemed to have little in common except that five out of eighteen Martins' nests were in cart-sheds where Swallows might have nested—the other Martins' nests were in haysheds or under eaves.

In Colwyn Bay the two species nest together in one farm with Martins in the majority. In Anglesey there were two pairs of Martins in the area under observation, but no Swallows within a quarter of a mile of either. In Carmarthenshire the two species nested together in seven places and Martins alone in four others. At Staunton, Notts., no Martins were seen. In N. Norfolk in three villages there were 151 pairs of Martins to 56 pairs of Swallows in the area covered, the former being concentrated in the villages whereas the Swallows

were much more widely distributed ; and though in E. Norfolk there were thirty pairs of Martins to seventy-four of Swallows in the census area in no cases did they nest together. At Seaford, Sussex, the two species nested together in three farms and on Thorney Island, Sussex, they nested in the same buildings or groups of buildings in three out of nine groups occupied by one or other species.

MOVEMENTS OF YOUNG.

Mr. J. Bartholomew reports the discovery about September 2nd in a farm-loft in Stirlingshire of two dead young Swallows, members of two broods which had been marked in a farm half a mile away on June 29th. This visiting and entering of buildings other than those where they were reared has been noticed in Antrobus, N.W. Cheshire, on several occasions during the autumn migration ; on one occasion a young ringed Swallow was found dead in a Swallow's nest in a shed in a farm a quarter of a mile from where it was marked, and annually a few unringed young Swallows are caught in a shippon where two or three pairs breed, all of whose broods have been carefully ringed.

Young ringed House-Martins have also been caught in Cheshire in a nest on another farm, and in August Martins have been seen entering an unused old nest in a farm where none had bred ; it would seem that it is natural to a Martin to enter a Martin's nest even if it is in no way connected with that nest.

For the following report we are indebted to Mr. H. Britten of the Manchester Museum.

PARASITES OF SWALLOWS AND ANIMALS FOUND IN THEIR NESTS.

The inhabitants of over twenty Swallows' nests, examined from various localities by myself and Mr. Gordon B. Thompson of the British Museum, have again proved exceedingly interesting, and especially so were several sent to me from Le Vesinet (S. et O.), France, by G. R. Mountfort ; these will be quoted in full at the end of this report. Nests were received from the following localities :—

1. Aghalee, Co. Antrim, J. Kerr ;
2. Baldernock Parish, Stirlingshire, J. Bartholomew ;
3. Aberlady, East Lothian, G. Charteris ;
4. Edgerton, Huddersfield, J. C. S. Ellis ;
5. Several Cheshire localities, E. Cohen and A. W. Boyd ;
6. Llandulas, Denbighshire, Miss M. Mitchell ;
7. Penmon, Anglesey, R. M. Jones ;
8. Laugharne, Carmarthen, J. F. Thomas ;
9. Dumbleton, Glos., G. Charteris ;
10. Newbury, Berks., C. Brown ;
11. Weybourne, N. Norfolk, R. M. Garnett ;
12. Kelvedon, Essex, D. J. W. Campbell ;
13. Chichester, Sussex, Rev. H. J. Emmet.

PARASITES FOUND IN SWALLOWS' NESTS.

(i) *Siphonaptera*.

Ceratophyllus gallinæ Schrank. This common bird flea was again present in a number of the nests both as adults and larvæ.

Ceratophyllus garei Roths. A single female of this common bird flea was present in one nest from Northern Ireland.

(ii) *Diptera*.

Phormia sordida Zett.=*Protocalliphora caerulea* R.-D. Many pupæ of this fly were present, and larvæ were taken from young nestlings when being handled to attach rings. A new factor with regard to this fly came to light this year; this was the presence of a small Chalcid parasite which accounted for 95 per cent. of the pupæ of this fly, and indeed some nests with numerous fly pupæ did not produce a single imago but scores of this brilliant little green Chalcid.

(iii) *Chalcidæ*.

Mormoniella vitripennis Walk. This parasite apparently attacks the pupæ of a number of the larger flies, and it was interesting to find it was present from Scotland to the south of England, and at the peak of its parasitism at the same time in these widely separated districts, so that in all probability the blue bottle will be greatly reduced in numbers next season.

(iv) *Acari*.

Dermanyssus gallinæ Redi. The red mite was again in countless numbers in many nests, one nest with dead young was simply a heaving mass; there were no pupæ of the blue bottle present to account for the death of the young birds, so that presumably the mites were the culprits in this instance. They were present in every nest examined.

OTHER ANIMALS (NOT PARASITES) FOUND IN SWALLOWS' NESTS.

(i) *Psocidæ*.

Troctes divinatorius Mull. was the only booklouse met with this season, and only from one nest where the red mites were in large numbers.

(ii) *Orthoptera*.

Forficula auricularia L. The common earwig was again present in several of the nests examined.

(iii) *Hemiptera*.

Lyctocoris campestris F. Again present in several nests, especially those containing an abundance of the red mite.

(iv) *Lepidoptera*.

Borkhausenia pseudospinetella Staint.

Endrosis lactella Schiff.

Tinea pellionella L. ?

Tineola biselliella Hüml. The larvæ of these moths were feeding on the lining of most nests, often two species in one nest.

(v) *Coleoptera*.

Cartodere ruficollis Marsh. This tiny inhabitant of barns and haylofts was again present in some of the nests.

Attagenus pellio L. The larvæ of this Dermestid beetle were present in one nest. These larvæ are usually present in all attics and outhouses, living on the dead bodies of insects and other small animals.

(vi) *Diptera*.

Many flies were sent in by one correspondent as occurring in the vicinity of the Swallows' nests. They were in no way connected with the nests and they are therefore omitted from this report.

(vii) *Arachnidæ*.

Oonops pulcher Templ. This tiny spider was present in one nest; it is generally found amongst debris of various kinds, both in buildings and outside.

Amaurobius similis Bl. This large and distinctly marked spider was present in one nest and is usually found in crevices in walls or beneath loose material everywhere.

(viii) *Pseudoscorpiones*.

Cheridium museorum Leach. Again present in several of the nests examined.

(ix) *Acari*.

Glyciphagus domesticus De G. This generally distributed mite of the house and store was again present in one or two of the nests.

The following are some interesting details of the insects sent from young Swallows and nests in France:—

(i) *Siphonaptera*.

Siphonaptera hirundinis Cart. A single example of this common House-Martin flea was taken from a young nestling Swallow; it will be interesting to learn whether this flea is often found on Swallows on the Continent, or if this was an accidental occurrence like the cat, dog or rat fleas on human beings.

(ii) *Diptera*.

Stenopteryx hirundinis L. This was stated to be the commonest parasite of Swallows and House-Martins in France, every nestling having at least two, or even four amongst its feathers; this was so unlike our experience in the British Isles that I specially asked whether this was not an error with respect to the Swallow, but was assured that it was quite correct.*

Ornithomyia biloba Duf. This fully winged fly, very much like one found on many of our British birds, was taken on nestling Swallows, and with one exception, always in sheds where cows were present; the farmer stated that the flies were also on the cows, but my correspondent has been unable to verify this up to the present. The other nest where these flies were present was in a fowl shed.

When at the British Museum recently Mr. Gordon B. Thompson showed me one example of this fly from young Swallows in Belgium, so that it is quite possible that it is associated with the nests of this bird on the Continent, and an examination of the nests used last season would probably result in the discovery of the puparia in the nests.

HARRY BRITTEN.

CENSUS.

A census was made in eleven areas, as against twelve in 1934; seven were exactly the same areas as those covered in 1934 and in the others—two in Cumberland, Carmarthenshire and Thorney Island, Sussex—a census was made for the first time. The numbers before each locality correspond with the fuller descriptions earlier in the text.

*Seen on nestling swallows near the Somme, France, 1917 (A.W.B.).

Census Results. Swallow, 1935.

Locality.	Area in acres.	Altitude	Type.	Breeding Pairs.		Swallow density per 1,000 acres in 1934.
				Number	Density per 1,000 acres.	
3. Cumdivock, Dalston, Cumberland.	935	300 ft.	Rural. Stock-raising.	20	21	—
4. 4 miles radius of Ullswater, Cumberland.	32,000 (approx.)	476 ft.	Rural. Pasture land.	109 (approx.)	3.4	—
6. Huddersfield, Yorkshire.	2,400	300—800 ft.	Urban and upland pastures.	14	6.6	5
11. Antrobus and Sevenoaks, N.W. Cheshire.	2,717	150—284 ft.	Rural. Dairy and mixed farms.	84/5	31	33
12. S.E. Anglesey.	1,515	0—60 ft.	Rural. Pasture.	66	43	40
13. Laugharne, etc., Carmarthenshire.	3,435	0—480 ft.	Rural. Dairy farming.	81	23.5	—
14. Skokholm Island, Pembrokeshire.	240	0—150 ft.	Rough grazing and heather.	Nil.	Nil.	4
18. Salthouse, N. Norfolk.	4,160	0—260 ft.	Sea-coast villages Arable and heatherland.	56	13.5	13
19. Hemsby, E. Norfolk.	1,739	0—100 ft.	Rural. Cereal crops.	74	42	35
21. Seaford, Sussex.	7,680	0—750 ft.	Coastal downland and river valleys.	15	2	3
24. Thorney Island, Chichester Harbour, Sussex.	1,200	Sea-level l.	Rural. Pasture and Arable.	16	13	—

Total Acreage. Total pairs of Swallows. Average Density per 1,000 acres.

11 Sample Areas ... 58,021 536

9

Census Results. House-Martins, 1935.

Locality	Area in acres.	Breeding Pairs.		Density per 1,000 acres, 1934.
		Number.	Density per 1,000 acres	
3. Cumdivock, Dalston, Cumberland	935	4	4	—
4. 4 miles radius of Ullswater, Cumberland	32,000 approx.	90 approx.	3	—
6. Huddersfield	2,400	Nil.	Nil.	Nil.
11. Antrobus and Sevenoaks, N.W. Cheshire	2,717	18	6	10
12. S.E. Anglesey	1,515	2	1	1
13. Laugharne, etc., Carmarthenshire	3,435	30—40	8—11	—
14. Skokholm Island, Pembrokeshire	240	Nil.	Nil.	Nil.
18. Salthouse, N. Norfolk	4,160	151	36	38
19. Hemsby, E. Norfolk	1,739	30	18	—
21. Seaford, Sussex	7,680	23	3	3
24. Thorney Island, Sussex	1,200	28	23	—
Total acreage.	58,021	Total Pairs of House-Martins.	376—386	Average density per 1,000 acres.
11 Sample Areas	...	58,021	376—386	6½

CENSUS.

(i) The Swallow.

In those areas where the census made in 1934 was repeated in 1935 the results showed only the most trifling variation, and were in fact hardly more than might be accounted for by the observers' missing one or two pairs in either year; the figures for S.E. Anglesey for example which were 62 in 1934, should probably have been 64, for the figures for 1935 (66) include two pairs in a farm which could not be visited in the earlier year.

Two of the new census areas, in Cumberland and Carmarthenshire, both rural cattle-raising districts at low altitudes show almost the same density—21 and $23\frac{1}{2}$ pairs to the 1000 acres; and an interesting addition to our knowledge has been gained by an attempt at a census in part of the Lake District of Cumberland of the Swallows in a very large area which comprised much mountain and moorland, and where the density is shown to be about $3\frac{1}{2}$ pairs to 1000 acres—much the same as that of the Sussex downland, the Suffolk heathland and the hilly industrial district of the Lancashire-Cheshire border in the 1934 census.

The density on Thorney Island, Sussex, is the same as that of a coastal area in N. Norfolk—13 to the 1000 acres. The one area which shows a material increase in number is Hemsby in E. Norfolk—from 35 to 42 pairs to the 1000 acres, figures which in each year show that this area in particular, though not in a cattle district, is peculiarly favourable to the species.

(ii) House-Martin.

Figures for this species are too meagre to allow such comparison between the two census years, but again the variation is surprisingly small; the figures for N. Norfolk, the locality showing the greatest density, are almost identical—36 to the 1000 acres as against 38 in 1934.

Variation in density between different localities does not seem to follow that of the Swallow.

The big Lake District area and the Sussex downland show the same small figure of 3 pairs to 1,000 acres, but although in Carmarthenshire there were 8 to 11 pairs to that area, yet in S.E. Anglesey there was only 1 and that in the district where the Swallow shows the greatest density in our records. The Martin is absent altogether from some districts which Swallows inhabit regularly. The lack of suitable mud for nest-building may well be the cause of the Martin's absence from some districts and of their scarcity in others.

SUMMARY OF THE 1934 AND 1935 ENQUIRIES.

1. *Average size of broods.*

The first brood is the largest.

So far as the records of two years can do so, they show fairly conclusively that Swallows in the Lowlands of Scotland and north England lay larger clutches and rear larger broods (in June and July in particular) than birds breeding in the southern half of England. This suggests an association between longer hours of daylight and larger broods. Heavier rainfall cannot be shown to have any adverse affect. The average brood for the whole country is just over four for the whole season.

2. *First and last eggs and broods.*

Swallows do not lay till some weeks after their first arrival. In two years the earliest egg was laid on April 28/29; the earliest eggs are usually laid in the first or second weeks of May and sometimes not till the last week of May and early June.

A few pairs rear three broods in the season and the young of the last brood may occasionally be found in the nest till late in October.

3. *Use of nests more than once in a season.*

The use of a nest more than once in the same season follows no rule other than arbitrary choice; some recorders have found none that were used twice and in other localities the number varied from 3 or 4% to 40%.

The use of nests built in previous years is general and often one of these is used for a second brood.

4. *Size of clutch and subsequent size of brood.*

The normal clutch is five; six eggs are not infrequent, but found usually in the northern counties; seven eggs recorded three times; sets of eight and nine eggs were probably laid by two hens. Infertile eggs or mortality among young reduced the size of the brood in all districts; often the loss from these causes was trifling, but in the southern half of the country it amounted to as much as an average of one young bird per brood.

Accurate data from 118 nests in 1934 and 117 nests in 1935 from various districts, show that 10% of the eggs laid fail to produce young—or at least young that survive.

5. *Relation to domestic animals.*

Though there is an obvious association of Swallows with cattle, horses, pigs and to a lesser though growing extent with

fowls, it is impossible to show that the presence of animals is a ruling factor in attracting them; a suitable nesting site even in an unoccupied building is apparently almost as potent an attraction as one where animals are present.

6. *Usurpation of nests by other birds.*

House-Sparrows and Wrens often occupy Swallows' nests. House-Sparrows occasionally are known to drive Swallows away or destroy a nest, though usually they build on a Swallow's old nest. Wrens occupy old nests. Robins and a Spotted Flycatcher have built in Swallows' nests.

7. *Interference by destructive animals or birds.*

Swallows' nests are usually free from interference. Rats and mice are responsible for most damage.

Superstition is effective in protecting them from human interference and from this they suffer less than most birds.

8. *Relation to House-Martins.*

Though they feed in company there is little or no competition for nesting sites, and consequently the two species do not clash.

9. *Parasites.*

The most important parasites that prey on Swallows are a blue-bottle fly and a red mite; the larvæ of the former probably cause many deaths among young Swallows, and red mites, which swarm in countless numbers, are presumed to have killed others. This blue-bottle (*Phormia sordida* Zett.—*Protophormia caerulea* R.D.) is evidently wide-spread and the red mite (*D. gallinae* Redi.) was found in every nest examined. Another insect of considerable importance in the economy of the Swallow is a small Chalcid, itself parasitic on the blue-bottle fly mentioned above.

Many other insects occupy Swallows' nests, but are of lesser importance to their hosts: a bug that feeds on the pupæ of fleas, of which two species occur; moths whose larvæ feed on the feathers in the nests; beetles; false-scorpions, etc.

10. *Census.*

(i) *Swallow.*

Swallows favour a rural area where there are suitable buildings for their nests. Their density varies from over 40 pairs to the 1,000 acres in districts of Norfolk and Anglesey where nesting-sites are easily available, and between 20 and 33 pairs

in the cattle-raising districts of western England and Wales, to comparatively low numbers (2 or 3 to 6 pairs to the 1,000 acres) in a large area in the Lake District, in the industrial and urban north, in Suffolk heathland and Sussex downland.

(ii) *House-Martins*.

The variation in density between different localities is quite different from that of the Swallow. They are prone to concentrate in groups and whereas Swallows are far more generally distributed Martins are the more urban and suburban species of the two. From many apparently suitable areas they are almost entirely absent; in others they are abundant and far outnumber the more scattered Swallows.*

*A paper on the results obtained from ringing Swallows will be published later.

PROPORTION OF SEXES IN ROOSTING CHAFFINCHES.

BY

THE HON. GUY CHARTERIS.

DURING the last two winters I have netted by night a large number of Chaffinches (*Fringilla caelebs*). My main object was to trace their movements by ringing them, but the record I have kept of the numbers of each sex has given interesting direct results. In the tables that follow I have grouped together four localities that show an approximate preponderance of males and a fifth I give separately as the results are in marked contrast, showing for both winters a small majority of females. For the figures of this last roost—Woodnorton—I am indebted to Mr. A. J. Harthan. Except in the case of Stanway where outings have been frequent and of short duration and consequently the "bags" small I have given the total for each night under its date.

Although more Chaffinches were ringed last winter than the winter before, actually there were far fewer. More were caught because we used more bat-fowling nets and, taught by experience, were more efficient in our methods. Moreover, there was a comparative scarcity of Redwings, a difficult quarry, the pursuit of which had occupied much of our time during the preceding winter. At all events I am satisfied that a large proportion of Chaffinches disturbed were netted and that the percentages shown are a fair average of the actual sex ratio of the birds roosting in the places named.

Obviously, if a small proportion only had been caught the figures would be of little interest or value and they would be less reliable if it could be shown that there was a temperamental difference between the sexes, making either easier to capture. Mr. Harthan, who has had much experience as a netsman, asserts that the hens make a quicker and less noisy break from covert. I incline to agree but as I usually beat I am less competent to give an opinion. Granted it is so, then it is probable that a larger proportion of hens are taken because a bold outward flight should result in many being netted simultaneously. Once the nets are down and ringing is proceeding those that may remain in the bush being beaten may take the opportunity to escape. Against this, birds roosting in bushes close at hand may take flight before being purposely disturbed, and the hens if more timid would be more likely to do so. Here weather conditions play an important part but I do not propose to discuss that aspect of the case.

As might be expected from the name *cælebs*, cock and hen Chaffinches may be found roosting apart just as by day they may feed apart. On most occasions my records show long sequences of cocks, short sequences of hens, and where scattered birds are found a rough alternation of sexes. These last I assume to be the local resident population, and "recoveries" both by night and resulting from daytime trapping go some way to prove my assumption correct. In this connexion Mr. Harthan advances a theory to account for the exceptional Woodnorton results. I quote his words: "Since Woodnorton is a veritable 'oasis' surrounded by orchard country, it may be the winter roost of the multitude of Chaffinches that breed in this orchard district, i.e., that in winter, locally bred Chaffinches predominate over foreigners, if any."

Certainly Stanway, Hewell, Toddington and Batsford have each contributed one or more Continental returns, Woodnorton not one. In case it is correlated with a similar scarcity of foreign Chaffinches, I think it desirable to mention that last winter there was an almost total absence of Bramblings (only 5 were ringed compared with 142 nor did I see any by day). If last winter's results were obtained from a mainly home-bred population, it is interesting that the sex ratio remains approximately the same and seems to disprove the theory advanced to account for the exceptional results shown at Woodnorton.

STANWAY, Cheltenham.							
	Males.	Females.	Total.		Males.	Females.	Total.
1934-5	156 (58%)	111 (42%)	267	1935-6	185 (64%)	104 (36%)	289
HEWELL (Redditch).							
1935 Jan. 19th	48	28	76	1935 Dec. 28th	119	59	178
Feb. 2nd	31	22	53	1936 Feb. 16th	90	41	131
	79 (63%)	50 (37%)	129		209 (68%)	100 (32%)	309
TODDINGTON, Cheltenham.							
1934 Dec. 26th	25	24	49	1936 Jan. 18th	39	9	48
1935 Jan. 6th	16	7	23	Jan. 26th	39	20	59
Jan. 26th	41	24	65	Feb. 2nd	33	17	50
Feb. 3rd	30	19	49	Feb. 17th	40	21	61
Feb. 23rd	44	30	74	Feb. 23rd	45	21	66
	156 (60%)	104 (40%)	260	Mar. 13th	52	28	80
					248 (68%)	116 (32%)	364

BATSFORD, Moreton-in-Marsh.*

1934			1935			1936		
Dec. 29th	9	7	16	Feb. 15th	53	25	78	
Jan. 5th	15	6	21	Feb. 21st	16	3	19	
Feb. 1st	16	12	28	Feb. 29th	3	2	5	
Mar. 2nd	57	34	91	Mar. 14th	25	17	42	
	97 (62%)	59 (38%)	156		97 (67%)	47 (33%)	144	
Total	488 (60%)	324 (40%)	812		739 (67%)	367 (33%)	1,106	

For both winters : Males, 1,227 (64%) ; females, 691 (36%) ; total, 1,918.

WOODNORTON, EVESHAM.

Males.			Females.			Total.		
1934			1935			1936		
Jan. 4th	63	81	144	Dec. 26th	27	29	56	
Feb. 4th	29	60	89	Jan. 1st	29	33	62	
Feb. 7th	42	45	87	Jan. 22nd	34	36	70	
Feb. 11th	36	23	59	Jan. 26th	26	22	48	
Feb. 26th	28	16	44	Feb. 13th	37	31	68	
Mar. 1st	41	61	102	Feb. 19th	27	25	52	
Mar. 5th	22	26	48	Mar. 16th	10	24	34	
	261 (46%)	312 (54%)	573		190 (49%)	200 (51%)	390	

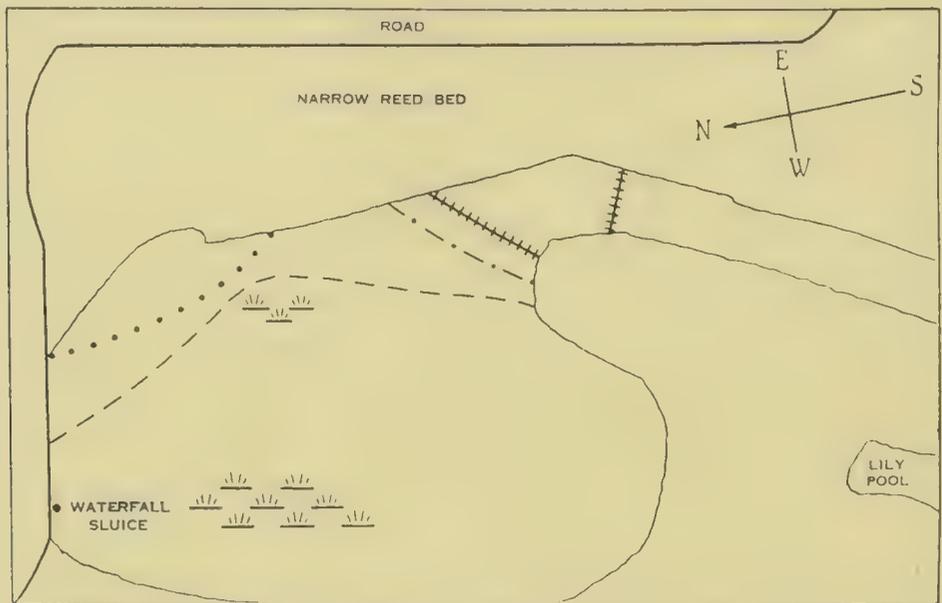
*Low return 1934-5 due to concentration on Bramblings and in 1935-6 Starlings.

THE WINTER BEHAVIOUR OF MOOR-HENS.

BY

MISS AVERIL MORLEY.

I HAD long suspected from what I had learnt of other residential species, and from a few scattered observations on Moor-Hens (*Gallinula ch. chloropus*) made in January and February in former years, that Miss Frances Pitt's experience (*Brit. Birds*: Vol. XI, p. 170) and Miss E. L. Turner's (Vol. IX, pp. 260-1) might not hold good for all resident Moor-Hens. But it was not until I was able to watch those on an old mill-pond in East Sussex, imperfectly, but at any rate regularly, through the winter of 1935-6, that I found this species obeyed the same law as do so many other (in theory, I would say *all*) residents, namely, indulging in courtship activities throughout the winter.



Water Territories of Resident Moorhens in Winter.

- · — · — · = approximate S.E. boundary of A and B's territory.
- · · · · = „ S.W. „ „ „ A's territory when alone.
- +++++ = „ S. and N.W. boundary of C's territory.
- = „ E. boundary of B and D's territory.

The pond lies in a valley covered with forest and woods, separated from these by fields and a garden, shut off by the woods from other haunts of Moor-Hen. It occupies a quarter of an acre of a two acre marsh, formed by the damming of a broad stream. In the course of the stream the pond is

four or five feet deep, but elsewhere it is shallow and some parts have a normal depth of only five or six inches. The pond finds an outlet in a twenty foot waterfall, the outflow being governed by a sluice. The Moor-Hens were mostly to be found on the pond's immediate surroundings and avoided the main swamp. The vegetation of the swamp in winter is composed of the dead clumps of common rush, which forms a thick mat of cover, a few sallows, with reedmace on the edges and in the middle of the pond, while higher up stream, alder borders the banks. Moor-Hens are the only residents.

In the first fortnight of October, there was one pair (A and B) resident on the pond. Young birds were occasional visitors (the maximum number being eight) when the waterfall sluice was raised and a large expanse of mud exposed by the draining of the water, but there was no friction between the resident pair and these occasional visitors. On October 17th, there appeared a young bird (C), easily distinguishable from the others by its almost dwarfish size, which began to pester A and B. It swam towards one of them, calling rather like a Coot when flushed off the nest, a call which I had never heard before from any of the visitors. The adult swerved at it so that it turned quickly to avoid being struck, and retired into the stream. A little while after, from behind the rushes where the stream broadens out into the pond (later, C's territory) I saw wings flapping and ripples spreading agitatedly over the surface of the water; and later again there was a commotion in the narrow rush-bed, and a Moor-Hen rose and fluttered in the air and dropped farther off in the marsh, while one of the adult pair that was on the pond, uttering the challenge cry, swam into the rush-bed to investigate. In the afternoon, one of the A and B pair, working along the pond's edge, again encountered C at the stream-mouth and drove at it, driving it back into the stream; then turning and swimming away it "crowed" triumphantly, just as I have seen a Moor-Hen do in February, when returning to its mate in the bank's cover after a successful expedition against a rival.

On October 19th, at dusk, C was swimming across the pond to a clump of reeds when A (which I think was the male of the pair, and which was a good deal blacker and more mature than B) darted from the bank and swam very closely alongside C, both going fast, with lowered necks and heads. They disappeared in the reeds, and then a few seconds later C came flying out and behind it A, which chased it along the marsh by

the stream, a distance of fifty yards. A stopped at the lily-pool and there "crowed", upon which its mate hurried out of the narrow rush-bed and swam across the pond towards the pool, and was lost to sight among the rushes. For the rest of October, C worried A and B persistently. On October 21st, I saw the first courtship actions. C, as it swam towards A, calling the "Coot-cry", rapidly pecked the water. The adult did likewise, and both swam rapidly towards the rushes by the stream-mouth. Later, one of the adult pair (B?) swam clucking towards the stream-mouth, where was C, which, on the approach of the other, suddenly dived completely under water, kicking up a sparkling jet of water with one foot as it did so, and came up somewhere out of sight. Unfortunately I had then to leave my watching. On this day a fourth bird, another young one, D, appeared, to stay as a resident. It took no part for a fortnight in the disturbances, but skulked for the most part, sometimes feeding, sometimes preening, in the larger of the reed-clumps in the pond, which later formed the centre of its territory on water. A and B did not seem to resent it, perhaps because it never attempted to worry them as C had done, or drew attention to itself.

On October 27th, a fresh courtship action was seen, perhaps a development of the water-pecking. C at the stream-mouth was displaying to B by bobbing the head and neck under the water, a kind of rapidly repeated up-ending. It was attacked by A, and retired to the rushes. On this day also a new note was first heard, a very distressed, painful and piercing cry as if the bird was in agony, which was always uttered in the cover of the rushes, and which I sometimes heard late at night. By the first week of November, the displays were more frequent and sustained. The separation of A and B, which had been threatened by C, was now completed by the hitherto quiescent D. On November 6th, a beautiful, sunny day, I saw two birds approach a third (owing to the light shining behind them I was unable to recognize them) all rapidly and excitedly pecking the water; when they drew close to each other they began to flip the water with their beaks so that it rose up in jets sparkling in the sun. Two more birds, making five in all, now joined the group.

As they grew more excited they ducked and bobbed and dived and splashed up the water with their feet. Two birds separated themselves, swimming side by side very fast, with lowered heads and necks, into the rushes, but they were soon back again as if the activities of the others were an irresistible lure, much as I have seen Blackbirds in December drawn to

the common courting ground. Then a young one, I think C by its size, swam towards the river mouth, the others following in a strung-out line, still pecking at the water and bobbing and splashing, A bringing up the rear, one of them calling the "Coot cry". They disappeared behind rushes. About half an hour later I saw A back on its beat by the narrow rush-bed which was all that was left to it now of its once splendid territory; next to it, at the stream mouth was C, while two more birds were under a willow tree farther up the stream. One of these was making some magnificent dives and splashes, sending the water up in high showers of silver, while the other swam backwards and forwards from the bank to the displayer, as if irresistibly attracted by the enchanting spectacle. The fifth bird had disappeared, nor was a fifth one seen again on the pond until March.

In this month (November) A, now quite alone, made distressed attempts to get back B which had paired off with D. It would swim across the pond to the stream mouth by C's beat, clucking anxiously, when the pair were behind C on the ground near the lily pool, or across to the bank near the house when the pair were feeding there.

On November 9th the pair swam to a reedmace clump in the middle of the pond (in April their nest was found here) and while one (B?) disappeared in it, the other pushed A away from the vicinity, making it keep close to its own rushes.

On November 10th the flood waters were drained away by the opening of the sluice, and a large mud-bank was exposed in the middle of the pond, the course of the stream running close to A's beat. When A attempted to cross the stream to feed on the mud-bank it was vigorously attacked by one of the B and D pair—the fiercest fight seen hitherto; nor was the attacker satisfied until A was feeding on its small mud-belt on its own side of the river.

At the end of November A disappeared, and C became the tyrant of the place, claiming the stream mouth as its beat and confining B and D pair to the pond; it was a most irascible little bird and would chivvy and chase the pair over the pond and follow them in flight across the rush-bed if they ventured too near its haunt.

In December all three birds became more secretive in their habits. Fighting and courtship took place on land, on the meadows above the marsh, but I was rarely able to watch these activities, and the identity of the participants I was never able to establish. C seemed still without a mate. When, very infrequently, the pair displayed on the pond, C generally

came out and joined them : sometimes, it seemed, to attack ; sometimes it would be less bellicose and would go through the motions itself, as if anxious to attract.

On December 17th when a night frost had frozen the smaller pools, a bird (B or D) swam into the pond and began displaying alone by ducking the head ; it was soon joined by a second bird (I think a new-comer, E). Then C rushed out of its patch, kicked up some violent water jets, and rushed back again. From the same quarter as the first two, a fourth bird appeared (I think the other of the B and D pair). It made for the first-comer with agitated bobbing, swam closely round it, then, with body low in the water, it swam very fast after the second-comer and pursued it, forcing it to make short flights over the water until it had pushed the interloper on to the bank. Both disappeared among the rushes.

Later in December the presence of the new-comer E caused great excitement on the pond, especially to C, which was continually displaying with it, E being as excited and as forward. E did not seem to claim any territory, which makes me think it was a female. These two birds were the greatest frequenters of the pond, so that it looks as if the early part of the Moor-Hen's courtship takes place on water.

During January and February the birds were very seldom on the pond, which was now often kept empty for fear of floods. From March 22nd, however, the Moor-Hens appeared again on the water, but the fighting was much fiercer and more intense because B and D were come for the purposes of nest-building and strongly resented the presence of the other birds. Bobbing and water splashing was only performed by unmated birds, one of which was strangely enough C. But at this time of the year the numbers on the pond and its surroundings were being augmented by summer visitors ; winter was over and the courtship observed belonged to the orthodox season, Spring.

RECOVERY OF MARKED BIRDS.

(Continued from page 79)

No.	Ringed.	Recovered.
Mallard (<i>Anas p. platyrhyncha</i>).		
RINGED AS FULL-GROWN.		
AB.1375	Loch Leven (Kinross), 4.7.35. by Lord Mansfield.	Where ringed, —.2.36.
AG.299	Leswalt (Wigtown), 14.3.32, by M. Portal.	Corsewall (Wigtown), 7.2.36.
AA.8533	Ditto 6.3.35, by J. Law.	Ditto 7.2.36.
AG.294	Ditto 7.3.32, by M. Portal.	Loch Ryan (Wigtown), 27.1.36.
25550	Ditto 5.3.26.	Aland Is. Finland, 15.4.27.

Teal (*Anas c. crecca*).

RINGED AS FULL-GROWN.

RT.9890	Leswalt (Wigtown), 8.3.35, by J. Law.	Kirkcolm (Wigtown) 19.1.36.
69649	Ditto 17.3.26, by M. Portal.	Kenmare (Kerry), 23.1.36.
73151	Longtown (Cumb.), 1.3.33, by W. Bell.	Rockcliffe (Cumb.), —.2.36.
78566	St. James's Park, London, 27.2.28 (<i>sent from Long-</i> <i>town, Cumberland.</i>)	Where released, —.6.36.

NOTE.—The following are results of ringing at Orierton Decoy and the ring numbers are those of the Orierton rings used. Details have been very kindly supplied by Messrs. C. W. Mackworth-Praed and H. A. Gilbert.

830	Orierton, Pembroke, 15.1.36, by S. Greenslade.	Llandinam (Mont.), 25.1.36.
507	Ditto 12.12.35.	Wolseley Bridge (Staffs.) 15.1.36.
182	Ditto 27.10.35.	Sawley (Derbyshire.), 8.1.36.
622	Ditto 21.12.35.	Preston (Lancashire.), 24.1.36.
527	Ditto 13.12.35.	Lancaster, 11.2.36.
602	Ditto 20.12.35.	Metheringham (Lincs.), 1.2.36.
277	Ditto 15.11.35.	Withernsea (Yorks.), 21.2.36.
690	Ditto 25.12.35.	Clevedon Moors (Som.), 12.2.36.
413	Ditto 6.12.35.	Aylesbury (Bucks.), 28.2.36.
582	Ditto 18.12.35.	Fordingbridge (Hants.), 14.2.36.
280	Ditto 16.11.35.	Killeshandra (Cavan.), 19.1.36.
91	Ditto 6.2.35.	Carbury (Kildare), 4.1.36.
931	Ditto 22.12.35.	R. Greese (Kildare), 15.2.36.
178	Ditto 26.10.35.	Abbeyleix (Queen's Co.), 20.2.36.
953	Ditto 24.12.35.	Carnsore Pt. (Wexford), 28.2.36.
710	Ditto 26.12.35.	New Ross (Wexford), 12.2.36.
485	Ditto 11.12.35.	Tacumshane Lough (Wex- <i>ford), 4.2.36.</i>

No.	Ringed.	Recovered.
Teal (<i>continued</i>).		
RINGED AS FULL-GROWN.		
542	Orielton, Pembroke, 14.12.35. by S. Greenslade.	Guines (Pas-dé-Calais), France, 28.3.36.
764	Ditto	28.12.35. Neuilly (Calvados), France, 26.3.36.
88	Ditto	6.2.35. Angers (M. et L.), France, 19.2.36.
402	Ditto	29.11.35. Bruges, Belgium, 6.4.36.
250	Ditto	10.11.35. Tjeukermeer (Friesland), Holland, —.1.36.
96	Ditto	8.2.35. Aggersund, Jylland, Den- mark, 5.11.35.
331	Ditto	22.11.35. Tromsfylke, Norway, 28.5.36
34	Zool. Gardens, London, 25.1.35.	Goring (Oxon), 10.2.36.
	(Taken from Orielton with clipped wings.)	

Wigeon (*Anas penelope*).

RW.8711	Leswalt (Wigtown), 25.2.36, ad., by J. Law.	Leningrad, Russia, 10.5.36.
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Tufted Duck (*Nyroca fuligula*).

RT.9431	Molesey (Surrey), 24.9.33, ad., by P. Hollom.	King's Norton (Warwick), 5.3.36.
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Eider (*Somateria m. mollissima*).

113348	Slains (Aberdeen), 27.5.34, ad., by M. Portal.	Montrose (Angus), 14.3.36.
AB.1309	Tentsmuir (Fife), 14.6.35, juv., by Lord Mansfield.	Where ringed, —.1.36.
AB.1437	Ditto	1.7.35. Ditto 15.3.36

Cormorant (*Phalacrocorax c. carbo*).

RINGED AS NESTLINGS.

113941	Mochrum (Wigtown), 30.6.35, by Lord Dumfries.	Langbank (Renfrew), 24.2.36.
114021	Ditto	3.7.35. Loch Leven (Kinross), 4.4.36.
114162	Ditto	30.6.35. Holy I. (Northumb.), 1.3.36.
114167	Ditto	30.6.35. Edingham Loch (Kirk- cudbright.), 27.2.36.
114195	Ditto	29.6.35. Annan (Dumfries), 27.2.36.
114099	Ditto	3.7.35. Ulverston (Lancs.), —.1.36.
114335	Ditto	1934. Totnes (Devon), —.2.36.
114008	Ditto	3.7.35. Lough Neagh (Tyrone), 28.2.36.
113996	Ditto	29.6.35. Fouesnant (Finistère), France, 22.10.35.
114152	Ditto	30.6.35. Ditto 29.9.35.
112063	Farne Is. (Northumb.), 7.7.35. by Bootham Sch.	Luce Bay (Wigtown), 26.2.36.
112055	Ditto	7.7.35. Preston (Lancs.), 8.3.36.
112995	Skomer (Pem.), 1.7.34, by R. M. Lockley.	Barnstaple (Devon), 26.2.36.

No. Ringed. Recovered.

Lapwing (*continued*).

RINGED AS NESTLINGS.

(a) RECOVERED AWAY FROM WHERE RINGED.

- Z.5737 Kilmacolm (Renfrew), 31.5.29, Beltra (Sligo), 21.2.36.
by R. O. Blyth.
- AP.9355 Kilbarchan (Renfrew), 26.5.35, Lesparre (Gironde), France,
by F. Ramsay. caught 17.3.36, released
30.3.36, found dead Twisk,
Noord Holland, 3.7.36.
- S.1954 Penrith (Cumb.), —.6.29, by Knocklong (Limerick),
H. J. Moon. 25.2.36.
- AS.2031 Ditto 3.5.35. Bonzac (Gironde), France,
5.2.36.
- AS.2215 Ullswater (Cumb.), 2.6.35, by La Taillée (Vendée), France,
H. J. Moon. 15.3.36.
- AS.3613 Mobberley (Ches.), 12.5.35, by Pézenas (Herault), France,
E. Cohen. —.1.36.

(b) RECOVERED WHERE RINGED.

- AR.8071 Windermere (Westmor.), —.6.34, by H. J. Moon. 29.5.36.
- U.8660 Kirkby Lonsdale (Westmor.), —.6.28, by H. J. Moon. 6.6.36.
- AP.7628 Ings (Westmor.), 23.5.34, by E. Savage. 14.4.36.

Redshank (*Tringa t. totanus*).

- X.2524 Rusland (Lancs.), 7.6.27, Heversham (Westmor.),
young, by late C. Archibald. —.3.36.

Curlew (*Numenius a. arquata*).

- AA.9107 Penrith (Cumb.), 24.6.34, Where ringed, 16.5.36.
young, by H. J. Moon.
- AB.1754 Ditto 7.5.35. Co. Roscommon, —.12.35.

Woodcock (*Scolopax r. rusticola*).

RINGED AS NESTLINGS.

(a) RECOVERED AWAY FROM WHERE RINGED.

- AS.520 Almondbank (Perths.), 12.6.35, Auchterarder (Perths.),
by Lord Mansfield. —.2.36.
- AR.2809 Abbeystead (Lancs.), —.6.34, Bodafon, Anglesey, 3.3.36.
by H. W. Robinson.
- Private Dunecht (Aberdeen), 1933, by Tullamore (King's Co.),
Ring Lord Cowdray. —.2.36.

(b) RECOVERED WHERE RINGED.

- AR.5061 Coupar Angus (Perths.), 13.6.34, by Lord Mansfield, —.10.35.
- AP.6264 Greenloaning (Perths.), 2.7.33, by Lord Mansfield, 22.5.36.
- AR.5623 Muirfad (Kirkcudbr.), 25.4.34, by Col. Blair-Imrie. 11.4.36.
- 200646 Arklow (Wicklow), 11.5.35, by B. T. Orn. 27.1.36.

Sandwich Tern (*Sterna s. sandvicensis*).

RINGED AS NESTLINGS.

- AR.3376 Leuchars (Fife), 6.7.35, by Benguela, Angola, —.2.36.
Perth Nat. Hist. Soc.
- AS.1688 I. of May Bird Obs., Scotland, Appam, Gold Coast, —.2.36.
6.7.35.
- AN.3716 Farne Is. (Northumb.), 25.6.35, Porto Amboim, Angola,
by Mrs. Hodgkin. 25.3.36.

No.	Ringed.	Recovered.
Sandwich Tern (continued).		
RINGED AS NESTLINGS.		
AS.5379	Ravenglass (Cumb.), —.7.35, by H. W. Robinson.	Appam, Gold Coast, —.2.36.
AR.7214	Ditto —.6.34.	Benguela, Angola, 14.4.36.
AS.5306	Walney I. (Lancs.), 23.6.35, by H. W. Robinson.	Hussein Dey, Algeria, 17.5.36.
AS.5281	Ditto 16.6.35.	Accra, Gold Coast, —.1.36.
AS.5230	Ditto 23.6.35.	Loanda, Angola, 28.3.36.
AP.4217	Salthouse (Norfolk), 14.6.32, by R. M. Garnett.	Keta, Gold Coast, —.11.33.
AS.4335	Ditto 25.6.35.	Cape Coast, Gold Coast, 31.1.36.
AR.9407	Ditto 12.6.35.	Porto Amboim, Angola, 25.3.36.
AS.4062	Ditto 12.6.35.	Ditto 25.3.36.
AR.4393	Ditto 15.6.34.	Ditto 25.3.36.
AR.9414	Ditto 12.6.35.	Loanda, Angola, 16.5.36.
AP.8070	Ditto 19.6.33.	Benguela, Angola, 20.12.35.
AS.6481	Ditto, 12.6.35, by E. Cohen.	Cape Coast, Gold Coast, 6.2.36.
AS.6672	Ditto 12.6.35.	Sekondi, Gold Coast, —.1.36.
AS.6484	Ditto 12.6.35.	Porto Amboim, Angola, 30.4.36.
AS.6555	Ditto 12.6.35.	Angola, —.1.36.
AR.1631	Northern Ireland, 12.7.35, by J. Cunningham.	Loanda, Angola, —.3.36.
AR.1627	Ditto 12.7.35.	Porto Amboim, Angola, 30.5.36.

Common Tern (*Sterna h. hirundo*).

GR.195	Blakeney (Norfolk), 19.7.35, young, by J. Ferrier.	Sekondi, Gold Coast, —.1.36.
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Arctic Tern (*Sterna macrura*).

M.1152	Sule Skerry, Orkney, —.7.35, young, by H. W. Robinson.	Portugal, —.9.35.
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Black-headed Gull (*Larus r. ridibundus*).

RINGED AS NESTLING.

RR.255	Essex, 21.6.27, by London R. Nat. Hist. Soc.	Blackwater (Essex), 12.4.36.
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RINGED AS FULL-GROWN.

RV.7983	Littleton (Middx.), 28.2.35, by P. Hollom.	Where ringed, 26.1.36.
RV.8281	Ditto 16.12.35.	Barnes (Surrey), 25.12.35.
RW.8296	Ditto 27.2.36.	Ditto 24.5.36.
RW.8207	Ditto 11.2.36.	Ditto 8.3.36.
RV.8270	Ditto 25.11.35.	Ealing, London, —.12.35.
RV.7797	Ditto 1.2.35.	Hampton (Middx.), 27.3.36.
RW.8168	Ditto 17.1.36.	Sutton (Surrey), 30.1.36.
RV.8247	Ditto 25.11.35.	St. James' Park, London, 30.12.35.
RV.8264	Ditto 25.11.35.	Crawley (Sussex), 4.2.36.

No.	Ringed.	Recovered.
Herring-Gull (<i>Larus a. argentatus</i>).		
RINGED AS NESTLINGS.		
AB.2892	Eynhallow, Orkney, 22.6.35, by D. J. Robertson.	Glenferness (Nairn), 20.4.36.
AB.2673	Berriedale (Caithness), 10.7.35, by E. Cohen.	Crieff (Perths.), 28.4.36.
AB.3662	Puffin I., N. Wales, 2.7.35, by L. Monks.	Preston (Lancs.), 19.4.36.
401054	Skokholm (Pem.) 16.7.34, by C. Wontner-Smith.	Linney Hd. (Pem.), 3.5.36.
402594	Dungeness (Kent), 22.6.35, by P. Allen.	Boulogne, France, —.3.36.
Lesser Black-backed Gull (<i>Larus f. graellsii</i>).		
RINGED AS NESTLINGS.		
AB.4138	Hoy, Orkney, 24.7.35, by Serle and Bryson.	Where ringed, —.5.36.
400792	Foulshaw (Westmor.), 27.7.34, by H. W. Robinson.	Preston (Lancs.), 24.5.36.
400793	Ditto 27.7.34.	Upper Nidderdale (Yorks.), 21.5.36.
AB.2148	Walney I. (Lancs.), 9.6.35, by H. W. Robinson.	Torres Vedras, Portugal, 6.3.36.
Kittiwake (<i>Rissa t. tridactyla</i>).		
RV.9783	Farne Is. (Northumb.), 22.6.35, young, by Mrs. Hodgkin.	Bredifjord, West Iceland, 13.5.36.
Southern Guillemot (<i>Uria a. albionis</i>).		
RV.6520	Skomer (Pem.), 19.7.34, by C. Wontner-Smith.	Biscarrosse (Landes), France, 31.1.36.

NOTES

CHIFF-CHAFF AND GRASSHOPPER-WARBLER ASSOCIATION.

IN a wood running along the top of a hill in Surrey which I visited on June 24th, 1936, I heard a Chiffchaff (*Phylloscopus collybita*) singing in a tall conifer, and as soon as he stopped a Grasshopper-Warbler (*Locustella naevia*) started to reel in the undergrowth below him and for several minutes the two birds sang alternately. During a short walk (about three-quarters of a mile) I heard five more Chiffchaffs and immediately after each had finished a stave a neighbouring Grasshopper-Warbler reeled in reply. The birds never sang together, and in no case did I hear a Grasshopper-Warbler before a Chiffchaff. I spent the next two mornings in the wood, one of them in the company of a friend, and altogether we came across eight Chiffchaffs, each with a Grasshopper-Warbler in attendance. Ten days later I was again in the wood. The weather was cooler and more broken, and fewer Chiffchaffs were calling, but when they did they were instantly followed by Grasshopper-Warblers. It almost seemed as if they had wound up some little piece of mechanism which started to run when they stopped singing.

The only other Grasshopper-Warbler I heard in the neighbourhood was accompanying a Chiffchaff in a narrow strip of ash and other trees about a mile from the first wood.

I find no mention of any association between these two species in Mr. Eliot Howard's exhaustive monograph on the British warblers and I should be interested to hear if it has been noted elsewhere, and to what it may be attributed.

E. MACALISTER.

SUMMER PASSAGE MOVEMENTS OF SWIFTS.

ANYTHING that may help to throw light on the little known and less understood late passage movements of the Swift (*Apus apus*) being of interest, the following observation is worth recording.

On July 1st, 1930, at 5.15 p.m. (normal time) while staying at Ballycotton Lighthouse (on an islet a short distance from the Cork coast) Charles Oldham and I saw a single Swift fly in from the open sea and pass the island, low down, to the

mainland. This bird was at least a mile out at sea, apparently flying from due south, when it first came into the field of our binoculars. The wind was then west and the evening wet and gloomy.

Next day (July 2nd) at 4.15 a.m. soon after dawn, we saw a party of six Swifts fly in oversea in exactly similar manner to that of the bird above-mentioned. These too were noticed when nearly a mile from the island. They were flying relatively slowly, battling against a heavy wind (N.W.) and passed low down round the island to the coast. These birds, by their behaviour and distance from the shore, were obviously not local breeders. All were silent.

W. Eagle Clarke in *Studies in Bird Migration*, I (1912), mentions that, at the Eddystone Lighthouse, "Many Swifts occur in June (24th latest)". He also records that "several appeared on 5th July, 1902 . . ." but the direction of their flight is not stated. He notes that the occurrence of the Swift at lighthouses "is chronicled for the night-time (especially the earliest hours of the morning) only." BERTRAM LLOYD.

HOBBY AND GREY SQUIRREL.

ON a common in Surrey a Hobby (*Falco s. subbuteo*) laid its last egg on June 27th, 1936, an unusually late date. After incubation had been going on for three weeks, I revisited the place with a friend who was anxious to photograph it. On July 19th the bird was sitting, but we saw a grey squirrel in the tree and another in the next tree. Three days later the nest was deserted: one egg was broken in the nest and the contents eaten. I think there is no doubt that this was the work of the squirrels. D. H. MEARES.

FLOCK OF GADWALL IN SUTHERLANDSHIRE.

ON July 8th, 1936, at Dornoch, Sutherland, I watched a flock of 30 duck which can only have been Gadwall (*Anas strepera*). I first saw them resting on some saltings about 200 yards from the shore. When disturbed, they flew on to the sands (it was low tide) and on being disturbed again they went nearly to the water's edge. They resembled Mallard, but were perhaps a little smaller and rather darker in shade. The very conspicuous white speculum showed on about six of the party, both in flight and at rest; they did not allow me to get near enough to see the crescentic breast-markings although I was using a telescope. There had been rain all the morning and a cold north-west wind was blowing. Surely it is unusual to

see so many here at this, or indeed at any time? Two years ago, I found a brood of young ones at a loch, about four miles inland.

EDWIN COHEN.

FULMAR PETRELS BREEDING IN PEMBROKESHIRE.

With reference to my note on the Fulmar Petrels (*Fulmarus g. glacialis*) probably breeding at the Stack Rocks in 1935, (Vol. XXIX, p. 117) the coastguard informs me quite definitely that in 1935 one egg was laid by a pair. He was, however, unable to say whether the egg hatched or not.

I visited the colony on June 22nd, 1936, and I saw five pairs in view at one time and I think that the number of Fulmars is greater than in June, 1935. Moreover, one pair has extended the range and now occupies a ledge in the next small bay. I saw no eggs, however.

W. A. CADMAN.

EARLY BREEDING OF STONE-CURLEW.

On May 3rd, 1936, three friends, all thoroughly competent ornithologists, who are well acquainted with the Stone-Curlew (*Burhinus x. ardicnemus*), visited a breeding haunt in Dorset. Two nests with eggs were seen on that day and a third pair located. On May 6th, this pair was found after much watching to have young, a single large young bird being discovered which all agreed could not be less than ten days old. Another pair of young was also found, the same evening, but these were only two or three days old. Allowing 26 days for incubation, these birds must have had full sets on or about March 31st and April 7th-8th.

A clutch of two eggs found in Sussex on April 28th, 1927, by Mr. R. Carlyon Britton was so far advanced in incubation that the embryos were already covered with down and were probably laid about the first week in April.

The Marquis de Tristran (*Alunda*, 1934, p. 555) states that he received a clutch from a farmer at Emerillon, France, taken April 15th, 1932, which was on the point of hatching, and must have been laid about March 20th-25th.

F. C. R. JOURDAIN.

On May 18th, 1936, on a heath near Thetford, Norfolk, I found a young Stone-Curlew squatting amongst the stones, and after I had examined it, it ran away at a good speed. Its age I should estimate at between a fortnight and three weeks, as it was rather more than half-grown.

H. J. K. BURNE.

“ INJURY-FEIGNING ” BY STONE-CURLEW.

MR. GEORGE BROWN'S note on the above subject (*antea*, p. 90) prompts me to record a similar circumstance which occurred while I was photographing a Stone-Curlew (*Burhinus æ. adicnemus*) on May 31st, 1936. The chicks were just hatched and a hide was erected over them. (They were about twenty yards from the nest over which the hide had previously stood.) Within a few minutes both birds came up, calling distractedly. One bird (female?) tried to lure the young away from the tent by brooding a few feet away from them, her brooding patch being fully fluffed out. When this failed to bring them to their feet, both birds paraded about the hide, with necks stretched low over the ground and their wings three-quarters raised. This performance was attended by the most hysterical “ curlew-ing.”

When this manœuvre also failed, one bird indulged in a curious display of “ injury-feigning”. Half-flying, half-jumping she landed prone on her breast on the flints, spread out her wings flat on the ground, and raised her head high and slightly arched backwards. The position was exactly similar to that so often assumed by Nightjars (*Caprimulgus e. europæus*) under similar circumstances. This she repeated several times. The display was perhaps all the more remarkable in that it was performed not in front of a visible human being, but a canvas hide.

G. K. YEATES.

THE FOOD OF YOUNG LAPWINGS.

ON six occasions, whilst ringing young Lapwings (*Vanellus vanellus*) I have been able to catch a young bird with food in its bill. The following is a list of the food noted: (i) A caterpillar of the cabbage white butterfly (*Pieris rapæ*); (ii) a large earthworm; (iii) a wireworm; (iv) several small black flies; (v) a caterpillar of the yellow underwing moth (*Triphæna pronuba*); (vi) a white grub of the cabbage fly (*Anthomyia brassicæ*).

R. H. BROWN.

NOTES ON WADERS IN CUMBERLAND.

ON December 7th, 1935, a raw day after a night's frost, with the Pennine fells snow-clad to their bases, I was surprised to find a Common Sandpiper (*Tringa hypoleucos*) by the side of the river Eden near Carlisle. The Sandpiper was followed up-river for half an hour; the call-notes, the butterfly-like flight above the water, with wing-tips just clearing the surface, and when the bird alighted by the water edge, the curtseying of the tail, were typical of the species.

On May 9th, 1936, I watched a Spotted Redshank (*Tringa erythropus*), in breeding-plumage, about the mouth of a creek on Newton Arlosh Marsh. The Starling-like plumage and long orange-red legs were distinctive. This is the first spring record I have for this species, and the Rev. H. A. Macpherson in his *Vert. Fauna of Lakeland* states that the species is unknown in summer plumage. On a spit of gravel in the River Wampool adjoining the marsh a pair of Greenshanks (*T. nebularia*) were calling repeatedly to one another, as if anxious for each other's safety. Finally the two birds flew off in a northerly direction, the call-notes of one bird merging in a series of yodelling notes. I have only one other record of the Greenshank in spring on the Solway Marshes: the bird is a regular autumn visitor and this year I saw an early arrival on July 12th, one feeding in a shallow pool in a creek on Rockcliffe Marsh.

On May 16th a party of six Whimbrels (*Numenius ph. phaeopus*) passed over Rockcliffe Marsh, their identities revealed by their ringing tittering cries; although I am on the marshes every April and May, this is the first occasion I have seen the Whimbrel in spring; all other records refer to the autumn except for one winter record. R. H. BROWN.

COMMON BUZZARD AND OSPREY IN KENT.—Capt. G. E. Took informs us that he saw a Buzzard (*Buteo buteo*) near Canterbury in November, 1935. The species has been noted in this neighbourhood in recent years on several occasions (*cf.* Vol. XXVII, pp. 265 and 361).

Capt. Took also informs us that an Osprey (*Pandion h. haliaetus*) was unfortunately shot near Dover in September, 1935. It was found dead in a wood and brought to him for identification.

NEW HERONRY IN MONTGOMERYSHIRE.—Mr. W. A. Cadman reports a small heronry at Rhyd-y-gwial, Cemmaes, Machynlleth, Montgomeryshire, first occupied in 1932 with one nest. In 1933 and 1934 there was one nest each year, but in 1935 and again in 1936 three nests. All the nests were in alders. Mr. Cadman also had reports of another single nest at Groffit, near the above, during 1935 and 1936, but this he had not verified.

YOUNG OYSTER-CATCHER SWIMMING UNDER WATER.—Mr. E. Cohen informs us that on July 6th, 1936, at Golspie, Sutherlandshire, a young (feathered) Oyster-Catcher

(*Hæmatopus o. occidentalis*) took to the sea to escape, as they frequently do, and then dived and swam very well for some twenty yards under water.

LETTER.

COLORATION OF SOFT PARTS IN THE HERODIONES DURING THE BREEDING SEASON.

To the Editors of British Birds.

SIRS,—Mr. B. W. Tucker's difficulty in reconciling his own observations on *Ardeola ibis ibis* at the nest with the published authorities (*antea*, pp. 70-73) is more or less paralleled by my own recent experience with the Large Egret (*Egretta alba*) and the Smaller Egret (*Egretta intermedia*). In both species the *Fauna of British India* describes the bill in breeding plumage as black, and the orbital skin lores and edge of gape as bright green. Oates, a very careful observer, supports this, but *Practical Handbook* (II. i. 205) describes the bill of *alba* as "black, base orange (ad. summer), yellow (ad. winter and juv.)."

I visited one or two very large breeding colonies in August, 1935, in Upper Burma and watched scores of Egrets for a fortnight or more in an excellent light, both at the nest and when feeding on the ground. As these colonies nested in trees, my observations were not at such point-blank range as those of Mr. Tucker but were with $\times 12$ Zeiss glasses at ranges from 15 to 100 yards. I was greatly puzzled by the fact that nearly all these Egrets, which, from their dorsal plumes were clearly adult, had yellow or yellowish beaks, usually, though not invariably, with a dark tip. I only saw three in which the green facial skin was prominent and of these two had black beaks and one dark brown. Dr. C. B. Ticehurst, to whom I mentioned this, suggested that by August, when most of these birds were feeding young ones, extensive colour changes might well have started to take place in the soft parts. This is certainly possible and in late May, 1936, during a very hurried visit to this colony, most of the birds, which were then building their nests, had black or blackish beaks, though at the same time there were undoubted adults about with yellow beaks and fully developed dorsal plumes. I had not time to go into it as fully as I wished.

These colour changes clearly need more study in the Herodiones, as one very marked change, which I have been unable to find mentioned in any book, occurs in the feet of *Butorides striatus* (the Little Green Heron) in the breeding season. They become what appears in the field to be almost orange-pink and are most conspicuous in flight, though not noticeable at other times of the year.

J. K. STANFORD.
(Indian Civil Service).

BINSTED, HANTS. *August 8th, 1936.*

[In the case of nestling *Egretta alba*, nearly old enough to leave the nest, examined by me the bills were gamboge, upper mandible black at the tip, with orbital region and round gape bright green. In nestling Spoonbills (*Platalea leucorodia*) some had the feet entirely pale yellowish, while others, just able to fly, showed traces of slate colouring, but none had the legs and feet black.—F.C.R.J.]



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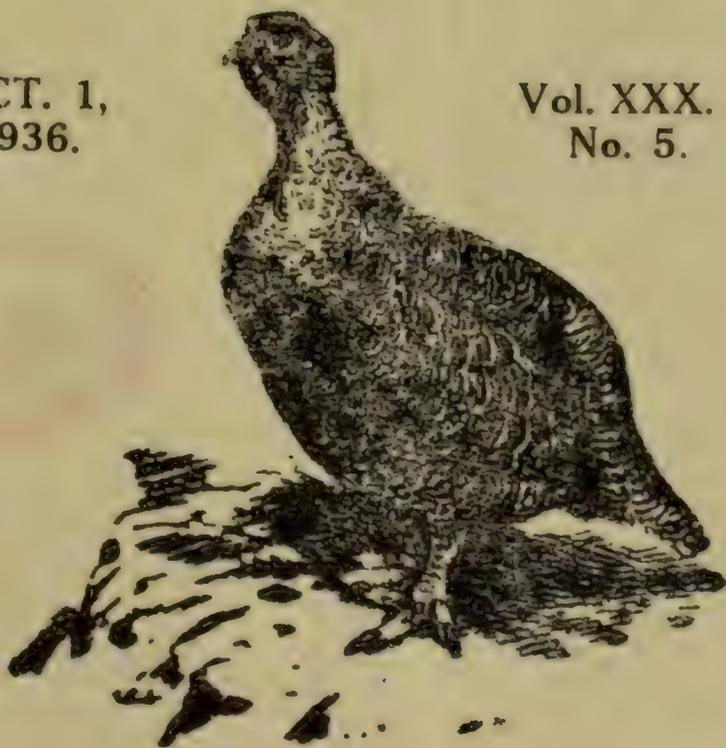
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CONTENTS OF NUMBER 5, VOL. XXX., OCTOBER 1, 1936.

	PAGE
Report on Great Crested Grebe sample Count, 1935. By P. A. D. Hollom	138
Further Notes on Orierton Decoy, 1935-36. By C. W. Macworth- Praed and H. A. Gilbert	159
Nesting of the Pintail in Kent and Sussex. By N. F. Ticehurst	162
Unusual "Hold-up" of Spring Migrants on East Coast of Scotland. By The Midlothian Ornithological Club	167
Notes:—	
"Return Migration" of Jays (P. A. D. Hollom)	170
Status of the Siskin and Twite in Lakeland (R. H. Brown) ...	170
Unusual "Hold-up" of Spring Migrants on Lincolnshire Coast (B. A. Pye)	171
Spotted Flycatcher, Great Tit and Gulls taking Moths (Dr. J. W. Campbell)	172
Birds and Molluscs (Dr. J. W. Campbell)	173
Hoopoes in Hertfordshire and Hampshire (F. M. Vaughan and G. Brown)	173
Tawny Owl taking Prey during the day (R. H. Brown) ...	173
Merlin in Inner London (E. MacAlister)... ..	174
Sooty Shearwaters and a Great Shearwater off the Hebrides (A. MacRae)	174
Manx Shearwater Breeding on Pembrokeshire Mainland (W. A. Cadman)	175
Redshank Nesting at Tring in 1936 (C. Oldham)	175
White-winged Black Tern seen in Co. Cork (S. Baron) ...	176
Short Notes:—	
Whooper Swans in Northumberland in June. Greenshank in Cumberland in January	176



PUBLICATION OF THE BRITISH TRUST FOR
ORNITHOLOGY.

REPORT ON GREAT CRESTED GREBE
SAMPLE COUNT, 1935.

BY
P. A. D. HOLLOW.

DURING the summer of 1935 a sample count of Great Crested Grebes (*Podiceps c. cristatus*) was taken in England, Scotland and Wales. The main object of this count was to discover the effect of the severe drought in some parts of the country during 1933 and 1934, and also to trace the general trend in numbers and distribution since the complete census of 1931 (see *British Birds*, Vol. XXVI., pp. 62/92, 102/131, 142/195).

The areas chosen were well spread geographically and included waters in Wales and Scotland; various other waters were also reported on, but the request in *British Birds* for casual observations met with very poor response. Most of the counts were made in June, and the numbers of non-breeders in particular refer to that month.

THE 1935 SAMPLE COUNT.

The following table gives the counts made in the selected areas together with the numbers for the same waters in 1931. For full particulars reference should be made to the detailed lists of occupied waters given at the end of the report.

	1935.			1931.		
	Breeding Pairs.	Non-B. Birds.	Total Adults.	Breeding Pairs.	Non-B. Birds.	Total Adults.
*Berks. ...	34/36	13/17	85	35/37	5	75/79
*Bucks.	17/18	15/17	51	11	2	24
*Cheshire	74/80	38/42	190/198	78	38	194
*Essex	17/18	30	64/66	33	31	97
*Leicester.	34	8	76	32	—	64
*Middlesex	10	27	47	15	5	35
*Oxford	14	1	29	15/16	—	30/32
*Somerset	17	15	49	17	5	39
Herts. (part)	23/28	18	64/74	31	35	97
Norfolk (some broads)	110	—	220	107	—	214
Surrey (part)	27	9	63	32	—	64
Yorks. (part)	48	8	104	47	—	94
South Wales (part)	16	—	32	15	—	30
Forth & Tay areas (part)	45	9	99	35/38	—	70/76
Other waters	33/35	52/55	121/122	57	19	133
Total	c.519/536	243/256	1,294/1,315	c.560/566	140	1,260/1,272

*A complete census was taken in these counties.

	1935			1931		
	Breeding Pairs.	Non-B. Birds.	Total Adults.	Breeding Pairs.	Non-B. Birds.	Total Adults.
Say	528	249	1,305	563	140	1,266
Increase or Decrease on 1931	-35	+109	+39			
Percentages on 1931 figures	94%	178%	103%			

In 1931 about 1,240 pairs were found in England, Scotland and Wales, so that the 1935 count represents a sample of 45 per cent. The 1935 figures show a decrease of about 35 breeding pairs or 6 per cent. ; an increase of 109 non-breeding birds or 78 per cent. ; and an overall increase in population of 39 birds or 3 per cent.

In 1931 the question of non-breeding birds was one of several supplementary points on the reverse side of the enquiry schedule, whereas in 1935 there were adjacent columns in which to enter breeding and non-breeding birds. Moreover it was known that one of the objects of the present count was to find to what extent the breeding population had been upset by the drought. There was, therefore, a tendency to require more positive evidence in 1935 than in 1931 before a pair was entered as breeding, especially as no indication had been given to observers as to what should be counted as breeding birds and what as non-breeding birds.

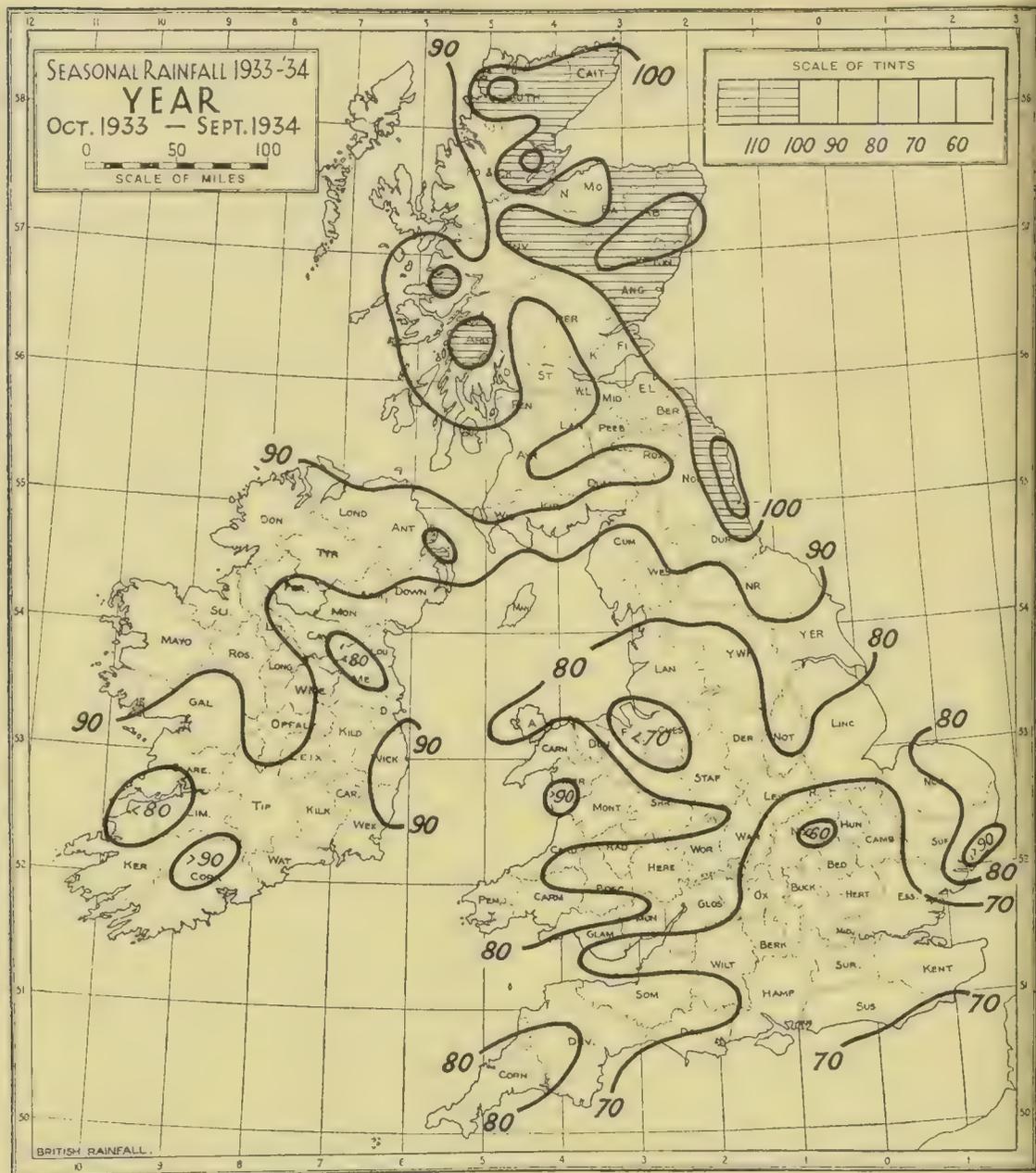
One observer who found two Grebes, evidently paired, on a water and did not see nest or young, but was unable to search the available cover, reported them as a breeding pair. Another observer, on similar evidence, reported non-breeding birds. But the majority did not give their reasons for including birds as breeding or otherwise, and so no attempt has been made to sort the records on a uniform basis ; they have been accepted as they stand.

Consequently the increase in the proportion of non-breeders to breeders has been exaggerated and the 1935 figures for breeding pairs are not strictly comparable with those for 1931, when, generally speaking, pairs present on territories were included as breeding.* Therefore in the tables comparing the 1931 figures with those for 1935 both breeding and non-breeding birds have been included, and the total number of adult Grebes on each water is shown.

*As an example, reference may be made to the last table on p. 80 of the 1931 report (*Brit. Birds*, Vol. XXVI.) which shows that on ten Northamptonshire waters twenty-one of the forty "breeding" pairs did not nest.

THE DROUGHT.

An exceptionally long period of dry weather began in November, 1932, and lasted for two years. Over England and Wales the rainfall for 1933 was 6.6 inches less than the



Rainfall, Seasonal year, as per cent. of average.

average and in 1934 there was a further deficiency of 1.7 inches, in spite of an excess of about 3 inches in December which in many places was the wettest December on record. The year 1935 continued to make good the shortage, and the excess for the year was about 5 inches. In Scotland, although

1933 was an unusually dry year, the average rainfall was exceeded in both 1934 and 1935. On page 140 will be found a map reproduced by kind permission of the Controller of H.M. Stationery Office from *British Rainfall, 1934*, showing the rainfall for the year October 1933 to September, 1934. During these twelve months the deficiency of rain steadily accumulated, and almost reached its peak, and it is therefore perhaps the most significant period of the drought so far as Grebes are concerned.

ACCUMULATED DEFICIENCY OF RAINFALL.
(Taken from *British Rainfall, 1934*).

Period.	England and Wales.		Scotland.
	inches.	inches.	inches.
November 1932 to March, 1933	...	1.7	0.2
.. July, 1933	...	3.5	0.9
.. September, 1933	...	5.8	4.3
.. December, 1933	...	9.7	9.7
.. March, 1934	...	11.4	11.2
.. July, 1934	...	13.1	7.8
.. September, 1934	...	13.1	5.8
.. November, 1934	...	14.9	5.7
.. December, 1934	...	11.5	4.6

The average annual rainfall in England and Wales is 35.2 inches, and in Scotland 50.3 inches.

Although sufficient information is not forthcoming to obtain an exact idea of the extent to which the Great Crested Grebes were affected at the height of the drought, it is clear that there were considerable disturbances and readjustments, particularly in 1934. This is well illustrated by the following examples of some of the more startling changes in that year compared with 1931. At Tatton Mere, Cheshire, there were 7 pairs in 1931 and 2 pairs in 1934; at Tring, Hertfordshire, 25 pairs in 1931, and none in 1934; at Blagdon, Somerset, 12 pairs in 1931 and 3 pairs in 1934; at Hornsea, Yorkshire, 10 pairs in 1931 and about 10 pairs in 1934; at Llangorse, Brecon, 13 pairs in 1931 and 20 pairs in 1934.

Only a small proportion of the waters was still affected by the drought in 1935, and the waters concerned were spread throughout the country, very few areas escaping altogether. The Grebes suffered on only half the waters that were affected in this way, while in three localities (in Essex, Leicestershire and Middlesex) the lower level resulted in a better growth of nesting cover.

The reports on the state of the waters in 1935 are tabulated below.

DROUGHT EFFECTS.

				<i>No. of Waters.</i>	<i>Material Reduction in water level, 1935.</i>	<i>Adverse Effect on Grebes, 1935.</i>
Berks.	...	...	...	22	—	—
Bucks.	...	...	...	11	1	—
Cheshire	...	...	...	36	6	4
Essex	...	...	...	10	1	1
Leics.	...	...	...	12	3	—
Middlesex	...	...	...	9	3	2
Norfolk	...	...	...	15	—	—
Oxford	...	...	...	8	1	—
Somerset	...	...	...	8	—	—
Surrey	...	...	...	18	4	2
Yorks.	...	...	...	15	4	2
Wales	...	...	...	2	—	—
Scotland	...	...	...	26	3	2
Other waters	...	...	...	28	9	5
				220	35	18

DECREASE OF BREEDING PAIRS.

In considering the decrease of breeding pairs it is noteworthy that it is more than covered by the decreases in pairs at reservoirs ; in fact, the decreases in almost every area are due to losses at waters of this type. The net reduction of about 60 pairs at reservoirs is made up as follows :—

			<i>Increase.</i>	<i>Decrease.</i>
Bucks.	Weston Turville	...	—	—
Cheshire	Baddiley	...	—	3
	Bosley	...	0/1	—
	Hurleston	...	1	—
	Sutton	...	—	—
	Walton	...	1	—
Essex	Lea Valley	...	—	17
	Cheshunt	...	—	—
Herts.	Elstree	...	—	3
	Tring	...	—	5/10
	Blackbrook	...	—	2
Leics.	Cropston	...	—	1
	Knipton	...	—	—
	Moira	...	—	1
	Saddington	...	—	—
	Swithland	...	4	—
	Thornton	...	2	—
	Ruislip	...	—	4
Middlesex	Stoke Newington	...	—	2
	Stanford	...	—	12
Northants.	Westhorpe	...	—	6
	Clattercote	...	—	—
Oxford	Clattercote	...	—	—
	<i>Carried forward :</i>		8/9	56/61

		<i>Increase</i>	<i>Decrease</i>
<i>Brought forward:</i>		8/9	56/61
Somerset	Blagdon	—	2
	Chard	1	—
	Litton	—	—
Staffs.	Bellfields	—	6
	Dimmingsdale	—	1
Warwicks.	Wormleighton	—	1
Worcs.	Bittell	—	3
Yorks.	Chelker	—	—
	Gouthwaite	1	—
	Ryhill	2	—
Fife	Kinghorn	1	—
Peebles.	Portmore	1	—
Midlothian	Bavelaw	—	1
	Cobbinshaw	—	2
	Gladhouse	—	—
		14/15	72/77
		Less increases	14/15
			58/62

18 Reservoirs showed decreases totalling 72/77 pairs.
 9/10 " " increases " 14/15 "
 9/10 " " no change —

37 Reservoirs. Net Decrease 58/62 pairs.

It follows that the natural waters show a net increase of about 25 pairs, and it would appear that many local decreases and increases are merely the redistribution of birds between natural waters and reservoirs where the effect of the drought was accentuated.

But much more significant than the failure of the reservoirs to maintain their population of breeding Grebes, is the fact that if the areas counted in 1935 are grouped according to their increase or decrease of nesting pairs, they fall into two main geographical divisions. All the decreases, except the possible one in Cheshire, are confined to counties in the Thames Valley, or those adjacent to them on the north, and in all other areas there is either no change or an increase in the number of breeding pairs. Buckinghamshire is the only county in the Thames Valley group to show an increase. This increase, however, is fully covered by the decrease of 50 birds at the Tring reservoirs (Hertfordshire) which are bordered on two sides by Buckinghamshire, and if Buckinghamshire is considered in conjunction with the neighbouring counties of Northampton, Oxford, Berkshire, Middlesex and Hertfordshire, there is a net decrease of about 26 pairs for the six counties.

AREAS SHOWING INCREASE OF BREEDING PAIRS.

	<i>Breeding Pairs</i>		<i>Non-Breeding Birds.</i>	
	1931	1935	1931	1935
Scotland (Tay and Forth areas) Increase	37	45	0	9
Yorks.	47	48	0	8
Leics.	32	34	0	8
Norfolk	107	110	0	0
South Wales	15	16	0	0
Gloucs.	0	2	0	0
Bucks.	11	17/18	2	15/17

AREAS SHOWING NO CHANGE OR DECREASE OF BREEDING PAIRS.

	<i>Breeding Pairs.</i>		<i>Non-Breeding Birds.</i>	
	1931	1935	1931	1935
Essex Decrease	33	17/18	31	30
Herts.	31	23/28	35	0
Middlesex	15	10	5	27
Surrey	32	27	0	9
Berks.	35/37	34/36	5	13/17
Oxford	15/16	14	0	1
Northants.	33	13	9	35/36
Cheshire (Probable decrease or no change) ...	78	74/80	38	40
Somerset No change	17	17	5	15

These areas of decrease correspond remarkably closely with those parts of the county which received during the year October 1933 to September 1934 only 70 per cent. or less of their average annual rainfall, as shown on the map on page 140.

In the case of counties only partially covered, the area shaded on the map corresponds roughly with the proportion counted rather than with the actual position of the waters visited. Both, however, are combined where possible; for example, the north-eastern half of Surrey is shaded and in Norfolk two-thirds of the county working from the south-east (Broads district). In Gloucester and South Wales (Brecon and Glamorgan), although only some of the possible sites were visited, more Grebes were found than in the complete census of 1931, so the whole counties have been shaded, as decreases there are impossible.

From the sample, then, there appears to be close conformity between the distribution of rainfall and that of the decrease of nesting Grebes. If it is permissible to assume that the sample is fully representative of the whole country, the following calculations may be of interest.

On the waters visited in the counties which in 1933/34 received only 70 per cent. or less of the average rainfall (i.e., Kent, Surrey, Sussex, Hants, Wilts., Berks., Oxon,



Map showing approximately the areas counted in 1935, and the relative density of Great Crested Grebe population compared with 1931.

Bucks., Middlesex, Herts., Essex, Cambs., Beds., Hunts., Northants. and Cheshire) numbers have fallen from 285 pairs in 1931 to 237 pairs in 1935, a decrease of 16.8 per cent. Elsewhere the shortage of rainfall was not so severe and numbers have risen from 255 pairs to 272 pairs, an increase of 6.7 per cent.

In 1931 the counties specified above held about 480 pairs, and a decrease of 16.8 per cent. would amount to a decrease of 81 pairs. The rest of the country in 1931 held about 760 pairs and an increase of 6.7 per cent. would mean an additional 51 pairs, leaving a net decrease for the whole country of 30 pairs. This compares with the decrease of 35 pairs found by the sample count of just under half the country.

Whether or not these assumptions are justified, it does at any rate appear that the sample is unduly weighted towards decrease by the high proportion of Thames Valley counties which have been included.

NON-BREEDING BIRDS.

As already mentioned, the increase of non-breeding birds is probably not so great as it appears, but after full allowance has been made for the stricter proof of breeding required in 1935, there appears to remain some increase of non-breeders. This is particularly the case in the areas which show an increase in the number of breeding pairs; in three of these counties there were no non-breeders in either year, while the other four counties each have increases of eight or more non-breeders. In the areas of decrease of breeding pairs non-breeders have been reduced only in Essex (1 bird) and Hertfordshire (35 birds). In nearly every other county they have increased substantially, and the only counties where breeders and non-breeders combined were appreciably lower in 1935 were Essex, Hertfordshire and Northamptonshire.

It is not known at what age Grebes begin breeding, and until this is ascertained it is impossible to judge with any certainty the significance of an increase in non-breeders. It might be caused by the inability of birds in breeding condition to find suitable nesting sites, to an unusually good hatch in a previous year, or to conditions unusually favourable for the survival of immature birds after the breeding season. However, for the sake of convenience, all birds hatched prior to 1935 are termed adults.

THE INTERMEDIATE YEARS.

In an attempt to follow the fluctuations in numbers in the years 1932, 1933 and 1934, the numbers of pairs at the waters counted in each of those years are listed, together with the

numbers of pairs found on the same waters in 1931 and 1935. The 1931 figure is taken as 100 and the index numbers are therefore as follows:—

				<i>Index Number.</i>
90 waters in 1932 held	147	pairs (approx.)		89
The same waters in 1935	153	„	„	93
and in 1931	165	„	„	100
69 waters in 1933	110	„	„	97
The same waters in 1935	110	„	„	97
and in 1931	113	„	„	100
89 waters in 1934	139	„	„	77
The same waters in 1935	153	„	„	85
and in 1931	179	„	„	100

But in no case do these groups of waters give the index number of 94 for the year 1935 which as shown on page 139 applies to the sample as a whole. This number of 94, based on about 560 pairs is taken as being more accurate than those obtained by considering the pairs counted in 1932, 1933 or 1934, and it is therefore considered reasonable to adjust the index number for 1935 in each case to 94, and to make a proportionate adjustment to the index numbers for the years 1932, 1933 and 1934. Thus to adjust the index number in the first group of waters (those counted in 1932) it is necessary to divide the numbers for 1932 and 1935 by 93, and multiply by 94; this gives the index number of 90 for 1932 and the required number of 94 for 1935. From the second group it appears that the same number of pairs bred in 1933 as in 1935, and the index number of 94 therefore applies to both these years. In the last group the index numbers are adjusted on the same principle as in the first group, giving an adjusted number of 85 for the year 1934. We therefore arrive at the following:—

<i>Adjusted Index Number.</i>	
1931	100
1932	90
1933	94
1934	85
1935	94

These figures suggest that the decrease observed in 1931 was continued in 1932; that a recovery in numbers took place in 1933, but that in 1934, as a result of the drought, the numbers fell again sharply. It must be stressed that these figures should not be taken as anything more than an indication of the fluctuations of Grebes, because they are arrived at in such a roundabout fashion, because different waters

comprised the groups reported on in each of the years 1932 to 1934 and because only 10 to 15 per cent. of the breeding pairs were counted in these three years.

THE AREAS COUNTED.

(A) COUNTIES COMPLETELY COVERED.

Berkshire. Three waters were deserted which had been occupied in 1931. Theale Gravel Pit is the only water which has been colonized since 1931, but several old localities, deserted in that year have been re-occupied and this has done much to offset the decrease of breeding pairs in Windsor Park (Virginia Water and Great Meadow Pond). At these waters the decrease in breeding pairs was accompanied by a corresponding increase in non-breeders, so that there was an increase in the total number of adults for the county as a whole. None of the waters were materially reduced in 1935 by the drought.

Buckinghamshire. Two new waters, Rowley Lake and Black Park, have been colonized and two waters have been deserted. Wotton is responsible for the 1935 increase of breeding and non-breeding birds in the county. The fluctuations here are interesting: in 1925 and 1926 four to six pairs bred. There were three pairs in 1930, probably none in 1931 and 1932, but in June, 1935, 20 adults were present, of which five or six pairs were nesting. It seems natural to connect this increase with the great decrease at Tring. The total population of the county has been more than doubled, having increased from 24 to 51 birds. Colnbrook by-pass gravel pit was reduced by the drought but the Grebes did not suffer.

Cheshire. Five waters have been newly colonized since the census year and an additional three waters, deserted in 1931, have been reoccupied. The attempt at Hurleston, one of the newly colonized waters, failed because of a drop in the level. Of the five waters occupied in 1931 but not in 1935, lack of water was the cause of desertion of Doddington and Oakmere, but not of Billinge Green, Thornycroft and Witton Flashes. At Tatton only half the birds were able to breed because of the lower water level. The number of Grebes in the county is unchanged at about 194.

Essex. This is the only completed county to show a serious decline in the total number of Grebes present in 1935. The population of the thirteen reservoirs, forming the Lea Valley group has been nearly halved and the number of breeding pairs reduced from twenty-four to seven. These reservoirs were at their normal level in 1935, but had been low in 1934. Pollution caused the desertion of Dagenham. At Navestock Park an extensive plant growth developed on the bed of the lake in 1934. This was submerged in 1935 when the water recovered to its normal level, and in April the banks were found to be lined with putrefying roach and other small fish, killed, it was suggested, by gases given off from the decaying vegetation. Wormingford decoy was reoccupied and Sewardstone Gravel Pit and Eagle Pond have been colonized.

Leicester. No new waters have been colonized, but numbers have increased in spite of two desertions. Three other waters showed decreases, and there were increases at four waters, but Mr. H. Kenrick was unable to find much connexion between these changes and the drought. Most of the waters which had been reduced in 1933 and 1934 had recovered to their normal level in 1935.

Middlesex. Ashford Gravel Pit is the only newly colonized water. At Ruislip pumping, boating and bathing combined to prevent the Grebes from nesting, and at Stoke Newington one reservoir was dry.

On the other the usual weed growth failed, so that the only pair which nested was compelled to do so on the grassy bank clear of the water. Nowhere else were drought effects noticed in 1935. By reason of a large increase in non-breeders the number of adults rose from 35 to 47. The non-breeding birds on the large Thames Valley reservoirs, both in Middlesex and Surrey, have not been included because counts for all of them are not available, but it is certain that on these also non-breeders have increased.

Oxfordshire. The most interesting record from this county is the breeding of a pair of Grebes in 1934 and 1935 on an island in the Thames near Shiplake. No other new sites were occupied (there are practically none available) and Shelswell Park had only a single bird. Clattercote reservoir was almost dry in 1934 and still several feet below normal in 1935, but two broods were successfully hatched out. There was a very slight reduction in the total number of Grebes in the county.

Somerset. Mr. Stanley Lewis was the only observer able to supply details for an entire county for the years 1932 to 1934; there were 20 pairs in 1932 and 1933, and 12 pairs in 1934. Blagdon reservoir suffered severely in 1934, and very few birds were seen, but there were many at Barrow where there is no cover for breeding. Numbers at natural waters were slightly above average in that year. In 1935 the same number of pairs bred as in 1931, but the non-breeders increased by 10 birds. Chew Magna was deserted because of cleaning operations.

(B) COUNTIES PARTIALLY COVERED.

In none of the counties under this heading do the waters counted form a complete unit, with no unvisited waters intervening.

Devon. In 1931 Slapton was the only water occupied, holding one pair. In 1935 at least one pair was breeding and four adults were seen in July, so there has certainly been no decrease in the county. One pair bred at Blagdon Lake, Ashwater, in 1933 and 1934.

Gloucester. The only water which held a pair in 1931 was drained in that year, and the waters which held pairs in 1935 were the only two about which information was received.

Hertfordshire. In 1931 ten waters were occupied. Seven of these were visited in 1935 and held 18 to 23 pairs as against 31 pairs in 1931. There were also five pairs on a recently colonized gravel pit. Full details of the effect of the drought at Tring and Elstree have already appeared in *British Birds* (Vol. XXVIII., pp. 250/256, and Vol. XXIX., pp. 28/29), but it should be remembered that these effects must have repercussions elsewhere and this area should be considered in conjunction with the neighbouring counties of Buckinghamshire, Middlesex and Essex. Possibly the fall in numbers at the Lea Valley reservoirs (Essex) in 1935 was due to the refilling and consequent re-occupation of Tring, which was virtually dry in 1934.

Norfolk. The count was confined to the broads, which in 1931 held about sixty per cent. of Norfolk's Grebes. Fourteen broads were counted and held 110 pairs in 1935, (107 pairs in 1931) but there were a number of broads which were not visited. No alterations in water level were reported.

Surrey. In 1931 twenty-five waters held 47 pairs. Thirteen of these waters, nearly all in the north and east of the county, were visited in 1935 and held 25 pairs (32 pairs in 1931). In addition two waters, unoccupied in 1931, held one pair each. The level of four lakes was reduced but the birds suffered only at Obelisk Pond and at Godstone. No explanation of the great decrease at Gatton was forthcoming.

South Wales. The two waters occupied in 1931 were the only ones reported on in 1935, and show an increase of one pair. It is interesting

that in 1934 there were 20 pairs at Llangorse, or six pairs more than in any other year for which records are available.

Scotland. The count was confined to the Forth and Tay areas where the majority of the 1931 localities were revisited. Drought reduced some of the Midlothian reservoirs and Portmore reservoir, Peebleshire, but its influence could not be traced anywhere in the Tay area. Mr. H. Boase reports that in the area which he works in the Tay valley the numbers have increased from approximately 25 pairs in 1926 to 31 pairs in 1931 and to 41 pairs in 1935. As already noted elsewhere, the drought was much less severe in Scotland than in England and Wales.

ACKNOWLEDGMENTS.

The names of those who assisted in the count are given below, and I should like particularly to thank those who made themselves responsible for specified areas, as shown on the detailed list of waters visited.

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SUMMARY.

1. A sample count of slightly less than half the Great Crested Grebe population of Great Britain was made in 1935. Scottish, Welsh, Northern, Midland and particularly Thames Valley waters were included.

2. The total counted, about 1,300 birds, showed an increase of 3 per cent. since the complete census of 1931. The number of breeding pairs had fallen by 6 per cent. and there was a considerable increase in non-breeding birds.

3. An analysis by counties of the numbers of breeding pairs shows that the decreases were practically confined to the Thames Valley and that there were increases in most other areas.

4. The counties which suffered most at the height of the drought of 1933/34, receiving only 70 per cent. or less of their average annual rainfall, were likewise in south-east England, which suggests a connexion between the decrease of nesting Grebes and shortage of rainfall. Cheshire was the only county

outside this area to have a similar deficiency of rainfall and there, too, there were indications of a decrease of Grebes.

5. By the summer of 1935 the effects of the drought had largely disappeared and in only a few instances were Grebes reported to be adversely affected. Decreases of breeding pairs were most noticeable at reservoirs.

6. Owing to a tendency to require stricter proof of breeding in 1935 than in 1931 and to the inclusion in the sample of a high proportion of the counties where the shortage of rainfall was most acute, it is probable that over the whole country the decrease of breeding pairs, and increase of non-breeding birds is less than is indicated by the sample count.

In conclusion, the effect of the drought on the Grebes as revealed in 1935 was slight. One would have expected to find a considerable reduction in the number of adults if nesting operations had been severely interfered with in the drought years of 1933 and 1934, but actually numbers were rather higher in 1935 than in 1931. The Grebe population of Great Britain would therefore appear to be in a very healthy state, ready to take advantage of more settled conditions in the future.

	1935			1931		
	Breed- ing Pairs.	Non-B. Birds.	Total Adults.	Breed- ing Pairs.	Non-B. Birds.	Total Adults.
BERKSHIRE (<i>Oxford Ornithological Soc.</i>)						
Aldermaston Park, Big Lake	1	0	2	1	0	2
Decoy Pond	1	0	2	0	0	0
Ascot Place	1	0	2	2?	0	4
Bearwood Lake	2/3	0/2	6	3	0	6
Binfield Brick Works ...	1	0	2	—	2 (?)	2
Buckland House	0	0	0	1	0	2
Buscot Lake	4	0	8	3/4	0	6/8
Buscot House Reservoir ...	1	0	2	1	0	2
Buscot Little Lake	1	0	2	1	0	2
Bulmershe, North Lake ...	1	0	2	0	0	0
South Lake*	1	0	2	0	0	0
Faringdon Park	0	0	0	1	0	2
Foliejon Park	0	0	0	1	0	2
Great Meadow Pond	4	5	13	6/7	0	12/14
Oakfield, Millbarn Pond ...	1	0	2	1	0	2
Queensmere	1	0	2	1	0	2
Silwood Park	1	0	2	1	0	2
Sunninghill Park Gt. Pond	2	0	4	1	0	2
Theale Gravel Pit	1	0	2	0	0	0
Virginia Water	c.7	c.8	22	10	3	23
Whiteknights Lake	2/3	0/2	6	1	0	2
Wokingham, Heath Lake ...	1	0	2	0	0	0
	34/36	13/17	85	35/37	5	75/79

* Bulmershe, South Lake. Six non-breeders were subsequently reported, in addition to the breeding pair.

	1935			1931		
	<i>Breed- ing Pairs.</i>	<i>Non-B. Birds.</i>	<i>Total Adults.</i>	<i>Breed- ing Pairs.</i>	<i>Non-B. Birds.</i>	<i>Total Adults.</i>
BUCKINGHAMSHIRE (<i>Oxford Ornithological Soc.</i>)						
Blackpit, Lillingstone Dayrell	0	0	0	1	0	2
Black Park, Langley ...	1	0	2	0	0	0
Chess River, Latimer House	1	0	2	2	0	4
Claydon Park, Lower Pond	0	0	0	1	0	2
Colnbrook By-pass Gravel Pit	3	0	6	2	0	4
Rowley Lake, George Green	1	0	2	0	0	0
Shardeloes Park ...	1	0	2	1	0	2
Stowe Park, Large Lake ...	2	0	4	1	0	2
Weston Turville Reservoir	3(?)	7(?)	13	3	0	6
Wotton Park (2 Lakes) ...	5/6	8/10	c.20	—	2	2

17/18 15/17 51 11 2 24

CHESHIRE

(A. W. Boyd)

Alsager Mere ...	1	0	2	—	0	—
Baddiley Mere (Reservoir)	1	1	3	4	0	8
Barmere ...	2	0	4	2	0	4
Billinge Green ...	0	0	0	1	0	2
Bosley Reservoir ...	1/2	1	3/5	1	0	2
Cholmondeley Castle ...	1/2	0	2/4	2	0	4
Combermere... ...	7	0	14	8	0	16
Crewe Hall ...	1	0	2	2	0	4
Cotebrook ...	1	0	2	0	0	0
Doddington Park ...	0	10	10	7	0	14
Elton Hall Flash ...	1	0	2	0	0	0
Hurleston Reservoir ...	1	2	4	0	0	0
Little Budworth Pool ...	1	0	2	1	0	2
Marbury Mere, Gt. Budworth	3/4	4/6	12	1	0	2
Marbury Mere, S. Cheshire	2	0	4	6	0	12
Mere Mere ...	2	0	4	1	0	2
North Rode ...	1/2	0	2/4	1	0	2
New Pool, Whitegate ...	1	0	2	0	0	0
Norbury Booths ...	1	0	2	0	0	0
Oakmere ...	0	0	0	1	0	2
Oulton Pool ...	7	0	14	4	0	8
Pettypool ...	3	0	6	1	0	2
Radnor Mere ...	1	0	2	2	0	4
Redesmere ...	2	5	9	2	0	4
Rosterne Mere ...	10/11	0	20/22	16	15	47
Rode Heath ...	2	0	4	0	0	0
Quoisley Meres ...	1/2	0/2	4	0	0	0
Sutton Reservoir ...	1	0	2	1	0	2
Tabley Mere ...	3	0	6	2	0	4
Tatton Mere... ...	3	7	13	7	23	37
Thornycroft ...	0	0	0	1	0	2
Tilstone Lodge Pool ...	1	1	3	1	0	2
Walton Reservoir ...	2	1	5	1	0	2
Witton Flashes ...	0	c.6	c.6	1	0	2
Winsford Top Flash ...	10	0	20	1	0	2

74/80 38/42 190/198 78 38 194

	1935			1931		
	Breed- ing Pairs.	Non-B. Birds.	Total Adults.	Breed- ing Pairs.	Non-B. Birds.	Total Adults.
DERBYSHIRE						
Kedleston Park Lakes—I.	1	0	2	0	0	0
II.	1	0	2	0	0	0
III.	0	0	0	0	0	0
	2	—	4	0	—	0
DEVONSHIRE						
Slapton Ley	1/2	0/2	4	1	0	2
Blagdon Lake, Ashwater ...	0	0	0	0	0	0
	1/2	0/2	4	1	—	2
ESSEX						
<i>(London Nat. History Soc.)</i>						
Braxted Park	2	0	4	1	0	2
Dagenham Breach	0	0	0	1	0	2
Eagle Pond, Snaresbrook ...	1	0	2	0	0	0
Gosfield Park	2/3 (?)	0	4/6 (?)	4	0	8
Great Hallingbury Park ...	1	0	2	1	1	3
Lea Valley Reservoirs (13) ...	7	28	42	c.24	30	78
Navestock Park(Dudbrook Lake)	0	0	0	1	0	2
Sewardstone Gravel Pit ...	2	2	6	0	0	0
Thorndon Park	1	0	2	1	0	2
Wormingford Decoy	1	0	2	0	0	0
	17/18	30	64/66	33	31	97
GLOUCESTERSHIRE						
Cirencester Park	1	0	2	0	0	0
Tortworth Court	1	0	2	0	0	0
	2	0	4	0	0	0
HERTFORDSHIRE						
Cheshunt	2	0	4	2	0	4
Elstree Reservoir	0	4	4	3	0	6
Hamper Mill Gravel Pit ...	5	14	24	0	0	0
Tring (4 Reservoirs)	15/20	0	30/40	25	35	85
Wormley Bury	1	0	2	1	0	2
	23/28	18	64/74	31	35	97
LEICESTERSHIRE						
<i>(H. Kenrick)</i>						
Belvoir Fish Ponds	3	0	6	4	0	8
Blackbrook Reservoir	0	0	0	2	0	4
Cropston Reservoir	2	0	4	3	0	6
Groby Pool	4	0	8	3	0	6
Knipton Reservoir	5	0	10	5	0	10
Moir Reservoir	1	1	3	2	0	4
Saddington Reservoir	2	0	4	2	0	4
Stapleford Park	0	0	0	2	0	4
Staunton Harold	1	0	2	1	0	2
Swithland Reservoir	8	0	22	4	0	8
Thornton Reservoir	4	1	9	2	0	4
Willesley Lake	4	0	8	2	0	4
	34	8	76	32	0	64

		1935			1931		
		<i>Breed-</i>	<i>Non-B.</i>	<i>Total</i>	<i>Breed-</i>	<i>Non-B.</i>	<i>Total</i>
		<i>ing</i>	<i>Birds.</i>	<i>Adults.</i>	<i>ing</i>	<i>Birds.</i>	<i>Adults.</i>
		<i>Pairs.</i>	<i>Birds.</i>	<i>Adults.</i>	<i>Pairs.</i>	<i>Birds.</i>	<i>Adults.</i>
LINCOLNSHIRE							
Raucely Hall	... ..	1	0	2	0	0	0
MIDDLESEX							
<i>(London Nat. History Soc.)</i>							
Ashford Gravel Pit	... ..	1	0	2	0	0	0
Feltham Gravel Pit	... ..	c.4	0	c.8	4	4	12
Gunnersbury Park	... ..	1	0	2	1	0	2
Hatton Gravel Pit	... ..	0	9	9	0	0	0
Osterley Park	... ..	3	0	6	2	0	4
Ruislip Reservoir	... ..	0	14	14	4	0	8
Stoke Newington Reservoir	... ..	1	4	6	3	1	7
Teddington	... ..	?	?	?	0	0	0
Trent Park	... ..	0	0	0	1	0	2
		10	27	47	15	5	35
NORFOLK							
<i>(Lt. Col. I. B. H. Benn and B. B. Rivière)</i>							
Filby Broad	... ..	9	0	18	9	0	18
Hickling Broad	... ..	9	0	18	9	0	18
Horse Mere	... ..	3	0	6	3	0	6
Hoveton, Big Broad	... ..	9	0	18	6	0	12
Little Broad	... ..	12	0	24	7	0	14
Snipes Water	... ..	1	0	2	1	0	2
Hudson Bay	... ..	2	0	4	1	0	2
Ranworth, Inner	... ..	14	0	28	22	0	44
Outer	... ..	4	0	8	4	0	8
Rollesby Broad	... ..	19	0	38	20	0	40
Ormesby Broad	... ..	12	0	24	12	0	24
Salhouse Broad	... ..	3	0	6	3	0	6
S. Walsham, Inner & Outer	... ..	c.8	0	c.16	7	0	14
Upton Big Broad	... ..	2	0	4	(Not counted 1931)		
Woodbastwick, Decoy Broad	... ..	5	0	10	3	0	6
Cockshoot Broad	... ..	1	0	2	(Not counted 1931)		
Old Hall Broad	... ..	1	0	2	(Not counted 1931)		
Total (excluding Broads not not counted 1931)	... ..	110	0	220	107	0	214
NORTHAMPTONSHIRE							
Ashby St. Led., High P., Armills	... ..	2	2	6	3	1	7
Canons Ashby, Upper Lake	... ..	0	0	0	1	0	2
Lower Lake	... ..	1	0	2	1	0	2
Stanford Reservoir	... ..	10	25/26	45/46	c.22	0	c.44
Westhorp, Upper Reservoir	... ..	0	2	2	0	2	2
Lower Reservoir	... ..	0	6	6	6	6	18
		13	35/36	61/62	33	9	75

	1935			1931		
	Breed- ing Pairs.	Non-B. Birds.	Total Adults.	Breed- ing Pairs.	Non-B. Birds.	Total Adults.
OXFORDSHIRE						
<i>(Oxford Ornithological Soc.)</i>						
Blenheim Park, Upper Lake	3	0	0	3	0	0
Main Lake	5	0	10	5/0	0	10 12
Bladon Water	0	0	0	2	0	4
Clattercote Reservoir ...	2	0	4	2	0	4
Eynsham Hall ...	2	0	4	1	0	2
Kirtlington Park ...	1	0	2	1	0	2
River Thames, near Shiplake	1	0	2	0	0	0
Shelswell Park ...	0	1	1	1	0	2
	14	1	29	15/16	0	30 32
SHROPSHIRE						
Norton Mere ...	2	0	4	2	0	4
SOMERSETSHIRE						
<i>(S. Lewis)</i>						
Blagdon Reservoir ...	10	0	20	12	0	24
Barrow Gurney Reservoir	0	c. 15	c. 15	0	4	4
Chew Magna ...	0	0	0	1	0	2
Chard Reservoir ...	1	0	2	0	0	0
Litton Reservoir, Upper	1	0	2	1	0	2
Lower ...	1	0	2	1	0	2
Marston Park ...	2	0	4	0	1	1
Orchardleigh ...	2	0	4	2	0	4
	17	15	40	17	5	39
STAFFORDSHIRE						
Bellfields Reservoir ...	0	c. 9	c. 9	0	0	12
Betley ...	3/4	0/2	8	2	0	4
Dimmingsdale, Pool Hall ...	0	3	3	1	0	2
Small Pool	0	0	0	1	0	2
Park Pool, Weston ...	2	0	4	1	0	2
White Sitch ...	2	0	4	1	0	2
	7/8	c. 13	28	12	0	24
SURREY						
Beddington Lane, North G.P.	0	2	2	0	0	0
Bury Hill, Dorking...	2	0	4	1	0	2
Frensham, Great Pond	8	0	10	6	0	12
Little Pond ...	2	0	4	2	0	4
Gatton Park... ..	1	0	2	9	0	18
Godstone, Bay Pond	1	0	2	1	0	2
Ivy Mill ...	0	0	0	0	0	0
Hedgecourt	4	0	8	3	0	6
Mitcham Junction Gravel Pit	1	0	2	0	0	0
Penn Ponds, Richmond ...	2	0	4	3	0	6
Silvermere	1	0	2	1	0	2
South Norwood Lake ...	1	0	2	0	0	0
Walton Gravel Pit ...	0	3	3	0	0	0
<i>Carried forward:</i>	23	5	51	26	0	52

		1935			1931		
		<i>Breed-</i>	<i>Non-B.</i>	<i>Total</i>	<i>Breed-</i>	<i>Non-B.</i>	<i>Total</i>
		<i>ing Pairs.</i>	<i>Birds.</i>	<i>Adults.</i>	<i>ing Pairs.</i>	<i>Birds.</i>	<i>Adults.</i>
SURREY — <i>continued</i>							
<i>Brought forward:</i>		23	5	51	26	0	52
Weybridge Mill Pond	...	1	0	2	1	0	2
Seven Arches		1	0	2	1	0	2
Wimbledon	... ..	0	4	4	2	0	4
Windsor Park, Obelisk	...	1	0	2	1	0	2
Wire Mill, near Lingfield	...	1	0	2	1	0	2
		27	9	63	32	0	64
WARWICKSHIRE							
Wormleighton Reservoir	...	0	2	2	1	0	2
WILTSHIRE							
Stourton, Upper	... ..	1	0	2	1	0	2
Lower	... ..	1	0	2	1	0	2
		2	0	4	2	0	4
WORCESTERSHIRE							
Bittell Reservoir, Upper	...	0	c.2	c.2	0	10	10
Lower	...	3	0	6	6	0	12
		3	2	8	6	10	22
YORKSHIRE							
<i>(H. B. Booth)</i>							
Bretton Park, Upper Lake		0	0	0	0	0	0
Lower Lake		2	1	5	2	0	4
Castle Howard	... ..	2	0	4	2	0	4
Chelker Reservoir	... ..	1	2(?)	4(?)	1	0	2
Coniston Cold	... ..	1	0	2	0	0	0
Dringhouses	... ..	3	0	6	3	0	6
Eshton Tarn	... ..	0	0	0	0	0	0
Fairburn	... ..	7	0	14	16	0	32
Gouthwaite Reservoir	...	2	0	4	1	0	2
Harewood Park	... ..	2	0	4	2	0	4
Hornsea Mere	... ..	16	5	37	10	0	20
Malham Tarn	... ..	1	0	2	1	0	2
Ryhill Reservoir	... ..	9	0	18	7	0	14
Walton Park	... ..	1	0	2	1	0	2
Wiganthorpe	... ..	1	0	2	1	0	2
		48	8	104	47	0	94
BRECONSHIRE							
Llangorse Lake	... ..	14	0	28	13	0	26
GLAMORGAN							
Hensol Lake	... ..	2	0	4	2	0	4

	1935			1931			
	Breed- ing Pairs.	Non-B. Birds.	Total Adults.	Breed- ing Pairs.	Non-B. Birds.	Total Adults.	
ANGUS (H. Boase)							
Ardgarth (Lundie)	1	0	2	(Not counted 1931)		
Balgavies	3	0	6	1	0 2	
Duns Dish	0	0	0	1	0 2	
Forfar	3	0	6	(Not counted 1931)		
Fithie	1	0	2	(Not counted 1931)		
Lintrathen	6	0	12	2	0 4	
Lochendores...	1	0	2	1	0 2	
Rescobie	1	0	2	2/4	0 4/8	
Thriepley	2	0	4	0	0 0	
		13	0	26	7	0 14 18	
		(excluding waters not counted in 1931)					

FIFESHIRE

Lindores	3	0	6	8	0 16
Kinghorn Reservoir	...	2	2	6	1	0 2
		5	2	12	9	0 18

KINROSS

Leven	12	0	24	8	0 16
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PEEBLESSHIRE

Portmore Reservoir	...	1	0	2	0	0 0
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PERTHSHIRE

(H. Boase)

Clunie	2	0	4	1	0 2	
Craiglush	1	0	2	0	0 0	
Fingask	1	0	2	(Not counted 1931)		
Lowes ... ..	...	2	0	4	0	0 0
Marlee ... ..	...	4	0	8	2	0 4
Ochertyre ... ..	...	0	0	0	1	0 2
Rae ... ..	...	1	0	2	1	0 2
Stormont ... ..	...	3	0	6	2/3	0 4/6
		13	0	26	7	0 14/16	
		(excluding Fingask)					

MIDLOTHIAN

(Midlothian Ornithological Club)

Bavelaw Reservoir	...	0	0	0	1	0 2
Cobbinshaw Reservoir	...	0	2	2	2	0 4
Gladhouse Reservoir	...	1	2	4	1	0 2
Harperrig Reservoir	...	0	1	1	0	0 0
Thriepmuir Reservoir	...	0	2	2	0	0 0
		1	7	9	4	0 8

CORRECTIONS AND ADDITIONS TO THE GREAT CRESTED GREBE ENQUIRY, 1931.

Several inaccuracies in the report on the Great Crested Grebe Enquiry of 1931 (*British Birds*, Vol. XXVI., pp. 62/92, 102/131, 142/195) have come to light since the publication of the list of corrections and additions at the end of the report. These are as follow:—

p. 69. Buckinghamshire, Wotton Park: Two birds were seen, but probably none nested in 1931 (*cf. Report of the Oxford Ornithological Society* for 1932, pp. 58/59).

p. 73. Essex, Navestock Park and Dudbrook Lake are the same locality. Dudbrook Lake should therefore be deleted from the list of waters unoccupied in 1931 (W. E. Glegg and B. T. Ward).

p. 76. Leicestershire, Stapleford Park. Two pairs nested in 1931 and not four pairs as given in the report (H. R. Jasper).

p. 79. Norfolk: Upton Broad and Woodbastwick Cockshoot and Old Hall Broads were not reported on in 1931. They held 4 pairs in 1935, as is usual (B. B. Rivière).

pp. 79/80. Northamptonshire: W. B. Alexander has drawn attention to the dates of occupation of the following waters given in Lilford's *Notes on the Birds of Northamptonshire*.

Blatherwycke: 2 pairs (at least one bred), 1886.

Canon's Ashby: Pair shot in April, 1886.

Fawsley: Bred in 1885 and 1886, 5 in April, 1890, 4 in March and one pair bred 1891.

Naseby Reservoir: 10 in April, 1884.

Welford: Pair in June, 1884.

p. 89. Yorkshire: Renishaw Park, Sheffield: One pair bred in 1931 and for many years previously, but not in 1930 (H. B. Booth).

p. 289. Midlothian, Scotland: Thriepmuir and Bavelaw reservoirs adjoin and sometimes both are called Thriepmuir. In 1931 one pair bred on Bavelaw, none on Thriepmuir (Midlothian Ornithological Club).

These alterations leave the figure for the total number of Great Crested Grebes in the country in 1931 unchanged.

FURTHER NOTES ON ORIELTON DECOY, 1935-36

BY

C. W. MACKWORTH-PRAED AND H. A. GILBERT.

THE migration of ducks seems to have been late on the west coast in the autumn of 1935 probably owing to the fact that westerly gales were almost continuous during October and November. The first Wigeon (*Anas penelope*)—a party of four—were seen on September 9th—an early date. The first Shovelers (*Spatula clypeata*) arrived on November 3rd.

A count was taken on various dates and showed as follows:—

November 8: Mallard, 80; Teal, 250; Shoveler, 30; Wigeon 50-60; Pochard, 7.

November 13: Mallard, 80; Teal, 450; Shoveler, 30; Wigeon, 70; Pochard, 15; Tufted Duck, 5.

These numbers remained fairly constant until from December 1st wild fowl began to arrive in greater numbers. On the 9th there were between 1,100 and 1,200 birds on the pond. On the morning of December 13th a large number arrived and over 3,000 birds could be seen. A count of the Teal (*Anas c. crecca*) was taken—a matter of considerable difficulty. There were at least 2,300. This was the maximum reached. From then onwards the ducks varied in numbers according to the weather. After heavy rain the numbers would drop greatly—as low as 150. The average number in dry weather varied between 800 and 1,200 for some weeks until on January 26th the bulk of the fowl left the district.

The catch of "various" included a Little Grebe (*Podiceps ruficollis*), a Heron (*Ardea cinerea*) and a Woodcock (*Scolopax rusticola*).

Moor-Hens (*Gallinula chloropus*) and Coots (*Fulica atra*) were ringed and released at a distance. It was discovered that they had considerable homing instinct and usually returned to the pond. One Coot returned from 25 miles, and Moor-Hens from a maximum of 15 miles away.

The sexes of several species of duck were taken when caught and ringed and females were found to predominate to a marked degree.

A catch containing more males than females was rare. On Christmas Day, however, there was a catch of 20 male Teal to 10 females. It may be that females are more unsuspecting than males, and therefore were caught in disproportionate numbers. A count was made on three occasions of the sexes of Shoveler and of detached flocks of Teal. It was found that females largely predominated.

TEAL.			WIGEON.		
	<i>Male.</i>	<i>Female.</i>		<i>Male.</i>	<i>Female.</i>
1934			1935		
December ...	11	22	February ...	2	2
			November ...	0	1
			December ...	7	16
1935			1936		
January ...	27	20	January ...	17	25
February ...	9	21		26	44
March ...	5	0			
September ...	0	3	SHOVELER		
October ...	4	36		<i>Male.</i>	<i>Female.</i>
November ...	50	108	1935		
December ...	132	201	November ...	0	7
			December ...	10	7
1936			1936		
January ...	26	53	January ...	0	5
February ...	15	32	February ...	1	6
				11	25
	279	496			

Many birds were caught twice or more in the decoy. In fact, our recaptures numbered as many as 811. One Teal (206) was recaptured over 30 times. A Wigeon "dogged" into one pipe early one morning, was fed into another pipe and recaptured during the afternoon of the same day.

No Gadwall were seen. Goosanders visited us on two occasions.

The accompanying map shows the returns of Teal we have obtained this year—no other species having been sufficiently often recorded to justify tabulating.

The Galician record shown on the map should be regarded with suspicion. This was of a bird wing-clipped and released in Sussex, and when its feathers grew again it made off south-westward apparently as it would normally have done from its breeding ground. A companion bird—not shown on the map—stayed in Sussex and was shot there the following winter.

Four birds also, ringed by us in January or February, were recovered at the decoy or locally on the return from their breeding grounds in the autumn.

One rather notable point is the date of the records. The Irish records range from October to February, showing that our birds pass on westward at any time in the winter. On the other hand, the whole of our English and Welsh records, outside our own neighbourhood, were late—either late January or February; while all our Continental records except one were later still—February to April. This would appear to show that as a rule birds do not leave us in an eastward

direction till they are beginning to think of their return migration, and that then they either strike north-eastward across England or go south to the coast of France and then follow the Channel. The one exceptional record is that of a bird ringed by us in November and caught again in a decoy in Holland on January 1st.



Of the further records, one came from Pskov in Russia in August where it had a brood of 9 young ; another on May 16th from much the same district a little farther eastwards. The latest record came from 69°N. within the Arctic Circle, on the Norwegian coast on May 28th. The two Danish returns were both of birds in autumn, September and November, presumably on their way back to us.

NESTING OF THE PINTAIL IN KENT AND SUSSEX.

BY

N. F. TICEHURST, O.B.E., M.A., F.R.C.S. ENG.

ALTHOUGH for a considerable time I have had almost conclusive evidence that the Pintail (*Anas a. acuta*) has occasionally nested in the Romney Marsh-Dungeness area, I long ago determined to let this accumulate until I could produce a certain case at first hand. Now that I am at last in a position to do so, it seems to be a suitable occasion to put the rest of the evidence on record.

Up to the summer of 1909 (*cf. Hist. of the Birds of Kent*, p. 354) there was no reason for regarding the Pintail as other than a winter visitor to this area, somewhat irregular in appearance and very variable in numbers from year to year, while records of it later in the spring than the middle of April were very few. This is still true in the main, though I should now amend it by saying that in some years there is a considerable passage of migrants in March and early April, while in most years stragglers are to be seen at a later date and may sometimes remain to nest. It is probable I think that this is not actually a new thing, but has merely been established by the increased number of observations that have been made during the last twenty-five years in the localities the Pintail is known to frequent. Except for the war years, when no visits were made to these haunts, I have notes of one or two pairs having been seen in the latter half of April or in May (even so late as the 28th) in every year except 1911, 1921, 1924 and 1935.

On August 28th, 1909, I examined an adult drake, in eclipse plumage, immediately after it had been shot at the decoy pond in the parish of Peasmarsh. This is on higher ground that forms the southern boundary of the Rother valley a short distance above where it debouches into Romney Marsh. (*British Birds* Vol. III., p. 265). The question at once occurred to me: "What had this bird been doing there at that extraordinary date?" and there flashed across my mind the somewhat extravagant answer: "perhaps it was one of a pair that had stayed behind to nest in the marsh."

The next year, 1910, was one of the infrequent ones in which the Pintail occurs in really large numbers. I have never before, or since, seen so many as were to be seen on the flood water at Fairfield in the early days of April that year. Teal, Wigeon and Shoveler were also present in very large numbers. By April 10th, however, the water had been pumped away

and though a good many ducks of all species were still present, most had gone before the 16th and on that day I failed to find any Pintail at all. In that year I did not visit the other fleets myself, which as it turned out was a serious omission for at the end of August I received a letter from Mr. F. Finn of which the following is an extract: "In May our 'Looker' found me a nest, which he said was a 'Shoveler's,' and, as I wanted some eggs for hatching, he directed me to it. The duck had commenced to sit, but flew off before I was close enough to see her properly. Unfortunately I took it for granted that our man knew a Shoveler too well to make a mistake and I accordingly took the eggs—five in number—home and hatched them under a hen. One of these died when a week old and a second was killed by a rat. But the strange part of it is that they turn out to be Pintail. At least so far as I am able to identify them. . . . If you should care to run down and have a look at them any time I shall be only too pleased to see you and show them to you."

In accordance with this invitation I went over to Mr. Finn's farm at St. Mary's-in-the-Marsh on September 24th with the late Michael J. Nicoll, and Mr. Finn showed us the two birds. They were on a small, wire-enclosed pond in company with about a dozen young Mallard that he had also reared. They had been pinioned and were quite tame, coming for food quite close to our feet. We were both agreed that the birds were unquestionably young Pintail, apparently duck and drake, and there was no reason for doubting the story that they had been reared from eggs taken from a nest in the Marsh. Mr. Finn told us that the fifth egg was cracked and so did not hatch, and that the nest was in a tuft of grass, that barely sufficed to hide the bird, in the middle of a very large and bare grass field, that he subsequently pointed out to us, in the vicinity of the fleets. He also remarked that he took no trouble to identify the duck when she left the nest, feeling confident that the "Looker" knew a Shoveler duck when he saw it.

On May 28th, 1922, Fred Austen, the Dungeness watcher, reported to me that a pair of Pintail were to be seen on some marshy ground on the outskirts of Dungeness near the coast, but I mistook his direction and evidently went to the wrong place, for I failed to find them and have since learned that I had been a mile or more from the right one. Later on, in July, I heard from him that they had nested and hatched and that he had himself seen the duck with her brood. The nest was in a tuft of grass on a grassy flat between two pools. I subsequently commissioned a man, who had also seen the nest before the eggs hatched, to procure me some of the down

and feathers from it, but unfortunately on his going to do so the area had been mown and raked for hay, and so all such evidence had disappeared. On September 26th a Pintail was seen on the Hoppen Pits, Dungeness, by Mr. H. G. Alexander, a very early date for a migrant.

In early April, 1925, there were once again large numbers of Pintail at the fleets. A few were still there on the 10th and a single pair remained well into May. I saw the duck on the 24th. The late Mr. J. Selmes, then living at Camber, and a well-known sportsman and wild-fowler, who knew ducks exceedingly well, was tenant this year of a shoot in the Sussex portion of the Marsh. This included a small fleet, which he frequently visited. Amongst other ducks there in July he identified a Pintail duck with a brood of young ones. On August 1st his dog caught one of them that was not yet able to fly. Before the end of September he had shot the entire brood. This he related to me the following spring.

On May 2nd, 1926, I was at the fleets with Messrs. W. H. Mullens and G. E. Lodge. We spent a considerable time watching a flock of Black Terns that were hawking up and down the fleet and during the whole time a Pintail drake was behaving in a very curious manner. We were well hidden and had not disturbed the other ducks at all, but this bird appeared to be in a most restless and excited state, constantly flying up and settling again, without any apparent reason, and flying round repeatedly in high and wide circles. On the 24th, Mr. Witherby and I found him again at the same place, but on this occasion he was sitting asleep on the far shore of the fleet opposite us. Presently, while we were watching the other ducks, he rose, circled round and went off straight away from us until we lost him in the distance. After a few minutes we saw him coming back, accompanied by a second bird, which proved to be a Pintail duck. They settled together at the original spot and started to feed. There was no opportunity either then or on a later occasion to investigate the matter further, but the drake's action certainly suggested that he had been to fetch his duck from her nest in order to feed.

In the spring of 1930 a pair of Pintail haunted a certain area of marsh and pools on the borders of Dungeness, where they were constantly seen and identified by a local man who knows them well. Some time in late April or May, while he was spudding thistles near one of these pools, he put the duck off a nest of seven eggs, well hidden in a long grass tuft on a slightly elevated and drier stretch of marsh. The eggs were afterwards eaten by a hedgehog. I did not learn of this till some years later

In 1933 a flock of nine Pintail arrived at the Midrips in September and remained throughout the winter. It was constantly seen at flight to or from the sea by local residents, and on several occasions in October by my son, H. F. Ticehurst. Two birds, one of which I saw, were shot from it on different occasions. September is a very early date for migrant Pintail to arrive on this coast and this, together with their number and the fact that they were always together, did not mix with the other ducks, and were, so far as could be ascertained, the only Pintail in the district, strongly suggests that they were a family party that had been bred at no great distance.

In 1936 about a dozen Pintail were at the fleets on February 26th, where they remained until the middle of March, leaving behind them two pairs which I saw there on the 22nd. These were constantly present up to April 6th. Miss Stone failed to find them on the 8th, but they were seen by Mr. R. H. Allen on the 16th, but were apparently absent again on the 18th. Between the 16th and May 11th I have failed to find anyone who saw them in this locality, so it must remain uncertain whether they were the same birds as those to be immediately referred to. I am inclined to think that they were, for the distance between the two places would be nothing to a flying duck.

In the meantime two pairs appeared in another area, near the coast, on the 11th, where they were seen at frequent intervals during the next four weeks. Here my son, Richard N. Ticehurst, was watching one of the pairs on the evening of April 24th with the idea of tracing the duck to a possible nest, when he quite by chance put the duck of the other pair off her nest. This was situated about twenty-five yards from where he had been sitting on the ground and the bird flew up before he had advanced more than fifteen paces. After circling round, she pitched in a near-by pool where she was immediately joined by her drake, who came from a distant pool, where he had been seen to pitch shortly before.

Two days later he took me, my elder son and Miss A. Morley to the place, which was so situated that we were able to approach within thirty yards of the nest under cover of a fold in the ground. As soon as our heads emerged into the sitting bird's line of vision she stretched up her neck and gave us an ample opportunity to identify her with glasses at close range. Her long slim neck, yellowish brown head with dark pencillings, finer than those on the head of a Mallard, and her narrow blue-grey bill were apparent to us all. As we approached nearer she sprang from the nest and circled round

us when we were able to remark her slim shape, with long, slender, outstretched neck, more tapering, slightly longer and more up-turned tail, and her more sharply pointed, narrower and more quickly beating wings, as compared with the Mallard ducks that were almost constantly in sight at the same time. If further identification were needed this was furnished by her settling on to one of the pools in the vicinity, where she was at once joined by an unmistakable Pintail drake.

The nest was placed in a hollow, scratched by a rabbit, in a patch of mixed moss and lichen on shingle, measuring $14\frac{1}{2}$ by 9 inches and $4\frac{1}{2}$ inches deep. One egg had been laid since the 24th and there were now nine, arranged in a circle with bare stones showing in the middle with a thick circle of down well mixed with fragments of lichen surrounding them. When sitting the bird's back must have been flush with the surrounding ground, and when covered the mass of lichen-encrusted down rendered the nest almost invisible. Otherwise there was no cover whatever. The situation was distinctly a surprise and I should imagine quite unusual, for there was ample accommodation in long grass close by, though it is in such situations that Mallard nest in that area quite commonly, indeed, they seem to prefer them.

The nest was not touched by us, except to cover the eggs before we left it. Its subsequent history was a disappointment. The locality was left severely alone and only visited once, on May 3rd, when the duck was found to be sitting. On the 10th the eggs were found to have been quite recently destroyed and two, partly eaten, were lying just outside the nest. The destroyer was in all probability a hedgehog, as these animals are exceedingly numerous in that locality and are annually responsible for the destruction of the nests of ducks and other ground nesting species. Nothing was seen on this day of either pair of birds, but one pair was at the flets on May 11th.

The Rev. F. C. R. Jourdain has very kindly examined the two sucked egg-shells together with a sample of down and feathers from the nest, without any previous knowledge of their identity, and is completely satisfied that they are derived from a Pintail.

I am indebted to Miss A. V. Stone, Messrs. H. G. Alexander, H. R. Allen, P. Allen and R. G. Williams for allowing me the use of their dated records to supplement my own.

UNUSUAL "HOLD-UP" OF SPRING MIGRANTS ON EAST COAST OF SCOTLAND

BY

THE MIDLOTHIAN ORNITHOLOGICAL CLUB.

A VERY similar "hold-up" of small passerines to that recorded on the Norfolk coast in early May, 1936, by Mr. R. M. Garnett (*antea*, pp. 58-59) was noted at several places in Scotland at about the same time.

ISLE OF MAY.

An unusual "hold-up" of passerines occurred from May 6th to 10th, after which numbers fell rapidly. Pied Flycatchers (*Muscicapa h. hypoleuca*) and Redstarts (*Phoenicurus ph. phoenicurus*) mentioned by Mr. Garnett as being numerous, were also unusually plentiful on the May.

Whinchats (*Saxicola r. rubetra*), Wrynecks (*Jynx t. torquilla*) and Black Redstarts (*Phoenicurus o. gibraltariensis*) were seen in small numbers; while a maximum of thirteen Bluethroats (*Luscinia svecica*) (subsp. ?) was recorded on the 10th, two of these being trapped and ringed, and a few bars of song heard.

Mr. Garnett heard of no unusual numbers of passerines at this time other than those mentioned, but on the Isle of May, Reed-Buntings (*Emberiza s. schoeniclus*), Lesser Whitethroats (*Sylvia c. curruca*), Fieldfares (*Turdus pilaris*), Wheatears (*Ēnanthe a. xnanthe*), and Continental Redbreasts (*Erithacus r. rubecula*) were above their normal numbers. In addition uncommon visitors appeared as follows: Two Blue-headed Wagtails (*Motacilla f. flava*), one 6th-7th, and one on 12th; six Ortolan Buntings (*Emberiza hortulana*), one 6th-7th, two on 10th, three on 11th, one 12th-13th; two Wood-Sandpipers (*Tringa glareola*), 7th-10th; one Grey-headed Wagtail (*Motacilla f. thunbergi*), 10th-12th, and a White-spotted Bluethroat (*Luscinia s. cyanecula*), on 10th. Sight records of the last mentioned are not perhaps quite satisfactory, but excellent views of the bird were obtained on several occasions at a distance of a few yards. The crescent shaped silky white breast mark very narrowly edged above with red was very plain, while no part of the plumage showed abnormal colouring.

On the evening of May 10th the wind which had been S.E. died away and an interesting resumption of migration was to be observed. The Wood-Sandpipers, which had been feeding separately, came together calling noisily and after circling round to gain height set off over the sea in an easterly direction. A few minutes later, twenty Fieldfares rose into the air

in a flock, and disappeared in the same direction, which if maintained, would mean that southern Norway would be their next halt.

All the Robins and probably most of the Willow-Warblers seen on the May at this time belonged to the Continental and northern forms respectively, the British races not being noted until the resumption of normal migration.

BASS ROCK, EAST LOTHIAN.

A Wryneck was seen on May 10th (see *Scot Nat.*, 1936, p. 142).

NOSS HEAD, CAITHNESS.

No unusual migration was noted. Mr. John Bain writes: "I don't remember a Spring that I have seen so little migration, a Lesser Whitethroat was the only warbler I saw (May 8th). Several Swallows and House-Martins at the end of the first week of June told me that a 'hold-up' had occurred".

WHALSAY, SHETLAND.

Messrs. Tom Bruce and R. Stuart Bruce report that between May 5th and 10th, Redstarts, Pied Flycatchers, Whitethroats, Chiffchaffs and Willow-Warblers were numerous, while Whinchats and a Wryneck were seen among other species.

FAIR ISLE.

Mr. George Stout writes: "What an enormous number of birds we had the whole of the first half of May, but mainly on the 7th and 8th. I got one Reed-Warbler and saw another on the 11th—there were thousands of Willow-Warblers and Chiffchaffs, of which all three forms were present, from 11th to 16th, viz., British, Scandinavian and Siberian, and an enormous number of Pied and Spotted Flycatchers, some Chaffinches, hundreds of Bramblings and Reed-Buntings and a mixture of the other Buntings—Ortolan, Corn, Yellow and Little, 7th to 16th, a good few Linnets, Wrynecks, Garden-Warblers and Common Whitethroats, hundreds of Lesser Whitethroats, only a few Blackcaps, hundreds of Greenland Wheatears and Redstarts. I saw one Nightjar on the 19th; sixty Bluethroats on 7th and 8th, mainly Red-spotted but there were one or two White-spotted among them; Wagtails, quite a number; White, Blue-headed, Yellow and probably Grey-headed also from 7th to 16th. We had quite a number of Robins, mainly Continental, and also some Hedge-Sparrows. There was a Harrier—presumably Hen—11th, several Kestrels and both Long-eared and Short-eared Owls with the big rush".

LOCAL WEATHER INFLUENCES.

Perhaps the most interesting result obtained from a comparison of the dates during which the maximum "hold-up" occurred at Fair Isle, Isle of May and Norfolk is the apparent importance of the local weather conditions in determining the date of the check and resumption of normal migration. Assuming as Mr. Garnett does that the prevalent easterly winds carried Continental migrants over to the British Isles, they would tend to be held up locally by strong winds, mist or rain.

On Fair Isle, where migrants were unusually numerous early in May, the fresh to moderate S.E. winds of the 5th and 6th led to a hold-up on the 7th and 8th, when the wind fell and became variable allowing normal migration.

On the Isle of May, the "hold-up" came later possibly owing to the south-east winds from 3rd to 8th, and the mist and drizzle on the 6th and 7th respectively. Normal migration was resumed on the night of the 10th when the wind dropped and the weather again became favourable.

The Norfolk hold-up came even later, being from the 10th to the 13th during which time fog occurred. On the 13th the wind changed to the south-west and May 14th was fine and warm.

NOTES

"RETURN MIGRATION" OF JAYS.

WITH reference to the note on Jays (*Garrulus glandarius*) seen by Lt.-Col. R. N. Thompson coming in from the sea at Fairlight Cove, Sussex, on May 22nd, 1936 (quoted *antea* p. 80) I saw a flock of nine Jays at the same place on the morning of May 17th, 1936. The day was hot and hazy with little or no wind, and I first saw the birds about a quarter-of-a-mile inland, flying towards the sea at a height of perhaps 200 feet. Five of them circled back and I think went down to a small wood, but the other four continued until about 100 yards from the edge of the cliff, and then they too turned back. The date is too early to expect to find young Jays on the wing, nor, of course, is it usual to see Jays flying at such a height, so that one is tempted to connect the occurrence with last autumn's immigration. P. A. D. HOLLOW.

STATUS OF THE SISKIN AND TWITE IN LAKELAND

THE Rev. H. A. Macpherson, in his *Vert. Fauna of Lakeland*, stated concerning the Siskin (*Carduelis spinus*) that "though I have seen Siskins in pairs as late as Heysham did (i.e., April 5th) I have had no better success in my search for local nests than fell to his share. Yet this species bred for several years at Netherby. James Plenderleath, the head-keeper on the estate, informs me that he has not known any Siskins to spend the summer in the plantations round Longtown since 1885." He then gives information, on the authority of James Plenderleath, to prove that one pair of Siskins reared young near Longtown in a year *prior to 1885*.

In Vol. III. of the *Carlisle N.H.S.*, published in 1923, is a paper on "Lakeland Ornithology, 1892-1913" by E. B. Dunlop, with an appendix by L. E. Hope. E. B. Dunlop makes no reference to the Siskin but L. E. Hope states "the winter visitations of the Siskin to North and East Cumberland are fairly regular in character but variable in numbers. Rev. E. U. Savage saw a flock numbering over one hundred individuals at Raughton Head on December 11th, 1922."

My own experience is that the Siskin is a fairly regular autumn and winter visitor, present from October until the end of March, frequenting chiefly alders and silver birches, either by itself or in company with Lesser Redpolls (*C. f. cabaret*). The largest flock I have seen contained eighty-five birds.

Howard Saunders, in his second edition of *A Manual of British Birds* (1899) stated that "a few pairs breed regularly in some parts of Cumberland" and this statement is repeated in *A Practical Handbook of British Birds* (1920) to the effect that "a few pairs nest regularly in Cumberland" but there seems to be no published evidence that the Siskin has ever bred in Cumberland or Westmorland since 1885.

The Twite (*Carduelis flavirostris*), according to the Rev. H. A. Macpherson, "nests thinly on the Pennine range, as also upon some of the mountains in the centre of Lakeland. Nevertheless, in wandering over the wildest of our moors, I have often marvelled at its absence." He gives two breeding localities for the Twite, namely Toddles Moss and Solway Moss, where eggs had been found, but both mosses are within the Solway Firth area, and if he ever found the Twite breeding on any of the fells of the North Pennines or the Lake District he gives no breeding data to support his statement.

Neither E. B. Dunlop nor L. E. Hope make any reference to the breeding status of the Twite.

I have searched the fells of the Cumberland and Westmorland Pennines and the Lake District for several years, both winter and summer, but have never met with the Twite and if it does breed on these fells it must be in very isolated pairs. In fact, I have only one record for the Twite, a pair feeding by the roadside near Welton, Cumberland, (ten miles south of Carlisle) in mid-November, 1923.

R. H. BROWN.

UNUSUAL "HOLD-UP" OF SPRING MIGRANTS ON LINCOLNSHIRE COAST.

MR. GARNETT'S description of the "hold-up" of migrants in Norfolk (*antea*, pp. 58-9) may be supplemented by the following notes from the Lincolnshire coast.

Extraordinary numbers of passage Pied Flycatchers (*Muscicapa h. hypoleuca*) and Common Redstarts (*Phoenicurus p. phoenicurus*) appeared between Cleethorpes and Donna Nook on the morning of May 7th, 1936. Half a dozen, or more, were to be seen in every coastal hedgerow, and one or two of either species in many of the solitary bushes. Pied Flycatchers, the majority of which were males, were the more numerous.

Many Whitethroats (*Sylvia communis*) and Willow-Warblers (*Phylloscopus trochilus*) were also present, and two Black Terns (*Chlidonias n. niger*) were seen on the saltings.

Mr. Foster Stubbs, and Mr. J. C. Clark, both of whom witnessed this phenomenal occurrence at North Cotes, informed me that Flycatchers and Redstarts were again present in reduced numbers on the following day, but only two or three

stragglers remained on the 9th. On May 10th I noted one of each, but on the 11th, when I surveyed the whole of the above-mentioned coastline, apparently all had passed on.

Mr. Garnett has described the unusual weather conditions over the north of France and southern North Sea but in Lincolnshire where from May 1st to the 7th, the wind was from between N. and E., there was no change in local weather conditions which would account for this abnormal visitation.

BERNARD A. PYE.

SPOTTED FLYCATCHER, GREAT TIT AND GULLS TAKING MOTHS.

ON July 20th, 1936, at Layer Marney, Essex, I saw a Spotted Flycatcher (*Muscicapa s. striata*) capture an oak-eggar (*Lasiocampa quercus*). When I came on the scene the bird was darting at the moth and had apparently injured it. I caught the moth, a male, but found no beak marks or injury apart from slight rubbing of the right hind wing. During the examination, the Flycatcher "waited on" and was so anxious to get the moth that on my releasing it, the bird seized it within a few inches of my feet. The moth was gripped across the "body" and taken to a path where it was pounded against the gravel. While so engaged the Flycatcher was attacked first by a Willow-Warbler (*Phylloscopus t. trochilus*), and then by a male House-Sparrow (*Passer d. domesticus*), both of which appeared anxious to get possession of the moth. Subsequently the Flycatcher was pestered by one of its own youngsters which had left the nest a few days previously, and in the end both birds passed out of sight, the adult still holding the oak-eggar.

Under one of the favourite perches of this Flycatcher, there were in addition to those of meadow-brown butterflies, large numbers of which had been taken by this bird during June and July, several wings of the dark arches moth (*Xylophasia monoglypha*). Last year in the same territory, a Flycatcher was seen in pursuit of a yellow underwing (*Triphæna sp.*).

In Strathtay, Perthshire, on June 19th, 1936, a Great Tit (*Parus m. newtoni*), collecting food for its nestlings, captured a white ermine moth (*Spilosoma menthastri*), which was at rest on some palings.

Soon after sunset on June 16th, 1936, in North Uist, many Common Gulls (*Larus c. canus*), and a pair of Herring-Gulls (*Larus a. argentatus*), were working the heather and catching map-winged swift moths (*Hepialus fusconebulosa*), great quantities of which were on the wing at the time.

JAMES W. CAMPBELL.

BIRDS AND MOLLUSCS.

IN a previous note of mine (*antea*, Vol. XXIX., p. 183) a list was given of Molluscs which had been obtained from the stomachs of certain shore birds. The following are further results of stomach examinations. I am indebted to Mr. J. R. le B. Tomlin, of the British Museum (Natural History), for the identification of the Mollusca.

STARLING (*Sturnus v. vulgaris*): Near Winchester, Hants, Colchester, Essex, and Knebworth, Herts; January to May, 1934. Sixteen contained *Trichia hispida* L.; seven contained *Cochlicopa lubrica* Müll; five contained *Helicella caeperata* Mont.; two contained *Goniodiscus rotundatus* Müll; one contained *Oxychilus alliarius* Müll; one contained *Clausila rugosa* Drap.

ICELAND REDWING (*Turdus m. coburni*): North Uist; February, 1935. One contained *Cochlicopa lubrica* Müll and *Succinea* sp.

SCAUP (*Nyroca m. marila*): Cromarty Firth; March 16th, 1930. One contained *Hydrobia ulva* Penn., and *Littorina saxatilis* Olivi.

LONG-TAILED DUCK (*Clangula hyemalis*): North Uist; February 8th, 1935. One contained *Hydrobia ulva* Penn., *Littorina littoralis* L., *Rissoa parva* Da Cos., *Lacuna vincta* Mont., and *Cingula semicostata* Mont. JAMES W. CAMPBELL.

HOOPoes IN HERTFORDSHIRE AND HAMPSHIRE.

It may be of interest to report that a Hoopoe (*Upupa epops*) appeared in my garden at Totteridge on August 1st, 1936, and thereafter daily for the next fortnight, coming on to the lawn at regular intervals to feed. Since August 14th, it has not been seen. Although the bird was extremely wary, I was able to get a photograph of it. F. MARTIN VAUGHAN.

[There are only three or four previous records of the occurrence of the Hoopoe in Hertfordshire. Mr. G. Brown informs us that a Hoopoe was shot (in mistake for a Jay!) by a keeper in a wood near Newbury in Hampshire, near the Berkshire border on July 7th, 1936.—EDS.]

TAWNY OWL TAKING PREY DURING THE DAY

To the notes contributed on this subject (*antea*, pp. 47 and 86) I should like to state that in my experience it is not unusual for the Tawny Owl (*Strix a. sylvatica*) to take prey during the day in woods or thickly timbered country, more especially when it is feeding young. I have proved on several occasions, by visiting a nest containing young owls twice during the same

day, that freshly caught food is taken to the young during the hours of daylight and in addition have seen Tawny Owls either hunting for prey in woods during daylight or else with prey in their talons.

R. H. BROWN.

MERLIN IN INNER LONDON.

ON August 24th, 1936, I saw a small grey hawk rise from a chair-back in Kensington Gardens and fly low into a near-by tree. It remained there for two or three minutes and when disturbed, flew to a low branch of the next tree, but seeing people on the grass, turned instead of alighting, and disappeared in a clump of trees near the bandstand, where I was unable to find it. I got quite near to it at the first tree, and observed it through field glasses, both perching and flying and was able to identify it as a male Merlin (*Falco c. aesalon*).

E. MACALISTER.

SOOTY SHEARWATERS AND A GREAT SHEARWATER OFF THE HEBRIDES.

THE following occurrences of the Sooty Shearwater (*Puffinus griseus*) were noted on board S.S. *Hebrides* and may be of interest:—

1932.—August 19th: One off Haskeir Island (almost midway between St. Kilda and Sound of Harris). September 2nd: One 5 miles N. (magnetic) Mull of Cantyre. September 17th: Two in the southern approach to the Minch 13 miles N.N.W. (magnetic) Gunna Sound.

1933.—January 3rd: One off Ru Ushinish, S. Uist in a S.S.W. gale; bird flying southerly. July 26th: One 12 miles S.E. by S. (magnetic) from Muldoanich Island, southern Hebrides.

1934.—September 15th: One off Muldoanich Island.

1935.—July 16th: One 1 mile W.N.W. (magnetic) Shillay Island, Sound of Harris. August 6th: One 15 miles N.E. by E. $\frac{3}{4}$ E. (magnetic) Point of Coll, Hirta (St. Kilda); bird flying in southerly direction. September 10th: One 3 miles S. by E. (magnetic) Ardmore Point, Islay, flying in south-easterly direction. September 16th: One on the Coll banks, southern approach to the Minch, flying in southerly direction.

1936.—July 29th: One near Muldoanich Island. August 8th: One on the Coll banks southern approach to the Minch, flying in southerly direction. August 11th: One at frequent intervals between Haskeir and Boreray (St. Kilda). August 25th: One keeping company with a flight of about 50 Manx Shearwaters (*Puffinus puffinus*); in flight with them and

settling down on the water together. The position was seven miles W. by S. (magnetic) Pladda Island lighthouse, the Firth of Clyde.

An occurrence of the Great Shearwater (*Puffinus gravis*) may also be noted, one being seen on August 18th, 1936, at 12.15 p.m. B.S.T., midway between Scallasaig Bay, Colonsay and Isles of the Sea. The bird was flying in a south-westerly direction and the wind was from that quarter and fresh. Visibility was good. A. MACRAE.

MANX SHEARWATER BREEDING ON PEMBROKESHIRE MAINLAND.

I AM not aware that the Manx Shearwater (*Puffinus p. puffinus*) has been recorded as breeding on the mainland of Pembrokeshire. Whilst camping on the cliffs at St. Govan's, Pembroke, on June 20th, 1936, my wife and I heard numerous bird calls which were quite unfamiliar to us. With a friend, Mr. R. Adcock, we hunted the headland at 2 a.m. on the 21st, and eventually traced the birds to a cove, and here we found one Manx Shearwater sitting on the ground and several others uttering their weird calls from the rabbit burrows. There were numbers on the wing, both here and at other points along the headland.

Subsequent investigation by daylight led to the discovery of an old bird sitting on a nest of grasses and heather some six feet down a rabbit burrow. There was no egg in the nest, though it is possible that a young bird was present but hiding farther along the burrow. We further discovered that many rabbit holes in this neighbourhood, and on the headland, had footprints, presumably of Shearwaters (Puffins are rare on this coast and confined to the actual cliff face). Subsequently I discovered the remains of a dead Shearwater on a rabbit warren near Angle, and I am of the opinion that careful investigation would reveal the species to be fairly common as a breeding species along the south-west Pembrokeshire coast.

W. A. CADMAN.

REDSHANK NESTING AT TRING IN 1936.

As the reservoirs at Tring were brimful in the early part of the year, I ventured an opinion (*antea*, Vol. XXIX., p. 382) that no Redshanks (*Tringa totanus*) would nest there in 1936. The event showed that I was mistaken. From the third week of March until early June one or two frequented the reservoirs, being seen now on this water, now on that, but so far as I can ascertain none nested then. I was unable to go to the place

between June 9th and July 11th, when I found that during May and June large drafts had been made on the water in Little Tring Reservoir, with resultant big areas of mud and swamp, similar conditions, indeed, to those of 1935. On July 11th there were two adult Redshanks yelping fussily about the reservoir ; and, after watching for an hour and a half I detected two downy chicks with some larger Lapwing chicks in the swamp herbage. Whether the parent birds were those seen so often in April and May I do not know, but, even if they were, it is not suggested that they refrained—deliberately or otherwise—from nesting because optimum conditions were lacking, but it is interesting that a pair did nest so soon as the conditions—set up by the receding water—were suitable.

CHAS. OLDHAM.

WHITE-WINGED BLACK TERN SEEN IN Co. CORK.

ON July 31st, 1936, off Slandore, Co. Cork, I saw a White-winged Black Tern (*Chlidonias leucopterus*). The following notes were made on the spot. Head, back and breast black, bill and legs blood red, distinct white patch starting at carpal joint, tail white. Wings lighter on the upper side than the lower ; this was especially noticeable as the bird was in flight.

July must be considered a very unusual date for this vagrant, most of the records being for the spring. S. BARON.

WHOOOPER SWANS IN NORTHUMBERLAND IN JUNE.—Mrs. E. F. Tate informs us that she saw eight Whoopers (*C. cygnus*) at the mouth of the River Aln on June 2nd, 1936, a late date. The birds appeared to be tired and remained for the two following days, which were bitterly cold and stormy.

GREENSHANK IN CUMBERLAND IN JANUARY.—In connexion with Mr. R. H. Brown's note (*antea*, p. 135) Major W. M. Congreve writes that he and Mr. S. W. P. Freme saw a Greenshank (*Tringa nebularia*) on several occasions between January 26th and 28th, 1933, on the tidal river that flows into the Solway at Anthorn, near Kirkbride.



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CONTENTS OF NUMBER 6, VOL. XXX., NOVEMBER 2, 1936.

	PAGE
Ménage à trois in the Mute Swan. By J. M. Dewar, M.D. ...	178
On the Colour of Bills of Kingfishers. By Philip A. Clancey ...	180
Notes on the Flight of the Sparrow-Hawk. By Hubert E. Pounds ...	183
Notes :—	
Lapland and Ortolan Buntings in Pembrokeshire (R. M. Lockley) ...	190
Long Incubation Period of Blue Tit (G. R. Mountfort) ...	190
Pied Flycatcher in Co. Cork (G. R. Humphreys) ...	191
Bluethroat in Essex (W. A. Wright, R. W. Pethen and E. Mann) ...	191
Kingfishers' Moulting Periods (P. A. Clancey) ...	191
Food of Kestrel and Possible Seed-dispersal (O. E. Höhn) ...	192
Goosanders spending Summer in Surrey (W. E. Glegg and W. A. Wright) ...	192
Incubation and Nestling Period of the Fulmar Petrel (H. W. Robinson) ...	194
Early Breeding of Stone-Curlew (R. Whitlock and G. K. Yeates) ...	194
Unusual Numbers of Little Stints ...	195
Spotted Redshanks in Cambridgeshire (R. C. Homes) ...	195
Flock of Avocets in Hampshire (Rev. F. C. R. Jourdain) ...	196
Little Gull in Cambridgeshire (C. W. G. Paulson) ...	196
Short Notes :—	
Great Grey Shrike in Surrey. Robins Occupying Vacated Territory. American Goshawk in the Scilly Isles. Brent Geese in co. Down in Summer. Four Eggs in Nest of Wood-Pigeon. First Breeding of Fulmar on Farne Islands and Yorkshire, <i>Correction</i> . White-winged Black Tern Seen in co. Cork, <i>Correction</i> ...	196
Reviews :—	
<i>Songs of Wild Birds</i> . By E. M. Nicholson and Ludwig Koch ...	198
<i>Bird Migration</i> . By A. Landsborough Thomson ...	199
Letters :—	
Swallows and Blood-stained Cows' Milk (Hugh Gladstone and A. W. Boyd) ...	199
Reported Breeding of Fulmar and Manx Shearwater in Pembrokeshire (R. M. Lockley) ...	200

MÉNAGE À TROIS IN THE MUTE SWAN.

BY

J. M. DEWAR, M.D.

THE Mute Swan (*Cygnus olor*) is a monogamous species, and *ménage à trois* appears to be of uncommon occurrence.

The term—*ménage à trois*—was borrowed by F. B. Kirkman from human affairs and applied to the association of three individuals of a bird-species for the purpose of nesting.

As a label, *ménage à trois* is preferred to its synonym, bigamy, because *ménage à trois* implies the setting-up of an establishment, which bigamy does not necessarily do. The relationship may be that of one male and two females (1-2 relation), or of two males and one female (2-1 relation). In birds, the 1-2 relation is much more common than the 2-1 relation, and, as far as I know, only the former has been observed in the Swan.*

Ménage à trois has to be distinguished carefully from homosexuality and other sexual relations. Homosexuality, which has been recorded several times in the Mute Swan, is an association of two individuals of the same sex, leading to pairing and nest-building, and in the case of females the laying of eggs which are necessarily infertile.

Altogether I have been able to collect from the literature six examples of *ménage à trois* in the Mute Swan, and to add a seventh case coming under personal observation.

From an old number of the *Zoologischer Garten*, Heinroth (*Die Vögel Mitteleuropas*, Vol. III., p. 146) records an early case of *ménage à trois* in the Mute Swan. A paired male drove a second female out of his territory and then courted and paired with it. Within his territory he attended to the first female. No further particulars are given.

In 1890, Stevenson and Southwell (*The Birds of Norfolk*, Vol. III., p. 93) published an account, derived from hearsay, of two examples. In the first case, one of the females died in the first or second year of the association. Thereafter the male remained with the other female in simple monogamy. In the second case the 1-2 relation lasted four years, from 1870 to 1873. In the first three years the one female hatched out five, seven, and eight young, and the other female two, one and five young. In 1873 the eggs were lost.

In 1901 F. A. Forel, in his monograph on the Lake of Geneva (*Le Léman*, Vol. III., p. 38), records another instance in which one male associated with two females. In the spring of 1894 the females nested on the shore of the lake, about a hundred metres apart. They were served and guarded by the male, which, however, did not assist either female in incubating.

*I am indebted to the Rev. F. C. R. Jourdain for most of the references to the literature.

In 1932 F. C. R. Jourdain (*Jr. Derby. Arch. and Nat. Hist. Soc.*, Vol. LIII., p. 93) reported, *vide* H. H. Hollick, a case of *ménage à trois* arising in two adjacent pairs of the Mute Swan, apparently as a result of the death of one of the males. The other pair hatched out seven young. The male of this pair next joined the widowed female which in due course hatched out six young. The male gradually killed off these young, and then returned to assist the first female in the care of her brood.

In 1936 A. Portielje (*Jour. für Orn.*, Vol. LXXXIV. p. 140) gave an account of another case, which was under observation, in 1935, in the Zoological Garden, Amsterdam. The male tolerated and bred with both females. But he did not take up with the second female until the first female had been fourteen days on her nest. The male was known to have served both females. He defended both females from intrusion, although he did not, as in Forel's case, assist in the incubation. Six young were hatched in the first nest on the twentieth of May, and two young in the second nest on the sixteenth and seventeenth of June. The nests were nine metres apart.

In the present year (1936) it has been my good fortune to meet with another example of *ménage à trois* in the Mute Swan. On the Blackford Pond, Edinburgh, a male has associated with two females for some years. The females are easily distinguished by the fact that one of them has a conspicuous deformity of the foot. Hitherto, the male has bred only with the normal female, but no cygnets have hatched. This year he was known to have served both females, and these built nests on the shore a few yards apart. The sequence of events at the two nests was not simultaneous, the time-interval being about twenty-one days (*cf.* the Amsterdam history). The male spent much time sitting with the first female on her nest, and he also relieved her at intervals. At no time during incubation was he known to have paid any attention to the second female. The first female laid fifteen eggs of which the park-officer removed eight, and the second female seven eggs of which the officer removed four. The first clutch was expected to hatch at the end of May, the second clutch on the eighteenth of June. Unfortunately all the eggs were addled. The birds were allowed six weeks of incubation. When the first female exceeded the period by several days, the eggs had to be removed. The second female deserted on the forty-fourth day. The clutch of fifteen eggs laid by the first female appears to be noteworthy, but I am unable, personally, to vouch for the number.

I am greatly indebted to the park-officer, Mr. James Low, for much of the history of these birds, for confirmation on certain points, and for the opportunity to open five of the eggs.

ON THE COLOUR OF BILLS OF KINGFISHERS

BY

PHILIP A. CLANCEY.

As so many of the standard works on British birds give such conflicting notes on the colour of Kingfishers' (*Alcedo a. ispida*) bills, the following notes on this subject should prove of some value. In *A Practical Handbook of British Birds* it is clearly stated that the colour of the bill is black, becoming red at the base of the under-mandible in the male, and only sometimes in the female.

This is, however, discredited by the statements in such authoritative works as the *Monograph of the Alcedinidæ* (1871) by R. Bowdler Sharpe and *British Birds* (1931) by Jourdain and Kirkman, who give the bill as being black in the case of the male, while the female is said to have some orange colouring on the under-mandible.

The material which I have been collecting in Scotland supports the latter view to a great extent.

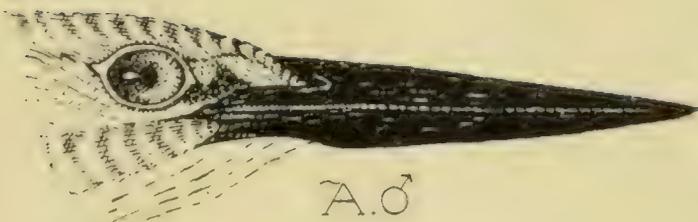
The males in every case (15 specimens examined) have an almost jet black bill, though one specimen obtained in Renfrewshire in April, has a distinct tinge of horn colouring on the angle of the under-mandible.

The females (8 specimens examined) on the other hand, unlike the males, are very variable indeed in the amount and shade of orange on the under-mandible. Many specimens show quite a considerable amount of rich vermilion pigment at the base of the upper-mandible, especially in the region of the culmen and the anterior nares. Peculiarly enough, this pigment on the upper-mandible hardly fades at all in the dried skin, while the under-mandible usually fades to a dirty yellowish horn colour.

A slight shading of dark slate is not infrequently found on the keel (gonys) as illustrated in Figures B and D, while an occasional specimen has a similar tinge of colour at the extreme base (Figure B).

The intensity of the shade of the orange on the under-mandible, as already mentioned, is extremely variable although the usual tint is yellow-bronze changing to rich vermilion-lake at the base.

The proof brought forward above is, I think, ample to show that the statements by Messrs. Sharpe, Jourdain and Kirkman are correct to a great extent, and that the description in the *Practical Handbook* cannot be accepted.



A.♂



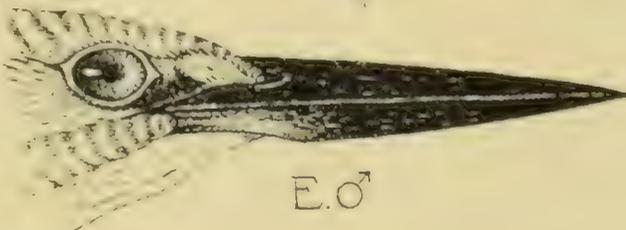
B.♀



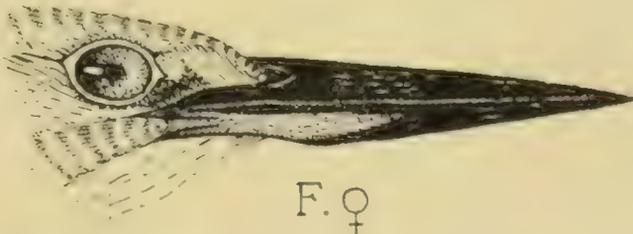
C.♂



D.♀



E.♂



F.♀

BILLS OF SCOTTISH KINGFISHERS.

(Natural Size.)

A.♂ B.♀ C.♂ D.♀

BILLS OF ENGLISH KINGFISHERS.

(Natural Size.)

E.♂ F.♀

Males examined from England, France, Switzerland, Hungary, Germany and the Balkan and Iberian Peninsulas all show varying amounts of red at the base of the under-mandible, and are therefore different from Scottish birds, which have almost jet-black bills.

Females are almost identical, except that on an average, Scottish females have a shorter and blunter bill, but as specimens from Switzerland, which I had the pleasure of examining, were identical, this character is of no sub-specific value. I have discussed with Mr. H. F. Witherby the possibility of the Scottish bird being differentiated as a new subspecies, but he was of the opinion that the differences were not sufficiently great to justify this, therefore I have decided to follow his advice in this matter.

I wish here to express my gratitude to the various persons who have so kindly supplied me with material, upon which this article is based. Among them, I would like to thank Dr. James M. Harrison for lending me his English and Continental specimens, and Dr. A. C. Stephen, of the Royal Scottish Museum, for permission to examine the magnificent series in this museum. My thanks are also due to Mr. H. F. Witherby and Dr. James Schenk, of the Royal Hungarian Institute of Ornithology, for their assistance and helpful advice.

NOTES ON THE FLIGHT OF THE SPARROW-HAWK,

BY
HUBERT E. POUNDS.

For several years I have paid close attention to the flight of the Sparrow-Hawk (*Accipiter n. nisus*). This Hawk is to be seen almost any day in the north-east Surrey hills, and though trapped and shot to a certain extent on ground that is still kept, a few pairs usually succeed in rearing a brood each season in those woods where Pheasant rearing on an extensive scale is a thing of the past.

The district in question consists of hill-ridges, and trough-like valleys—locally known as bottoms—both shallow and deep; is well wooded, the larger trees being chiefly oak, beech, elm, birch and ash, with a few scattered plantings of larch. The ground elevation varies between 400 and 600 feet.

From my observations which have been made at all seasons of the year, the bird employs certainly four different modes of flight, viz., prospecting, hunting (and chasing), soaring and, *on occasions*, patrolling.

1. *Prospecting Flight*. This usually takes place at a height of about 80-120 feet, sometimes lower in the case of the male. The Hawk floats in circles and, every now and then, flaps its wings somewhat briskly three or four times. There is also another phase aptly described by Mr. J. H. Owen in his interesting paper, "The Hunting of the Sparrow-Hawk" (Vol. XXV., page 239), thus: "This flight consists of a glide some thirty yards long then three or four rather slow wing-beats followed by another glide." In either case the result is the same, for the Hawk eventually slips earthward to engage in definite hunting or betake itself to a favourite hunting-ground. The bird can perform this prospecting flight equally well in wind or calm, though when a steady breeze is blowing, slight variations of it occasionally occur, one of which is as follows. I quote from my notebook: "Observed a hen Sparrow-Hawk engaged in a prospecting flight which lasted about six minutes. I first noticed it gliding slowly along at a fair height above a hillside. It drifted over the valley, every now and then bringing up against the breeze and hanging almost stationary with wings fully extended, but did not indulge in any soaring. By degrees, however, it planed lower and when still at a considerable height above the lane, lowered itself steadily against the stiff south-westerly wind—its wings being held at practically full stretch all the time—finally diving down

amongst the trees of a wood near by, presumably to strike or engage in definite hunting."

There seems little cause to doubt that during a prospecting flight the Hawk is deciding upon a hunting route, as it is frequently witnessed shortly after one has failed in its efforts to capture a bird. When such is the case, the circling type of prospecting flight may last from 15 seconds to 2 minutes or even longer, and then, more often than not, the Hawk sails right away from the vicinity of the spot where it lost its intended victim. On the other hand, I have seen a cock Sparrow-Hawk after dashing through a hillside shaw in the corner of a field and failing to make a capture, indulge in a low prospecting flight at a height of not more than 30 feet in the valley below, and close to the wood itself. On this occasion, the Hawk circled slowly and smoothly several times and swayed nicely just like a miniature Buzzard, with wings held stiffly extended and canted *slightly* upward, then at the end of about 20 seconds, sped back into the trees and returned along its original line of flight.

2. *Hunting (and Chasing) Flight.* This phase of the Sparrow-Hawk's flight is the one by which the bird is recognized and commonly known to the majority of keepers. It is a masterly performance, accomplished mainly by gliding, and the three or four wing-beats visible at intervals during the course of a hunt seem scarcely necessary to maintain momentum, for it is remarkable the distance the bird can cover without resorting to wing-beats at all. For instance, they do not appear necessary to assist it in rising to clear a hedge or gate; the bird just glides smoothly up and over the obstruction and on as before, without the slightest visible loss of speed. This characteristic hunting flight may be seen as the Hawk works alongside the edge of a wood, hedge, or fence, or down rides and paths in woods and plantations; also along streams and brooks in districts where these are present. It varies from a height of 1-2 feet to as much as 5-7 feet above the ground, and when a hedge is being worked, the bird slips over to first one side then the other, the change taking place about every 60 yards. At a fair estimate I put the normal speed of the Sparrow-Hawk's hunting flight at 40-45 m.p.h., though, on occasions, it is considerably less, approximately 18-25 m.p.h. The latter figure was arrived at after an experience I had several years ago when following a Sparrow-Hawk down a little-frequented lane on a cycle. The Hawk was working both sides of a hedge on the left-hand side of the road, and I knew my own speed to be about 16 m.p.h.

Although I was some way behind, and the distance between us gradually increased, I was able to follow it nearly quarter of a mile before it finally turned off and crossed a cornfield.

There is another form of this hunting flight practised chiefly, I think, by the cock Sparrow-Hawk, and that is a low rapid flight straight through a wood or shaw. It is a performance worth seeing, momentary though it usually is. I have witnessed it a number of times, and it seems as if the Hawk flings all thoughts of rides, tracks, and paths, to the wind, and just dashes through the brushwood a foot or so above the ground with grim determination. How it manages to thread its way through and avoid impact with the branches and stems of the bushes is very puzzling; the agility it displays is little short of amazing. Wing-beats are few, so far as one can tell as the bird sweeps past and, on emerging from cover, I have seen it throw up and dart back through the trees of the wood it had just left. Its speed on such occasions is exceedingly difficult to estimate, but I should say it does not exceed 25 m.p.h. and this is, probably, a trifle too high.

The prevalence of fog does not seem to interfere with the hunting of this Hawk, in all probability it is of great assistance. Last winter I had an interesting experience in this connexion, and one, too, which demonstrated the bird's remarkable wing-control. I again quote from my notebook, the date being December 7th, 1935: "Fog enveloped the Surrey hills, visibility not extending beyond about 200 feet. While I was waiting on the western edge of the larch plantation near —, a hen Sparrow-Hawk suddenly appeared gliding alongside the trees at a height of about 6 feet above the ground. The Hawk came straight towards me, in fact, I thought she was going to skim close past my head, but when 10 feet away, directly in front of me, pulled up 'dead,' and with much flapping turned sharply left, and flew back over the tops of the larches. It was a most interesting sight to watch the bird thus put on the brake at such close range." The speed of this bird was not, I think, in excess of about 20 m.p.h. for I had time, as it was approaching, to make a mental note that (*a*) it appeared to be looking on the ground, and (*b*) the primary feathers were splayed out and plainly visible.

Occasionally when travelling across country at a fair height or when mounting briskly prior to indulging in a prospecting flight, the Hawk's wings are bent *slightly* back at the carpal joint. Again, when travelling purposefully across country against the wind, the Sparrow-Hawk glides steadily but slowly, covering a considerable distance between wing-beats

though now and again making leeway; the wings, too, are often arched a trifle at the shoulders during these extended glides.

The accelerating power of this Hawk when quarry is sighted is an interesting feature of its hunting flight, for with little or no effort it can spurt forward to follow every twist and turn of its intended victim. If a chase takes place in a large open field, the pursued, be it finch, bunting, or lark, has but the barest chance of escape. It may shake off its grim enemy for a brief space of time but in the end, probably through exhaustion, succumbs. In small fields bounded by a thick hedge or bordering a wood, I have several times seen a Sparrow-Hawk completely foiled by its quarry successfully slipping into a dense hawthorn, or dodging through the branches of trees. With Wood-Pigeons, the hen Sparrow-Hawk, I think, sometimes exercises a certain amount of strategy; she selects her bird, then carefully "steers" it into a ride or clearing, there to administer the *coup de grâce*. I again quote from my notebook—"While going through — wood I noticed a hen Sparrow-Hawk pass through the trees, and a moment after heard a company of Wood-Pigeons rise noisily farther in the wood. A few seconds later, one of them dashed out from between the trees into the clearing where I was standing, with the Sparrow-Hawk practically on top of it. As they approached me a small cloud of feathers floated behind them, but my presence saved the pigeon from what must have proved certain death for, when nearly overhead, the Hawk broke from her quarry and swerved aside, rising in a grand ascending curve above the trees while the pigeon dashed away, disappearing beyond some birches. A few minutes after this I again observed the Hawk engaged in a prospecting flight over a gorse-brake on the edge of the wood. This lasted nearly three minutes, after which it glided away in a north-westerly direction towards — wood."

I consider the Sparrow-Hawk capable of a maximum chasing speed on the level of 60-65 m.p.h., but in a fast "power-dive", when its wings are used to force the pace, it attains more.

3. *Soaring Flight*. Very little mention seems to be made by the average observer concerning the powerful soaring flight of the Sparrow-Hawk. This may be due to the fact that it requires a trained and keen eye to be able to say definitely whether a soaring "Hawk" is a Hobby, Sparrow or Kestrel, for both the first and last named, as is well known, excel in the art. The Sparrow-Hawk, on occasions, certainly

runs the Kestrel close as regards its capabilities in this respect. But whereas the Kestrel (and Hobby) will ring upward without visible wing-beat on the calmest of summer days, the Sparrow-Hawk usually employs three or four rather slow—occasionally somewhat brisk and impetuous—wing-beats at intervals during the first half of an ascent. I have closely followed through good glasses a number of soaring Sparrow-Hawks, and I do not think these wing-beats materially increase the bird's speed enough to assist it in mounting the next series of spirals. Moreover, once it has climbed to 200 or 250 feet, the remainder of the flight is often accomplished without any apparent effort on the bird's part. It just circles slowly smoothly upward. When the maximum height is attained, and this under favourable conditions is probably well over 800 feet—one Sparrow-Hawk I watched though was all but invisible to unaided vision, this being partly due to the distance it had drifted during the ascent—the Hawk sails round alternately flapping and gliding, or else beats to and fro in a series of ellipses. The performances I have followed have ultimately terminated by the Hawk either gliding slowly away to some point of the compass, or planing earthward sometimes at rather an acute angle.

This high soaring propensity of the Sparrow-Hawk takes place on days that are fine and sunny with little or no wind; sunshine, however, appears to be appreciated if not essential. Again, I have witnessed soaring flights when an altitude of roughly 300 feet has been attained, on days when sunshine has been intermittent and the wind fresh though, under these conditions, the tendency to drift during the ascent is usually much more marked. I have observed really high soaring flights by the Sparrow-Hawk in the following months, viz., January, February, March, April, May, June, August and November. Of these, the first three have yielded some of the best performances I have seen between the hours of 11 a.m. and 2 p.m. (G.M.T.), the weather conditions, of course, being ideal with bright sunshine and a clear sky.

The following extract from my notebook concerns a soaring flight I observed in north-east Surrey on January 21st, 1933, a day of bright sunshine with little wind: "Watched a Sparrow-Hawk soaring at a considerable height while below it a Kestrel also soared. Suddenly, the former closed its wings and dived straight at the Kestrel. It came down at very high speed with legs outstretched, but just before reaching its objective swept up again in a steep climb; the Kestrel, however, twisted aside at the critical moment as though it

expected the attack to be driven home. Beyond making another rather frolicsome kind of stoop, the Sparrow-Hawk did not further molest the Kestrel but continued soaring, and both birds at length appeared to be on a level at an altitude of about 700 feet. Eventually each glided away in different directions."

On another occasion during the month of August, I witnessed in north Sussex, a soaring flight by three Sparrow-Hawks during which they were constantly tilting at each other in playful fashion. They had attained a height of roughly 300 feet when one sailed away on its own. It travelled for nearly half a mile alternately flapping and gliding, engaged in what looked like an unusually high prospecting flight, but presently slowed down and again commenced to soar. It climbed to a height of about 600 feet and ultimately glided away. The day was fine and warm with a light south-easterly breeze.

4. *Patrolling Flight.* During the years 1932-35 a solitary Common Buzzard (*Buteo b. buteo*) was a winter visitor to the north-east Surrey hills. On a number of occasions when I observed it on the wing either crossing a wooded valley or circling above a hilltop larch plantation which, by the way, was its favourite roosting place, a Sparrow-Hawk—sometimes but more rarely a Kestrel as well—appeared in the sky and remained in attendance while the flight lasted.

During the period the Buzzard remained in the district, from November to early March, only once did I see it actually attacked by a Sparrow-Hawk and on that occasion it was sitting in an oak overlooking a field. The Hawk, a hen, sped towards it, drove it clean out of the tree and continued to molest it till the Buzzard sought sanctuary in a neighbouring wood. This incident occurred during the first winter (1932-33) I observed a Buzzard in north-east Surrey.

It was not long, however, before I associated a certain phase of flight used by the Sparrow-Hawk and which I have termed patrolling—I use the word advisedly—with the presence of the Buzzard in the district. I certainly have no recollection or record of seeing it on quite the same lines at other times. Moreover, it was so distinctive that often I was able to obtain a fairly accurate idea whereabouts the Buzzard was in hiding, especially in the case of the hilltop larch plantation referred to, as this was easily overlooked for observation purposes from a wooded hillside opposite, being silhouetted against the sky. On these patrolling flights a Sparrow-Hawk would fly steadily, alternately flapping and gliding, at an

estimated speed of about 25 m.p.h. along the whole length of the plantation which is nearly half a mile long, a few feet above the tops of the trees, clearly endeavouring to locate something. If successful, then the Hawk would slacken speed and circle several times above a certain section of the trees—usually the place where the Buzzard was in hiding—before finally making off across country in characteristic normal fashion. On one occasion I was making my way through a wood into which only a short time previously I had watched the Buzzard descend, when I noticed a Sparrow-Hawk sail overhead, just above the tree-tops. It must have passed close to if not directly over the object of its search, for a few minutes later I put the Buzzard out of one of the trees standing close to a path from the direction of which the Sparrow-Hawk had come.

There is not the least doubt but that the presence of the Buzzard caused much uneasiness to the Sparrow-Hawks on whose territory it happened to be during its winter sojourns in the district. In all probability they had never seen one prior to the winter of 1932-33 and, therefore, deemed it necessary on subsequent occasions to keep a close watch on all its movements—hence the need for this patrolling flight.

NOTES

LAPLAND AND ORTOLAN BUNTINGS IN PEMBROKESHIRE.

ON September 5th, 1936, a Bunting was seen by several observers running about rapidly among heather clumps on Skokholm Island, Pembrokeshire. Although a sketch was made of the bird, which was very tame, no definite identification was arrived at. It was still on the island on the 11th, and what was considered to be the same bird was finally secured on that date. It proved to be a Lapland Bunting, an immature bird. The wing measured 93 m.m. ; wing and tail formula (typical buffish white markings on outer tail feathers) as in that species ; legs almost black with long and nearly straight hind claw longer than hind toe. The note of this bird could only be likened to a "quiet chirrup," something between that of a Linnet and a Pied Wagtail. This appears to be the first record of a Lapland Bunting (*Calcarius l. lapponicus*) for Wales.

On September 11th, while observers were looking for the Lapland Bunting, an Ortolan Bunting (*Emberiza hortulana*) was put up from heather. It was an immature bird, and except for the eye "spectacle," which was conspicuous, and the small bunting bill, might have been overlooked at a distance as a Meadow-Pipit, especially as the tail showed white on outer feathers. Head greyish brown uniformly speckled darker brown ; back like Meadow-Pipit but not prominently striped ; pale chin accentuated by dark malar stripe ; a warm or rufous tinge to the under parts below the spotted breast. The slightly pinkish and very small Bunting bill was unmistakable. This is the second record for Skokholm, Pembrokeshire, and South Wales (*cf. British Birds*, Vol. XXV., p. 79).

Both these birds were watched by Messrs. C. C. Doncaster, R. M. Lockley, B. M. Warner, G. A. R. and J. D. Wood. Subsequently, on September 12th, another immature Lapland Bunting was seen on the island by Messrs. Doncaster, Warner and Wood, and this bird was heard to utter a single "twee."

R. M. LOCKLEY.

LONG INCUBATION-PERIOD OF BLUE TIT

EACH year I have a number of Continental Blue Titmice (*Parus c. caeruleus*) nesting in boxes in my garden at Le Vesinet (S. et O.) and have kept accurate records of their incubation periods. These show 13 days as the normal period,

12½ and 14½ as extremes. This year one pair, with 8 eggs, took 15 days and another pair, with 10 eggs took the extraordinary time of 19 days. The weather was not remarkable in any way during this period, and the young were safely reared; the fledging period, from the day of hatching to the day of leaving the box, in both cases being exactly 19 days. The nests were inspected daily until the first egg was laid, also towards the termination of the clutch and again at dawn and dusk when hatching time was due. G. R. MOUNTFORT.

[The only explanation which I can suggest is that steady incubation did not begin till some days after the clutch was completed. Practically all estimates of the incubation period of the British Blue-Tit fall between 13 and 14 days; the fledging period is more variable and ranges from 14-15 days (T. H. and W. R. Harrison) to 16-17, 18, 19 and even 21 days.—F.C.R.J.]

PIED FLYCATCHER IN CO. CORK.

I HAVE received from Mr. McMahon, Principal Keeper, Roanarrig Lighthouse, off the coast of Cork, the leg and wing of a Pied Flycatcher (*Muscicapa h. hypoleuca*) killed striking the lantern at 3.0 a.m. on September 21st, 1936. This is the twenty-second specimen received from an Irish light-station. Mr. McMahon reports that another bird of this species visited the Rock on September 23rd.

G. R. HUMPHREYS.

BLUETHROAT IN ESSEX.

ON September 19th, 1936, at the Walthamstow Reservoirs we had the good fortune to see a Bluethroat (*Luscinia svecica*), apparently an immature bird. Its back and head appeared to conform to the description given in the Handbook and the rump and tail were especially noticeable in flight. The chin and upper breast seemed to be whitish and across the breast was a metallic blue band, below which was a very dark, almost black band. The bird was under observation for about 30 minutes and we were able to approach to within 30 yards. This bird was again seen on the following day.

W. A. WRIGHT, R. W. PETHEN AND E. MANN.

KINGFISHERS' MOULTING PERIODS.

It might be of interest to record that on examining an adult female Kingfisher (*Alcedo a. ispida*) from Crookston, Renfrewshire, on July 17th, 1936, I found it to be in full body-moult. I have also examined birds which were moulting the body-plumage in April and early May.

The periods of moult are given in the *Practical Handbook* as from August to November and from January to March, so that these examples extend the periods of both moults.

PHILIP A. CLANCEY.

FOOD OF KESTREL AND POSSIBLE SEED-DISPERSAL.

ON June 17th, 1936, I was shown a nest of a Kestrel (*Falco t. tinnunculus*) containing two young, in an elm near Farnham Royal (Bucks). A number of bones, obviously the remains of the Kestrel's prey were found. These bones were identified for me at the Natural History Museum, South Kensington, and they represent approximately the following numbers of individuals :

Twenty-two common field-voles (*Microtus agrestis hirtus*) ; one water-vole (*Arvicola amphibius*) ; one field-mouse (*Apodemus sylvaticus*) ; four young rats (*Rattus* sp?) ; four House Sparrows (*Passer domesticus*).

A small number of pellets examined were composed of the hair of the various mammals and contained also small bones and the wing-cases of beetles which could, however, not be identified. There were also leathery "skins" containing numerous seeds, and these I regard as the stomach walls and contents of the voles, etc. The dispersal of seeds by being transported on the feet of birds has often been stressed, but it seems that birds of prey (and other birds feeding on seed-eating animals) may act as even more efficient transporters when they eject in pellets the seeds which their prey has not digested. The only question which I have not the knowledge to decide is whether the seeds once inside the vole are still capable of germination. I put some of the seeds into a pot and one of them germinated within a short time. The pot was unfortunately lost later. The germination of one seed only does not, of course, provide sufficient proof from which to draw conclusions.

O. E. HÖHN.

GOOSANDERS SPENDING SUMMER IN SURREY.

I WAS surprised to see a brown headed Goosander (*Mergus m. merganser*) on the upper Pen Pond in Richmond Park, on September 21st, 1936. It was amazingly tame and came on to the much frequented path between the ponds with the many Mallards, when it permitted a very close approach. It did not appear to be a normal bird. The crest was unusual both in shape and colour, springing away from the back of the head like that of a Merganser and having a greyish tinge. On September 26th, I found two more of these birds on the

lower pond. They were in good plumage and very tame, although not so markedly so, as the first bird, which was still on the upper pond. The two birds on the lower pond soon flew off with vigorous flight in a southerly direction. The original bird was seen by me on September 28th, but not after. On the 27th, two tame birds were seen on the reservoirs at Barn Elms, and were probably those I had seen on the previous day. I ascertained later that the first bird had been seen on the 18th, and also that three brown headed Goosanders had been seen on a pond on Clapham Common. I went to the Common on October 2nd and visited the four ponds. On only one of these were duck, including Mallard, Pochard and Tufted Ducks, but no Goosanders. I then interrogated a keeper who informed me that three unusual birds, Goosanders, had been on the pond through the summer and that he had no doubt that they were still there as he had seen them on the previous day, but on accompanying me to the pond they were not to be found. I have knowledge of Goldeneye and Scaup having stayed on through the summer in Middlesex and Essex respectively, but I do not know that Goosanders have ever stayed through the nesting season so far to the south. The first bird was seen to eat bread during its stay in Richmond Park. It is of interest that these birds, generally difficult to approach, should settle down on such a small pond in a much frequented public park and then on the approach of the autumn migration, commence to take flights to neighbouring waters. I am informed that no birds are put down on Clapham Common. The possibility of the birds coming from some other ornamental water to Clapham must not be overlooked, but Goosanders are not commonly kept in captivity.

WILLIAM E. GLEGG.

On January 16th, 1936, I was informed that three strange ducks had been seen on a small piece of water on Clapham Common, London, known as the Mount Pond. I visited this pond on January 20th, and identified these three birds as immature Goosanders. One bird was slightly larger than the others and was probably a male. They were very tame and successfully competed with the Mallards which were being fed with bread. On my next visit they remained close to the island and did not come for the bread. I saw them several times subsequently, and am told that they remained there until September 24th, when only two birds were seen, the largest having departed about one week previously. So far as I know, they have not been seen since that date.

The question as to how they obtained their food is somewhat puzzling. They were often seen diving, and on some occasions

they brought fish to the surface. On one occasion the pond was visited after dark, and by the light of the headlamps of a car, the birds were seen on the island.

The pond is quite small, about two acres, and although considered to have been well stocked with fish, it is unlikely that these birds could have obtained sufficient food there to sustain them for a period of about eight months.

W. A. WRIGHT.

INCUBATION AND NESTLING PERIOD OF THE FULMAR PETREL.

As the incubation and nestling periods of the Fulmar Petrel (*Fulmaris. g. glacialis*) are not really known, it may be of interest to state what I observed each period this summer. The *Practical Handbook* gives the incubation period as variously estimated as from six to eight weeks, or even sixty days. In the 3rd Edition of Saunders's Manual (Eagle Clarke) it is given as from fifty to sixty days, all this data having evidently been copied from previous authors.

The Fulmar frequents a site for several years before finally nesting there, and for seven or eight years a pair so frequented a small island in Orkney, and sometimes laid an egg there which did not hatch, but this year, for the first time, the egg hatched and the young bird got away.

The egg was laid either on May 29th or more likely, on May 30th, and hatched on July 9th, giving an incubation period of forty or possibly forty-one days at the most.

On August 21st, although full-grown, it was still in the nest, and a wireless message on the morning of September 4th stated that it was still there. On the evening of that day, however, it left the nest for the first and last time, and did not return. This makes the nestling period eight weeks and one day, or fifty-seven days, which added to the incubation period of forty days, gives a total of ninety-seven days, or fourteen weeks all but one day. The nest was under a rock protected on three sides, the opening being about three feet by two feet, and about two feet high. The young one did not leave the nest until it did so for good.

H. W. ROBINSON.

EARLY BREEDING OF STONE-CURLEW.

FURTHER to the Rev. F. C. R. Jourdain's note on the above subject (*antea*, p. 133) it may be of interest to record that on May 6th, 1933, I found two young Stone-Curlews (*Burhinus æ. ædicnemus*) in Buckinghamshire. The chicks were estimated to be about twenty-four hours old. Allowing 26 days for incubation, the full clutch must have been complete about April 9th to 10th.

G. K. YEATES.

ON May 10th, 1935, in the Salisbury district, I found two young Stone-Curlews, apparently not more than two days old. Allowing 26 days for incubation, the clutch of eggs must have been complete by April 12th or 13th. This was on the exposed crest of a high, bleak hill.

In exactly the same spot I found two eggs on April 10th, 1936, and the bird was then incubating. R. WHITLOCK.

UNUSUAL NUMBERS OF LITTLE STINTS

As the following observations will show, Little Stints (*Calidris minuta*) have been seen in unusual numbers in various parts of the country this autumn. It would seem advisable to record the movements and numbers of these birds as fully as possible and we shall therefore be glad to have any further observations that our readers may have made.

FIFESHIRE.—Two at Morton Loch, Tayport, on September 8th (G. Carmichael Low).

MIDLOTHIAN.—Four at Threipmuir Reservoir, Edinburgh, on September 12th (G. C. Low with H. F. D. Elder and J. N. B. Munro).

CHESHIRE.—Two at Altrincham Sewage Farm on September 24th and 27th, four on October 4th and one on October 8th (A. W. Boyd).

NORFOLK.—Twenty-seven at Carvel Pool, Weybourne, on September 20th, thirty-five there on the 21st and twenty-one on Salthouse Broad; ten on Salthouse on the 24th (G. Carmichael Low with R. M. Garnett).

CAMBRIDGESHIRE.—Nineteen (with nine Curlew-Sandpipers and five Ruffs) at Cambridge Sewage Farm on September 20th (R. C. Homes with H. A. Littlejohn and L. Parmenter).

ESSEX.—Nine at Chelmsford Sewage Farm on September 13th (R. C. Homes with D. A. T. Morgan and C. W. G. Paulson).

SUSSEX.—Eight and two at the Midrips on September 17th. The eight remained until the 19th but had gone on the 20th, when the two were still present, but left before the 24th (N. F. and R. N. Ticehurst). Two at Chichester Harbour on October 18th (P. A. D. Hollom and B. W. Tucker).

SURREY.—One at Brooklands Sewage Farm on August 24th, September 14th and 16th and three on the 18th (P. A. D. Hollom).

BERKSHIRE.—Five on Windsor Sewage Farm on September 19th (P. A. D. Hollom).

BUCKINGHAMSHIRE.—About twenty at Slough Sewage Farm on September 11th and twenty-five on the 18th (W. B. Alexander); ten there on the 26th (R. J. Spittle); six on the 27th (R. C. Homes); two on the 30th and one on October 4th (O. Höhn).

GLOUCESTERSHIRE.—One on mud flats below Severn Beach on September 20th (H. H. Davis and H. Tetley).

SOMERSETSHIRE.—Two at Barrow Gurney Reservoir on September 26th (J. H. Savory and H. Tetley).

SPOTTED REDSHANKS IN CAMBRIDGESHIRE.

ON September 20th, 1936, in company with Messrs. H. A. Littlejohn and L. Parmenter, I observed a party of four Spotted Redshanks (*Tringa erythropus*) at Cambridge Sewage Farm, and heard the distinctive call-note. Previous records for the county refer to single birds or pairs. RICHARD C. HOMES.

FLOCK OF AVOCETS IN HAMPSHIRE.

ON August 7th, 1936, Miss N. Shaw saw a flock of 12 black and white birds with upcurved bills about 4 p.m. in Christchurch Harbour. She reported the occurrence to Miss C. Popham who on the 8th saw and identified three Avocets (*Recurvirostra avosetta*) on the wing. On July 9th she again put up two Avocets which flew off and later in the day found eleven about on the mud together with Common Terns and was able to get quite close to them in a boat.

On the 10th I was on the marsh and heard the calls of Avocets among some hundreds of Gulls on the wing. They were in a small, compact flock and finally settled in shallow water. On approaching them later I found they were twelve in number and through the glass some appeared to be immature, judging from the brown markings on the head. They were rather shy and finally flew out of sight. Subsequently Miss Popham again met with the same flock in the Harbour on the 11th but they seem to have left soon afterwards.

There is a previous record of eighteen seen on Southampton Water in 1880, of which twelve were shot ; with this exception, this appears to be the largest flock which has reached the county.

F. C. R. JOURDAIN.

LITTLE GULL IN CAMBRIDGESHIRE.

AT Cambridge Sewage Farm on August 23rd, 1936, in company with Dr. Lack, Messrs. R. C. Homes and C. S. Bayne, I watched an immature Little Gull (*Larus minutus*). When first observed the bird was swimming and feeding with some Black-headed Gulls. On the water the darker mantle, streaked crown and blackish ear-coverts were plainly visible ; while the smaller size, upright carriage of the tail, and the curious jerky "phalarope-like" swimming action immediately attracted attention. At close quarters in flight the bold black marking on the upper side of the wing was especially conspicuous. The tail was square, white, with a brownish terminal band. The under-parts showed entirely white. The flight was desultory, the action tern-like, but the shorter and more rounded wings gave the bird the appearance of a small Black-headed Gull.

C. W. GEOFFREY PAULSON.

GREAT GREY SHRIKE IN SURREY.—Mr. Kenneth R. Chandler sends us particulars of a Great Grey Shrike (*Lanius excubitor*) which he watched near Oxted on March 18th, 1936.

ROBINS OCCUPYING VACATED TERRITORY.—Mr. A. G. B. Wainwright informs us that on September 20th, 1936, a Robin (*Erithacus v. melophilus*) was inadvertently killed in a

mouse-trap. During the morning and afternoon of the same day he caught and ringed four different Robins in a Potter trap set near the centre of the territory of the dead Robin. This trap had been working for some time previously in the same place and had failed to catch the owner of the territory or any other Robin. This would seem to provide evidence of severe external pressure on unoccupied territory when eligible.

AMERICAN GOSHAWK IN THE SCILLY ISLES.—Mr. F. W. Frohawk records (*Field*, 30, v. 36, p. 1318) that an adult male American Goshawk (*Accipiter g. atricapillus*) occurred at Tresco, on December 28th, 1935. The bird, we understand, was examined and identified at the Natural History Museum. There is only one previous fully authenticated example, which was shot in Co. Tyrone on February 24th, 1919.

BRENT GEESE IN CO. DOWN IN SUMMER.—Mr. C. D. Deane informs us that on July 23rd, 1936, he observed a flock of nineteen Brent Geese (*Branta bernicla*) swimming near one of the islands of Strangford Lough.

FOUR EGGS IN NEST OF WOOD-PIGEON.—Mr. G. K. Yeates informs us that on September 17th, 1936, at Sherborne, Dorset, he found a nest of Wood-Pigeon (*Columba p. palumbus*) containing three eggs, and on revisiting the site on September 22nd, the number had been increased to four. Mr. Yeates states that it is evident from the stained appearance of the shells of two of the eggs and the condition of the interiors compared with the fresh and clean condition of the other two eggs, that this is a case of two clutches. Mr. Jourdain remarks that he himself met with a similar case in May, 1900, in Staffordshire, where a Wood-Pigeon was sitting on two fresh eggs, and had pushed to one side two discoloured ones.

FIRST BREEDING OF FULMAR ON FARNE ISLANDS AND YORKSHIRE.—*Corrections*.—Attention was drawn in our pages (Vol. XXIX., p. 360) to a statement by Mr. F. H. Edmondson (*Nat.*, 1935, p. 231) that the first proof of an egg being laid by the Fulmar (*Fulmarus g. glacialis*) on the Farne Islands, was in 1935, whereas the date of 1929 was given by the late G. Bokam. Mr. H. B. Booth informs us that the latter statement was certainly founded on an error and must have referred to the mainland, and Mr. Edmondson who visits the Farne Islands every year, affirms that the first egg seen was in 1935.

Mr. Booth desires us at the same time to correct a statement made in our pages (Vol. XVII., p. 40) that the Fulmar bred on the Yorkshire cliffs in 1021. The first eggs were taken

here in 1922, no eggs being found in 1921, although the climbers were keenly on the look-out for them.

WHITE-WINGED BLACK TERN SEEN IN CO. CORK—*Correction*.—In Mr. S. Baron's note on this subject (*antea*, p. 176) the locality was unfortunately printed as Slandore instead of Glandore.

REVIEWS.

Songs of Wild Birds. By E. M. Nicholson and Ludwig Koch. (H. F. & G. Witherby.) Gramophone Records and Illustr. 15s.

To review a book and gramophone records simultaneously is a little difficult; but the two are in this case inseparable and undoubtedly each is enhanced by its connection with the other. Mr. Koch's records of the songs of Nightingale, Cuckoo, Thrush, Blackbird, Ring- and Turtle-Doves, Willow-Wren and other birds are extremely good. The fact that the Robin's song sounds very like a Willow-Wren's in places is not a criticism, for one knows how nearly alike they sometimes are in nature—particularly, it often seems, in the first week of April. And the Great Tit's, though a somewhat unusual variant of that bird's song, has the typical metallic twang about it. These records should do much to help people to learn to distinguish the bird-songs. It is also great fun trying to pick out some of the faint songs and calls heard in the background.

Those who possess the combined book and records will not need to be urged to listen to the records; their very novelty will no doubt get them a good hearing. But it is to be hoped that no one will think that, having heard the records, he can neglect the book. This is all written by Mr. Nicholson, except one short chapter in which Mr. Koch explains how the records were obtained. Practically half the book is devoted to a description of bird-songs—including some of the more notable non-passerine seasonal sounds—and it is by far the most lucid and satisfying account of them that I have come across. Mr. Nicholson makes use of the good work of Messrs. Stanley Morris, Garstang and other earlier writers; but a great deal of the descriptive writing is entirely new and original, and it should be most helpful to all students of the subject. I have only one serious quarrel with him. Like Mr. Morris, he seems to regard the Spotted Flycatcher as a bird that very rarely sings: "A poor and rarely heard inward sub-song," he calls it. It is certainly a feeble affair compared with the musical ditty of the Pied Flycatcher; but it is as loud as any noise the Spotted Flycatcher ever makes (as far as I know) and is plainly audible in good conditions at a distance of thirty yards. And I think I could guarantee in almost any suburban area to set Mr. Nicholson down in a spot where, between the time of their arrival and the end of June, he could be certain of hearing Flycatchers singing for several hours per day, with only short breaks for "flycatching." Can it be that its "frequency" is too high for Mr. Morris's and Mr. Nicholson's ears? I am also surprised that he describes the Chiffchaff's song as if it were a constant alternation between two notes. In my experience hardly any individual Chiffchaff has a song of that pattern; and I think it is because it is so described that people so often think a Great Tit is a Chiffchaff. Naturally, there are various minor points like this on which no two ornithologists can be expected to agree entirely.

The earlier chapters of the book discuss what bird-song is and why birds sing. Mr. Nicholson wisely recognises that territorial significance, advertising the singer's presence, stimulus to the singer's mate and the

expression of well-being all play a part in the production and development of bird-song. I could wish that he had discoursed on this and some kindred topics at greater length, but perhaps that would not have fitted a "manual" of this character.

Here, as in his earlier books, Mr. Nicholson shows us how little we know and what dunces we all are. In some places you are almost led to feel that you ought to spend a whole year sitting in one spot—or better still, in six different spots in order to make comparisons—and whilst sitting there, with pencil and note-book in one hand and stop-watch in the other, contrive to withdraw your ears (but not your eyes) fifty yards, a hundred yards, a quarter of a mile, a mile, in order to test how far off you can hear the bird you are listening to, and in order to notice precisely when, how and in the end why it does it. But that is just Mr. Nicholson's way of suggesting that we might at least spend an occasional hour or two studying bird-song scientifically. If this book is as widely read (and listened to) as it ought to be, it should both promote knowledge and stimulate a good deal of enquiry along well-regulated lines about songs and other bird noises. H.G.A.

Bird Migration. By A. Landsborough Thomson. Bird-Lovers Manuals. (H. F. & G. Witherby.) Illustrated. 5s.

THIS little book is a welcome addition to this well-known series and we may say at once that it contains an admirably plain and straightforward account of the present state of our knowledge of the various phenomena, facts and theories relating to the subject of bird migration. At the same time it is a fascinating and eminently readable book. For the beginner a better introduction to the study of migration could not be written, while for the experienced ornithologist there is plenty to guide him into those directions where his time and energies can be most usefully expended in study or experiment, with a view to the elucidation of still unsolved problems. The book is divided into four sections. The first begins with a brief historical sketch of the ancient ideas about migration and then describes the different types and the phenomena of migration. The second sets out the directions, seasons and methods of migration, the third describes its immensity, complexity and regularity, while the fourth contains a discussion of the various theories that have been advanced to explain how and why migration is performed at all.

The descriptions in each section are admirably lucid and are adequately supplied, but not overburdened, with illustrative examples and charts. The book is one that no bird lover can afford to be without. —N.F.T.

LETTERS.

SWALLOWS AND BLOOD-STAINED COW'S MILK.

To the Editors of BRITISH BIRDS.

SIRS,—I have read Mr. A. W. Boyd's "Report on the Swallow Enquiry, 1935" (*antea*, pp. 98/116) with much interest.

In Dumfriesshire, there is a belief that the presence of Swallows in a cow-byre ensures good luck. It is certainly curious that, in 1932, Swallows failed to build—for the first time in many years—in a cottager's byre and that his cow should, after yielding blood-streaked milk, have gone dry altogether.

HUGH GLADSTONE

CAPENOCH, PENPONT, DUMFRIES.

September 4th, 1936.

[It is just possible that there is a grain of truth in the old superstition that the disturbance of Swallows causes cows to give blood-stained milk, a wide-spread belief to which reference was made in the Swallow enquiry (*antea*, p. 108). Mastitis, or inflammation of the quarters of a cow's udder, is due to bacterial infection. Mr. C. N. Jones, M.R.C.V.S., with whom I have discussed this, assures me that the infection in summer is largely fly-borne and that mastitis is most prevalent in August when flies are most abundant. It may also be spread by milking an infected cow and then another immediately after, but it seems clear that flies are the most active agents of infection. A reduction in the Swallow population might therefore have some slight effect on the incidence of summer mastitis but it is difficult to believe that the desertion of one particular farmstead would be of serious importance at a time when cattle are living in the meadows, unless it was part of a general reduction of the Swallow population of the district.

In Cheshire I have on numerous occasions come across another superstition in connection with this disease. It is quite customary when a cow has mastitis to milk it straight on to the floor of the shippin instead of using a bucket; this, of course, gives the flies their chance and increases the need of protection for Swallows, if, as seems possible, their presence is of value. It is almost impossible to stop this objectionable custom, which is on a par with the equally evil custom of hanging up a dead calf to stop contagious abortion in cattle; it was only yesterday that I heard that this latter superstition was still believed in and practised.—A. W. BOYD.]

REPORTED BREEDING OF FULMAR AND MANX SHEARWATER IN PEMBROKESHIRE.

To the Editors of BRITISH BIRDS.

SIRS,—Mr. W. A. Cadman has brought forward some evidence that the Fulmar Petrel (*Fulmarus g. glacialis*) bred in Pembrokeshire in 1935 (*antea*, p. 133), and the Manx Shearwater (*Puffinus p. puffinus*) on the Pembrokeshire mainland in 1936 (*antea*, p. 175), but I venture to suggest that the evidence is not conclusive. With regard to the Fulmar, I have interviewed the coastguard mentioned, and was not able to get absolutely satisfactory proof from him of its breeding. In common with other observers I have watched the progress of this colony of non-breeding birds at the Stack Rocks with some interest, and though no doubt they will breed in time, it seems certain that they have not done so up to the present.

With regard to the Manx Shearwater, this bird is heard screaming at night at most places along the Pembrokeshire coast from St. Davids south to Amroth, and as a result it has been credited with having bred at various places, *e.g.*, Marloes (where birds have been found in rabbit burrows by ferreters, as Mr. Cadman found near St. Govan's), Linney Head and Amroth. I have *heard* of eggs being found at these three places, but until they are so found, or the young discovered, by a competent observer, the question must remain open. The remains of Shearwaters which have been killed by gulls at sea and carried or blown inland are of course commonly picked up along the whole of the Pembrokeshire coast.

R. M. LOCKLEY.

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CONTENTS OF NUMBER 7, VOL. XXX., DECEMBER 1, 1936.

	PAGE
The Index of Heron Population, 1936. By E. M. Nicholson ...	202
An Observation of the Roosting of Swifts. By B. W. Tucker ...	206
On the Food of Some British Birds. By James N. Campbell ...	209
Birds of the Island of Steep Holm. By Stanley Lewis ...	219

Notes :—

Scandinavian Jackdaws in Scotland (H. F. Witherby) ...	224
Nests and Broods in 1936 in Whipsnade Bird Sanctuary, Bedfordshire (J. S. Huxley) ...	224
Water-Pipit in Kent (Col. H. W. Madoc) ...	225
Continental Golden-crested Wren in Lancashire (P. A. Clancey)	226
The Booted Warbler on Fair Isle. A New British Bird (G. Stout and G. Waterston) ...	226
Bluethroats in Kent and Sussex (Dr. N. H. Joy, N. F. Ticehurst and E. C. Arnold) ...	227
White-tailed Eagle in Norfolk (Miss M. Barclay) ...	228
Heron and Cattle (D. G. Pumfrett) ...	229
<i>Puffinus kuhlii</i> off the Sussex Coast (C. M. N. White) ...	229
Unusual Numbers of Little Stints ...	230
Glaucous Gull in Denbighshire (M. Mitchell) ...	230

Short Notes :—

Rare Birds in Fair Isle. Great Grey Shrikes in Surrey and Derbyshire. Black Redstart in Surrey. Barn-Owl in Inner London ...	231
--	-----

Letter :—

Ménage à Trois in the Mute Swan (J. C. S. Ellis) ...	232
--	-----

PUBLICATION OF THE BRITISH TRUST
FOR ORNITHOLOGY.

THE INDEX OF HERON POPULATION, 1936.

BY

E. M. NICHOLSON.

DURING the past year it has been possible still further to improve and to broaden the base of the national index started in 1934 in order to measure fluctuations in the breeding stock of Herons (*Ardea c. cinerea*). The index and the method of compiling it from returns sent in by observers all over England and Wales have already been described in *British Birds* (Vol. XXVIII., pp. 332-341), while the 1935 index figure and a map of the regions showing the changes in their Heron population appeared in Vol. XXIX, pp. 98-101. Among improvements carried out has been the extension of the sample to cover more than seventy heronries distributed over no less than fifty out of the fifty-three counties of England and Wales—that is all except Rutland, Middlesex and London, in which the species is not known to breed. Even more important in the long run is the work that has been done in preparing for further extensions. Records are now being kept of more than a hundred and twenty heronries in the British Isles, and although it may be some time yet before a reliable index can be obtained for Heron population in Scotland and Ireland a start has been made with the keeping of records at fourteen Scottish and seven Irish sites.

Last year we had to record a setback which reduced the breeding population of Herons in England and Wales to a fraction below the 1928 level. In the 1936 breeding season this slight fall in numbers was made good, and for England and Wales as a whole numbers are slightly above those of 1928. The recovery is, however, more than accounted for by local revivals of numbers in S.E. and S.W. England, other parts on balance showing a decline.

Scotland, to judge by the small sample available, appears to be distinctly above the 1928 level, and if we take all the heronries in Great Britain for which 1928 and 1936 figures are available, aggregating at present 1,535 nests, we get a 3 per cent. increase on 1928. The table following, however, is confined, as on previous occasions, to England and Wales.

PROVISIONAL INDEX OF HERON BREEDING POPULATION (1928=100).
 (Since 1934 several heronries have been added, but figures for earlier years have not been adjusted. The increasing numbers in the sample do not therefore mean a corresponding increase in breeding stock.)

<i>Year.</i>	<i>Index.</i>	<i>Number of Nests in Sample</i>	
1928	100	1,032	
1929	85	487	N.B.—The sample for 1929-33 is not adequate, and these figures should be treated with special caution.
1930	92	566	
1931	111	277	
1932	100	223	
1933	104	360	
1934	102	1,196	
1935	99	1,235	
1936	101	1,264	

We are now accumulating knowledge very rapidly about the normal movements of Heron population in England and Wales, which are evidently confined within remarkably narrow limits. It will be extremely interesting to be able to measure by this "yardstick" the effects, if any, of the next really severe winter, and we still have much to learn about the nature and causes of fluctuations in individual heronries and in the various regions of the country. These are much more conspicuous than changes in the Heron breeding population as a whole.

Some account of regional changes has already been given in the previous papers already referred to, and the story can now be brought up to date. In north-east England, if we exclude a single colony which has shown a highly abnormal rate of growth during the past eight years, breeding Herons are about at the 1928 level, and a number of minor increases and decreases during the past year about balance one another. The region has satisfactorily recovered from the setback experienced between 1928 and 1934. In north-west England the gains registered up to 1935 have not been held, five out of six heronries in the sample showing a decline compared with last year, whereas in 1934 five out of seven showed an advance. The decrease exceeds ten per cent., but in view of recent increases in this region the setback cannot be regarded as disturbing, numbers being still appreciably above 1928.

The instability of Heron breeding population in Wales and the Welsh border counties has previously been pointed out. This year total numbers are close to those found in 1935, and are well above the 1928 level, but individual heronries have fluctuated violently. The 10 sample heronries in this region may be divided into two groups of 5 with a total of 74 nests in each group this year. One of these groups, however, has declined from a total last year of 99, while the other has

increased from a total of 44, and these movements are typical of the erratic changes to which heronries seem even more subject in this region than elsewhere.

In the Midlands numbers appear still to be above the 1928 level, but are slightly decreasing generally, and if the substantial reduction in numbers at one exceptionally large colony were taken into account the decrease would be considerable. The situation is especially disturbing in Staffordshire, where a complete census of all ascertainable sites showed that no less than four well-known heronries, which mustered in 1928 as many as 47 breeding pairs, have since become extinct, in some cases at least through deliberate human action. Two other heronries in the county have increased and two small sites not previously recorded have come to light, but Herons breeding in Staffordshire as a whole have dropped from about 75 pairs in 1928 to about 42 pairs in 1936.

In the eastern counties, where the sample was formerly rather weak, an improvement has been effected, and nine sites are now under observation. Of these three show increases and six decreases. East England was already seriously below 1928 numbers last year, and this additional setback, affecting five out of the six counties in the region, makes it replace south-west England as the region where recovery is most overdue.

In south-west England, out of eight heronries included in the sample, five increased between 1935 and 1936, two showed no change and only one declined. The resulting increase of nearly 20 per cent., although welcome, still leaves this region appreciably below the 1928 level. As Cornwall had not previously been included, it should be noted that a very thorough investigation by Mr. G. M. Spooner of seven of the sites at present occupied in this county yielded a total of 55 nests, 50 of which were in heronries for which 1928 figures are available, the total for the same group in that year being 75. It seems clear, therefore, that Cornwall has shared the decline experienced in Devon and Somerset.

Sampling in the south-east region is peculiarly unreliable owing to the exceptionally high average size of its heronries and the extent to which it is reduced by the taking out of the Thames drainage basin for special treatment on an area footing. The five heronries counted in 1928, 1935 and 1936 in this region are rather above the 1928 level as a whole, principally owing to the remarkable growth of a single Kentish colony.

It will be recalled that in order to check the effects of the dying out of former heronries and the foundation of new ones the Thames drainage area is counted as a unit, all sites being included in each year, regardless of whether they existed previously or subsequently. A revision of provisional figures for this area shows that the decline between 1934 and 1935 was rather smaller than was suggested last year (*Brit. Birds.*, Vol. XXIX., p. 101), and as there has been a fractional improvement since then, the present Thames Valley numbers are only some 3 per cent. below 1928 level. Considering that Fawley and Wanstead, which were much the largest heronries in the area in 1928 have each lost nearly fifty pairs during the past eight years it is remarkable that the area as a whole has remained so stable.

To sum up, Heron breeding population in 1936 recovered to slightly above the 1928 level in England and Wales as a whole, and preliminary sample figures indicate a similar position in Scotland, while in Ireland it will be necessary to wait another year before any comparable figures become available. The greater attention now paid to regional changes, and the collection of material regarding more than a third of the heronries and Heron population of England and Wales show that violent fluctuations in particular heronries or areas are constantly occurring despite the apparent stability of the national totals. Every county in which Herons breed in England and Wales is now covered by the sample, but more help will be needed to produce reliable returns for Scotland and Ireland.

As before, it must be emphasised that the share of the writer has been confined to preparing this report, the work on which it is based having been carried out by more than ninety observers sending in their returns to W. B. Alexander, M.A., University Museum, Oxford, who has drawn up the necessary tables on behalf of the British Trust for Ornithology. Thanks are due to all those whose co-operation is contributing to the success of this experiment.

AN OBSERVATION ON THE ROOSTING OF SWIFTS.

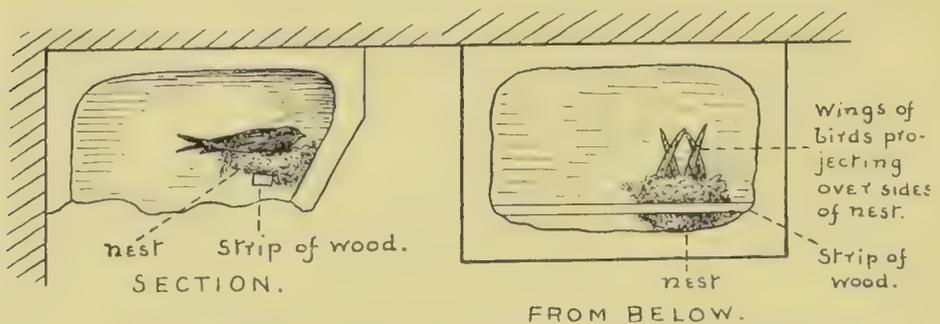
BY

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FROM time to time the question of how Swifts spend the night has excited the curiosity of ornithologists and the suggestion has even been made that after their crepuscular flights the birds sleep on the wing at great heights in the air. The problem of what happens after these collective evolutions is perhaps not directly affected by observations confined to a few individuals. Nevertheless the paucity of information regarding the night behaviour of Swifts in any circumstances, due to the inaccessibility to observation of most of the situations in which they nest and might be supposed to roost, appears to render the following experience deserving of record.

When on holiday in Corsica this summer my wife and I spent the night of August 24th at Bastia in the north-east of the island. At night we found that a cavity above our bedroom window was occupied by two adult Swifts (*Apus apus*), which were evidently roosting there. Part of the ornamentation of the facade of the hotel consists of sham supports to the balconies like inverted buttresses (I am not acquainted with the proper technical term for these structures) which, in fact, are no more than hollow shells of stucco. The greater part of one of these constructions above our window had been broken away, leaving only the upper portion, enclosing a cavity like an inverted box, which without



Diagrams illustrating the roosting cavity of Swifts
described in the text.

accurate measurement I should estimate at some 15 ins. long by about 10 ins. wide and not more than about 8 ins. deep. Across the opening an inch or two from the outer edge was a narrow strip of wood, probably part of some framework

used in the casting, and stuck up against the outer wall of the cavity, partly supported by this strip, was an accumulation of droppings, feathers, etc., which appeared to be an old Swift's nest. The birds sat on this with their wings projecting over the edge towards the wall of the building and for some time prior to settling down for the night continued to shuffle about and change their positions now and again, keeping up for considerable periods a persistent "chick, chick, chick . . ." varied occasionally by the typical Swift scream.

At sunrise the following day (5.40½ a.m., summer time*) the birds were still in their roost, but preparatory to leaving there was a good deal of shifting and scuffling, and for a time they were clinging to the inside of the cavity, the outer wall of which was not, in fact, vertical, but slanted outwards (see diagrams, which are drawn from memory to clarify the description and are not intended to be exact in detail). A few minutes after sunrise they shot out and were gone.

It had been our intention to leave that morning, but in order to make some further observations we altered our plans and remained another night. In the cavity of another damaged stucco ornament close to the window there proved to be an occupied Swift's nest with a nearly fledged brood. I did not see the parents visit these during the day, but at 7.17 (sunset being at 7.10½ p.m., summer time) the (presumed) female entered the hole and was not seen to emerge again. At 7.35 the other two birds swept practically simultaneously into their shelter. The nicety of judgment and extraordinary muscular control which enabled them to enter this relatively small space apparently going at full tilt up to the last split second afforded an impressive object lesson. A fourth bird entered a crevice between two projecting bits of stucco work lower down on the building, and the thud of its entry could be heard many feet away. At about 11 p.m. I confirmed that the two birds were still in their cavity.

Next morning I began observation at about 5.10 a.m., when they were already beginning to shuffle about and "talk"—the insistent "chick, chick, chick," already referred to, going on for considerable periods with irregular intervals of silence and at times becoming more of a chirrup than the simple "chick," with once or twice the familiar scream, as before. I had seated myself in as inconspicuous a position as possible at the open window with the object of timing their departure

*The exact times of sunrise and sunset at the place and dates concerned have been kindly supplied to me by Prof. H. H. Plaskett, the Savilian Professor of Astronomy at Oxford.

with reference to sunrise (5.41½ a.m.), but although they had previously shown no marked signs of objecting to observation, their suspicions were evidently aroused on this occasion. Instead of leaving within a few minutes of sunrise as on the previous day they remained in their shelter, though as early as 5.20 another bird was already on the wing outside and screaming, while at 5.23 two were seen. At 6.30 they were still in the cavity, though off the nest and clinging to the side. At 6.36, being due to leave soon after, I had to break off observation, and by 6.45 they had gone.

The failure to determine precisely the relation of the time of their normal departure to sunrise was, however, a minor matter. The chief interest of the observation lies, I think, in the fact that whereas in general, even if birds are seen to enter possible roosting places it is not practicable to follow their movements further or to be positive that they are not returning to eggs or young, in the present case the lucky and unusual combination of circumstances described allowed one to observe not only the entry and departure, but also the behaviour inside the roost of two birds not engaged in incubation. My only regret was that our arrangements did not allow of further observations, but in case any visiting ornithologist cares to extend them in a future season I have kept a note of the number of the room!

ON THE FOOD OF SOME BRITISH BIRDS

BY

JAMES W. CAMPBELL.

THE following notes are some of the results of stomach examinations which I have carried out during the last two years. A great deal of work has been done already on the food of British birds, but nearly all of this has been concerned with their economic status, and there are other aspects which have hardly been touched upon. For instance, there is little detailed information available to show the part which locality and different types of country may play in modifying feeding habits, and it is hoped that the results given here for Jay, Barnacle-Goose, Golden Plover, and Partridge, may be of use in this connexion, for comparison with results from other districts. Throughout the present investigation, whenever possible, the "stomach" contents have been estimated volumetrically, and percentages of the various food items are given. It must be pointed out that the totals concerned are small and in no case is it felt that sufficient examples have been examined to justify any opinion on the economic status. No attempt has been made to separate the food contents into "beneficial," "injurious," or "neutral" groups.

The vegetable and animal matter have been submitted for identification to the Departments of Botany, Zoology, and Entomology at the British Museum (Natural History), and I wish to acknowledge my thanks to the following for their help in this respect:—Mr. A. J. Wilmott, Mr. G. Tandy, Mr. A. H. G. Alston, Mr. W. R. Sherrin, and Miss M. S. Campbell (Botany); Dr. S. Finnegan (Arachnida); Dr. I. Gordon (Crustacea); Mr. J. R. le B. Tomlin (Mollusca); and Dr. K. G. Blair (Entomology). I am indebted to Mr. A. D. Middleton, of the Bureau of Animal Population, Oxford, for the suggestion that the volumes should be measured by water displacement, and to Mr. W. B. Alexander, Mr. N. B. Kinnear, and Mr. H. F. Witherby, for advice while preparing these notes. I also wish to thank Mr. A. MacCuish, keeper at Newton, North Uist, for the trouble he has taken in collecting botanical specimens for comparison with fragments found in some of the stomachs.

METHOD:—Only the upper portion of the alimentary tract (oesophagus, crop, proventriculus, and gizzard) was examined. After the various food items had been sorted out and freed from grit, their volumes were measured by means of the upward displacement of water in a graduated measuring glass. Three of these were used, graduated in cubic centimetres,

0.5 cubic centimetres, and 0.1 cubic centimetres, respectively. In order to overcome the difficulty caused by volumes less than 0.1, it was necessary in some cases to measure the contents of several stomachs together. There was also the risk that gross inaccuracies might be caused through the absorption of water by certain substances during the preliminary washings which were often required to remove grit. To avoid this, the contents were exposed to water for the shortest possible time, and drying was necessary before the volumes could be determined.

NOMENCLATURE :—The names used are from the following authorities :—Coleoptera—*A Catalogue of the Coleoptera of the British Isles*, by Sir T. H. Beare. Lepidoptera—*The Moths of the British Isles*, by Richard South. Mollusca—*British Snails*, by A. E. Ellis, and “The British Marine Mollusca”, by R. Winckworth, (*Journal of Conchology*, Vol. 19, No. 7, 1932).

NOTE :—In all cases, except the Pheasant, the numbers in brackets denote the number of “stomachs” in which the various food items occurred; in the Pheasant they refer to the number of specimens which were present.

ROOK (*Corvus f. frugilegus*).

Sixty-eight stomachs examined; fifty-eight from Essex, eight from Hertfordshire, and two from Hampshire. May 8th to May 17th, 1934. All were immatures of the “brancher” stage, still being fed by their parents.

RESULT.—Vegetable matter(67) = 87.9%. Animal matter (58) = 12.1%. The vegetable matter was made up as follows :—

- (A) Cereals (52) = 60.4%—wheat, barley, oats, maize and unidentified corn husk.
- (B) Peas (6) and potatoes (13) = 17.4%.
- (C) Miscellaneous vegetable matter = 10.1%—acorn (13), grass, roots, green leaves, seeds of *Polygonum aviculare*, and of *Rumex* sp., and unidentified vegetable matter.

The animal matter was made up as follows :—

- (A) Larvæ = 4.2%—Coleoptera : *Staphylinus olens*, *Byrrhus pilula*, *Melolontha vulgaris*, *Lacon murinus*, *Agriotes* sp. Lepidoptera : *Agrotis* sp., *Miana* sp., *Xylophasia* sp. Diptera : TIPULIDÆ, TABANIDÆ, THEREVIDÆ, MUSCIDÆ and ? STRATIOMYIDÆ. Also unidentified larvæ.
- (B) Insects other than larvæ, millepedes, woodlice and spiders = 6.5%. Isopoda : *Armadillidium vulgare*. Diplopoda : Unidentified millipedes. Chilopoda : *Julus* sp., and unidentified centipedes. Dermaptera : *Forficula auricularia*. Coleoptera : *Clivina fossor*, *Ophonus pubescens*, *Aphodius erraticus*, *Aphodius fimetarius*, *Barynotus obscurus*, *Alôphus triguttatus*. Diptera : TIPULIDÆ and *Sarcophaga* sp. Hymenoptera : *Ichneumon suspiciosus*, an unidentified “ichneumon,” and *Myrmica* sp. Araneæ : *Philodromus* sp., *Lycosa* sp.

(c) Mollusca=0.5%. Gastropoda: *Helicella caperata*.

(d) Earthworms=0.3%, unidentified.

(e) Remains of mammal (1) and eggshell (4) } 0.6%.

(f) Miscellaneous animal matter

Mammal=rabbit. Eggshell=domestic Fowl and ? Song-Thrush.

REMARKS:—All were obtained from rookeries in arable districts. In view of the large proportion of cereals, it should be remembered that the spring of 1934 was one of drought, and it has been suggested that the hardness of the ground may have hindered the search for larvæ, etc. At a rookery where regular observations have been made covering a number of years, the evidence furnished by pellets below the nest trees, showed that during the nesting seasons of 1934 and 1935, an abnormal amount of cereals was taken. Although the percentage of cereals found in the stomachs examined is high, in the case of pellets, examination of a large number showed it to be considerably higher. The source of the cereals is also of importance. Owing to the time of year (May) it seems improbable that this was taken at the expense of the growers of cereal crops, and at the Layer Marney and Horkesley rookeries, observation showed that poultry runs and cattle troughs supplied the grain. Grit consisting of crushed shell of the type put down for poultry was also present in some of the gizzards. In nearly all the Rooks examined, a quantity of grit, of various types, was found in the gizzards.

JACKDAW (*Coloeus m. spermologus*).

Twenty-two stomachs examined; eleven from Hertfordshire, seven from Essex, three from Hampshire, and one from Norfolk; March to June, 1934.

RESULT.—Vegetable matter (21)=84.4%. Animal matter (14)=15.6%. The vegetable matter was made up as follows:—

(A) Cereals (17)=67.6% (of which wheat formed 45.4%)—wheat (14), oats (2), barley (2), maize (3) and unidentified corn husk (1).

(B) Miscellaneous vegetable matter=10.9%—acorn (4), apple (1), peas (1), seeds (1), green grass (1).

(c) Unidentified vegetable matter (3)=5.9%.

The animal matter was made up as follows:—

(A) Larvæ=2.8%—Coleoptera: *Byrrhus pilula*, *Agriotes* sp., ? *Otiorrhynchus* sp. Lepidoptera: *Agrotis* sp. or *Miana* sp., *Mamestra pisi*, *Xylophasia monoglypha* or *lithoxylea*, ? *Leucania* sp., ? *Larentia* sp., and unidentified larvæ.

(B) Coleoptera other than larvæ (4)=7.7%—*Pterostichus cupreus*, *Staphylinus æneocephalus*, *Byrrhus fasciatus*, *Aphodius ater*, *Aphodius prodromus*, *Aphodius luridus*, *Aphodius ? borealis*, *Corymbites æruginosus*, *Agriotes lineatus*, *Agriotes obscurus*, *Phyllobius pyri*, *Sitona flavescens*, *Tanymecus palliatus* and *Phytonomus punctatus*.

(c) Unidentified insect remains (10)=2.8%.

(d) Woodlice (1), millepedes (1), spiders (2)=1.6%—Isopoda : *Armadillidium vulgare*. Diplopoda : unidentified "millepedes." Chilopoda : ? *Julus* sp., Araneæ : *Lycosa* sp., and an unidentified spider.

(e) Mollusca (2)=0.3%—Gastropoda : *Trichia hispida*.

(f) Eggshells (2)=0.4%—Pheasant or Partridge.

REMARKS :—Both in the total percentages of animal and vegetable matter, and in the various items identified, the result is very similar to the findings for the Rook. The majority of the Jackdaws were obtained from the same localities as the Rooks.

JAY (*Garrulus g. rufitergum*).

Twenty-three stomachs examined from east Essex ; three in May, twelve in June, three in October, and five in November ; 1934 and 1935.

RESULT.—Vegetable matter (23)=72.1%. Animal matter (19)=27.9%. The vegetable matter was made up as follows :—

(A) Acorn (20)=50.3%.

(B) Peas (6)=10.2.—These were small green peas stripped from the pod.

(c) Fruits (9)=9.7%—apple, currant, gooseberry, strawberry, bramble, elder (*Sambucus nigra*) and dogwood (*Cornus sanguinea*) were identified.

(d) Seeds and miscellaneous vegetable matter (8)=1.9%—seeds were unidentified. Fragments of leaf tissue—oak and willow—and rootlets.

The animal matter was made up as follows :—

(A) Lepidoptera (9)=14.4%.—Ova : ?NOTODONTIDÆ. Larvæ : *Leucoma salicis*, *Diloba cæruleocephala*, ? *Tæniocampa* sp., ?*Cheimatobia brumata*, ?*Ennomos fuscantaria*, *Himera pennaria*, ? *Boarmia repandata*, TORTRICIDÆ (several genera) and other unidentified larvæ of NOCTUIDÆ and GEOMETRIDÆ. Pupæ : TORTRICIDÆ (several Genera). Imagines : ?*Phlogophora meticulosa*, *Cheimatobia brumata*.

(B) Other insects (13) and spiders (2)=1.6%—Orthoptera : ACRIDIIDÆ. Coleoptera : *Othius punctulatus*, ? *Phytonomus punctatus*, *Phyllobius pyri*. Diptera : *Bibio marci*, *Empis lividus*. ANTHOMYIDÆ. Hymenoptera : *Biorhiza aptera*, *Vespa* sp., CAMPOPLEGIDÆ (cocoon). Araneæ : *Lycosa* sp., *Araneus* sp., and an unidentified spider. Also unidentified Coleoptera and Diptera.

(c) Galls (3)=4.7%.—These were the marble galls (*Cecidia*) of oak buds which are produced by the gall fly (*Cynips kollari*).

(d) Remains of birds (5)=7.2%.—nestlings of Song-Thrush and Blackbird.

REMARKS :—All the Jays were from the Layer Marney—Tiptree district. The majority were from woodland in which oaks were dominant, six were killed in a garden where Jays had been damaging green peas, and one was from a fruit farm.

These results are interesting in that they stress the importance of the oak as a source of food in this district. It is surprising to find that acorns are taken in quantities in early summer as well as throughout the winter. Many of the acorns had sprouted and the rootlets found in the stomachs were evidently from this source. No whole acorns were present. In addition to acorns, the oak supplied a great part of the animal matter. The Lepidopterous ova were attached to oak-leaf tissue, the larvæ and pupæ of the GEOMETRIDÆ and TORTRICIDÆ (these formed the bulk of the Lepidoptera), many of which are oak-feeders, were evidently obtained from oaks for they were mixed in the stomachs with fragments of oak-leaf, while the marble galls and the gall fly (*Biorhiza aptera*) are also dependent on oaks. Results from other districts would be interesting.

HEBRIDEAN SONG-THRUSH (*Turdus c. hebridensis*).

One examined, North Uist, February 9th, 1935.

The following were identified :—

- (A) Larvæ—Diptera : ? TIPULIDÆ, ?TABANIDÆ. Coleoptera : *Agriotes* sp., *Phyllobius* sp.
- (B) Coleoptera : *Notiophilus substriatus*, *Notiophilus biguttatus*, *Quedius* sp., *Aphodius prodromus*, *Barynotus* sp., *Sitona* sp., *Chrysomela staphylea*.
- (C) Earthworm remains.

BARNACLE-GOOSE (*Branta leucopsis*).

Fourteen examined, from North Uist, January to February, 1935.

Vegetable matter formed 100% of the food taken. This was made up as follows :—

- (A) Green grass (14)=93.2%.—*Sclerochloa maritima*, *Festuca rubra*, *Poa* sp., and unidentified grass.
- (B) Leaves and stems of clover (5)=1.2%.—*Trifolium repens*.
- (C) Green leaves of other plants=4.8%.—*Bellis perennis* (4), *Ranunculus repens* (3), *Caltha palustris* (2), *Apium nodiflorum* (2).
- (D) Equisetum (1)=0.4%.—*Equisetum palustre*.
- (E) Moss, liverwort and fragments of seeds=0.4%.—Moss (2) : *Hypnum cuspidatum*. Liverwort (1) : *Lophocolea bidentata*. The seed fragments were unidentifiable.

PALE-BREASTED BRENT GOOSE (*Branta b. hrota*).

Three examined, from North Uist, January to February, 1935. Only vegetable matter was present. *Enteromorpha* sp., which formed the greater part of this, and the white fleshy roots and stems of *Zostera* sp., were identified.

WIGEON (*Anas penelope*).

Five examined, from North Uist, January to February, 1935. Three were full of *Ruppia* sp., one of *Enteromorpha* sp., and one of unidentifiable vegetable matter.

Two examined, from Benbecula, October to November, 1935. One was full of *Apium nodiflorum*. The other contained leaves of *Glyceria aquatica*, leaves and stems of *Trifolium repens*, moss (*Hypnum cuspidatum*), and unidentifiable seeds.

RINGED PLOVER (*Charadrius hiaticula*).

Two examined, North Uist, February 12th, 1935.

The following were identified:—

- (A) Larvæ—Lepidoptera: ? CRAMBIDÆ. Diptera: BIBIONIDÆ, ? *Dolopius*, TIPULIDÆ, MUSCIDÆ.
 (B) Coleoptera: *Notiophilus* sp., *Dyschirius* sp., *Quedius* sp., *Staphylinus* sp., *Xantholinus* sp., *Simplocaria semistriata*, *Aphodius prodromus*, *Hypnoidus riparius*, *Barynotus* sp., *Sitona* sp., *Ceuthorhynchus* sp.
 (C) *Mollusca—Gastropoda: *Hydrobia ulvæ*, *Limnæa peregrina*, *Cochlicella acuta*.

*These were included in a note "Shore Birds and Molluscs," *antea* Vol. XXIX., p. 183.

GOLDEN-PLOVER (*Charadrius apricarius*).

Seventeen stomachs examined, from Benbecula, October and November, 1935.

RESULT.—Vegetable matter (16)=23%. Animal matter (17)=77%. The vegetable matter was made up as follows:—

- (A) Grass, moss and fragments of green leaves (16)=22.1%.
 (B) Seeds (7)=0.9%.—*Brassica* sp., *Anthemis arvensis*, *Centaurea* sp., *Solanum* sp. and *Polygonum hydropiper*.

The animal matter was made up as follows:—

- (A) Larvæ (16)=35.4%.—Coleoptera: *Harpalus* sp., *Pterostichus* sp., *Amara* sp., *Staphylinus* sp. Lepidoptera: *Triphæna pronuba*. Diptera: BIBIONIDÆ, TIPULIDÆ, TABANIDÆ. Also unidentified larvæ.
 (B) Insects other than larvæ (16)=13.3%.—Dermaptera: *Forficula auricularia*. Coleoptera: *Notiophilus* sp., *Pterostichus* sp., *Amara* sp., *Tachinus* sp., *Philonthus* sp., *Ephistemus globulus*, *Simplocaria semistriata*, *Aphodius fimetarius*, *Aphodius punctatosulcatus*, *Sitona* sp., *Ceuthorhynchus* sp. Also unidentified remains.
 (C) Mollusca (16)=24.8%.—Gastropoda: *Cochlicopa lubrica*, *Helicella itala*, *Cochlicella acuta*, *Trichia hispida*, *Oxychilus alliarius* and *Vitrina pellucida*.
 (D) Earthworms (4)=3.5%.

REMARKS:—All were obtained on the Machair of the west coast of Benbecula. For a note of Mollusca found in other examples from the Outer Hebrides, see *antea*, Vol. XXIX., p. 183.

COMMON SNIPE (*Capella g. gallinago*).

Nearly one hundred and fifty stomachs opened. The contents of one hundred were saved for identification; from North Uist and Benbecula, October, November, January, and February, 1935 and 1936.

The following were present:—

Animal matter:—

(A) Larvæ—Coleoptera: *Agriotes* sp. Trichoptera: "caddis cases." Diptera: *Prionocera* sp., and two or three other genera of TIPULIDÆ, TABANIDÆ.

(B) Other insects: Coleoptera: CARABIDÆ, STAPHYLINIDÆ. Hymenoptera: FORMICIDÆ.

(C) Earthworm remains.

Vegetable matter:

(A) Seeds: *Vicia hirsuta*, *Sonchus arvensis*, *Myosotis cæspitosa*, *Solanum ? dulcamara*, *Polygonum persicaria*, *Polygonum hydropiper*, *Rumex acetosella* and unidentified seeds.

(B) Vegetable debris: Fragments of heather, rush, moss and grass, vegetable fibres, etc.

JACK SNIPE (*Lymnocyptes minimus*).

Seventeen stomachs examined; from Benbecula and North Uist; October, November, January, and February, 1935 and 1936.

The following were present:—

Animal matter:—

(A) Larvæ—Diptera: PSYCHODIDÆ and *Prionocera turcica*.

(B) Other insects—Coleoptera: *Laccobius* sp.

(C) Mollusca—Gastropoda: *Succinea* sp.

Animal matter:—

(A) Seeds: unidentifiable.

(B) Vegetable debris.

WOODCOCK (*Scolopax r. rusticola*).

Thirty-two stomachs examined; twenty-two from Benbecula, seven from North Uist, and three from Essex; November, January, and February, 1934, 1935 and 1936.

The following were present:—

Animal matter:—

(A) Larvæ—Coleoptera: *Lacon murinus*. Diptera: BIBIONIDÆ, TABANIDÆ.

(B) Pupæ: Diptera.

(C) Insects other than larvæ and spiders—Dermaptera: *Forficula auricularia*. Araneæ: unidentified.

(D) Earthworm remains.

Vegetable matter:—

(A) Seeds: *Ranunculus ? aquatica*, *Atriplex hastata*, *Polygonum convolvulus*, *Polygonum aviculare*, *Euphorbia helioscopia*, and ? *Carex*. Also unidentified seeds.

(B) Vegetable debris: grass-blades and roots, vegetable fibres, etc.

REMARKS:—It had been hoped to investigate series of stomachs by the volumetric method, but this was impracticable owing to the difficulty of obtaining full stomachs. All the Woodcock and Jack Snipe and nearly all the Common Snipe were killed between 10 a.m. and 3.30 p.m., but only one full stomach of each was found on examination. Three Common Snipe, killed at dawn as they flighted back from their feeding grounds, had stomachs packed full of food.

The findings for the three species are of interest on account of the large amount of vegetable matter which was present. Apart from seeds which occurred in most stomachs—over 75% in the Common Snipe—nearly all of this was fragmentary, consisting of minute portions of rush, heather, green leaves, moss, and rootlets, much of it in a decayed and rotting condition. In the Woodcock long strips of grass roots occurred similar to those found in the Golden Plover. From the nature of much of this vegetable debris, it seems probable that a great deal of it is taken in accidentally while boring, and the same explanation may account for the presence of seeds. Another possible source of some of the more comminuted vegetable matter, is the digestive tract of the larvæ which are taken as food. In the Common Snipe especially, the vegetable matter forms a dense, closely packed mass in the stomach, and it seems likely that this is ejected in the form of a pellet. In all three species a certain amount of quartz grit was present.

PHEASANT (*Phasianus colchicus*).

Sixteen stomachs of chicks, six to fourteen days old, examined; from a rearing-field near Winchester, Hampshire; May and June, 1934.

The following animal matter was present:—

Isopoda: *Philoscia muscorum* (3). Coleoptera: *Amara ovata* (1), *Phyllotreta crucifera* (1), *Apion ononicola* (1), *Apion flavipes* (1), *Apion ononis* (1), *Phyllobius viridiæris* (7), *Alophus triguttatus* (1), *Sitona waterhousei* (5), *Sitona sulcifrons* (2), *Sitona* sp. (1), *Phytonomus* sp. (2), *Mecinus pyraster* (1) and unidentified remains. Lepidoptera: Larvæ of *Zygaena* sp. (5). Diptera: ANTHOMYIDÆ (5). Hymenoptera: *Myrmica* sp. (1). Araneæ: *Lycosa* sp. (1). Gastropoda: *Trichia hispida* (1).

REMARKS:—Although Pheasant chicks are known to take much insect life, there is apparently, little information at present as to the identity of the insects taken. The lepidopterous larvæ were full grown larvæ of one of the burnet moths (*Zygaena*), which are examples of warning coloration and reputed to be distasteful to birds. The rearing-field was on

the borders of warren country. Pheasant chicks on the same rearing-field were seen to take earthworms and cockchafers (*Melolontha*).

COMMON PARTRIDGE (*Perdix p. perdix*).

Twenty stomachs examined; from Layer Marney, Essex; September and October, 1934.

RESULT.—Vegetable matter (20)=99.4%. Animal matter (5)=0.6%.

The vegetable matter was made up as follows :—

- (A) Green vegetable matter (20)=18.4%.—*Ranunculus repens* (1), *Ranunculus* sp. (1), *Cerastium glomeratum* (2), *Cerastium triviale* (1), *Cerastium* sp. (6), *Trifolium repens* (3), *Trifolium* sp. (11), *Sonchus oleraceus* (1), *Euphorbia exigua* (1), *Aira cæspitosa* (2), *Arrhenatherum avenacium* (1), *Poa pratensis* (1), *Poa* sp. (1), unidentified grass (14), unidentified leaves (4), and green vegetable debris (3).
- (B) Seeds (22)=46.6%.—*Ranunculus* sp. (1), *Arenaria serpyllifolia* (2), *Lotus corniculatus* (1), *Lathyrus pratensis* (1), *Lathyrus* sp. (1), *Centaurea nigra* (2), *Anagallis arvensis* (1), *Chenopodium* sp. (2), *Polygonum convolvulus* (4), *Polygonum persicaria* (1), *Polygonum aviculare* (1), *Polygonum* sp. (2), *Alopecurus myosuroides* (12) (53.4% of seeds), *Avena* sp. (1), *Cynosurus cristatus* (1), *Poa annua* (1), *Poa* sp. (1), *Festuca ovina* (1), *Festuca* sp. (3), *Hordeum nodosum* (2), unidentified seeds (8) and seed debris (3).
- (C) Cereals (11)=12.2%—wheat (3), oats (6), unidentified corn husk (2).
- (D) Beans (2)=20.8%.
- (E) Roots (1)=1.3%.—*Ranunculus bulbosus*.
- (F) Miscellaneous vegetable matter (3)=0.1%.

The animal matter was made up as follows :—

Orthoptera : *Chorthippus* sp., *Stenobothrus* sp., Hemiptera-Heteroptera : *Nabis* sp. Hemiptera-Homoptera : *Deltocephalus* sp. Coleoptera : *Micraspis 16-punctata*, *Phytonomus punctatus*. Lepidoptera : ? *Spilosoma* sp. Hymenoptera : *Lasius niger*. Also larvæ of NOCTUIDÆ (Lepidoptera), and pupæ of TIPULIDÆ (Diptera).

RED-LEGGED PARTRIDGE (*Alectoris r. rufa*).

Fourteen stomachs examined; east Essex; ten in September, three in October, and one in November, 1934 and 1935.

RESULT.—Vegetable matter (14)=96.8%. Animal matter (4)=3.2%.

The vegetable matter was made up as follows :—

- (A) Green vegetable matter (13)=32.6%.—*Ranunculus repens* (2), *Ranunculus* sp. (1), *Cerastium* sp. (4), *Trifolium repens* (3), *Trifolium* sp. (5), *Lamium* sp. (1), *Cynosurus cristatus* (1), *Poa* sp. (2), unidentified grass (9), unidentified leaves (4), and green vegetable debris (6).

- (B) Seeds (14) = 18.5%.—*Cerastium* sp. (2), *Trifolium repens* (1), *Vicia sativa* (1), *Leontodon autumnalis* (1), *Anagallis arvensis* (2), *Atriplex hastata* (1), *Polygonum aviculare* (3), *Polygonum* sp. (1), *Rumex* sp. (2), *Alopecurus pratensis* (3), *Alopecurus myosuroides* (3), *Festuca* sp. (3), unidentified seeds (1) and seed debris (1).
- (C) Cereals (9) = 26.6%—wheat (2), oats (5), barley (4).
- (D) Beans (1) = 8.1%.
- (E) Peas (1) = 3.0%.
- (F) Roots (1) = 2.9%—unidentified.
- (G) Acorn (1) = 5.1%.

The animal matter was made up as follows:—

Orthoptera: *Chorthippus* sp., *Stenobothrus* sp., Hemiptera-Heteroptera: *Nabis* sp. Hemiptera-Homoptera: *Deltocephalus* sp. Hymenoptera: ICHNEUMONIDÆ. Araneæ: unidentified. Also unidentified insect remains.

REMARKS:—The area in which all the Common Partridges were obtained comprised a total of six hundred and forty-two acres, of which arable formed approximately thirty-two acres, the rest being grassland. Several counts showed that at the beginning of September, 1934, there were one hundred and forty-seven Common, and forty-two Red-Legged Partridges in this area; there were also about forty wild Pheasants, and a number of fowls turned out on the stubble, besides other competitors for the food supply. The summer of 1934 was one of exceptional drought, and the scorched grassland was quite unsuitable for Partridges. There is always in this district much local movement amongst the Partridge population from July to October, but in 1934 this was more extensive, and unusual concentrations occurred wherever food was to be found. In this district also a number of coveys never leave the grassland for the arable, but in 1934 the movement to the stubbles as shown by several seasons mapped counts, was much more marked than usual.

In the above results for the Common Partridge, the 12.2% of cereals was fallen grain left behind on the stubbles; the beans—they had just sprouted—were from a field which had been recently sown. In the Red-legged Partridge, however, both the beans and peas were fallen seeds which had lain on the stubbles for some weeks, and can therefore hardly be considered as an injury. Unfortunately, not all the Red-legged Partridges were from the same locality, so it is unwise to compare the results for the two species too closely. The findings for the few obtained in the same area as the Common Partridges suggest that their food is much alike. In view of the very small percentages of animal matter, it should be borne in mind that the birds were killed in the autumn. The actual animal matter identified is very similar in both species.

BIRDS OF THE ISLAND OF STEEP HOLM

BY

STANLEY LEWIS, M.B.O.U.

THE island of Steep Holm is a huge rock composed entirely of carboniferous limestone rising abruptly to a height of 250 feet out of and above the waters of the Bristol Channel, about five miles off the coast of Weston-super-Mare and three miles W.N.W. of Brean Down, Somerset. Its top surface measures about half a mile in length and three hundred yards in breadth, and is covered with grass well cropped by rabbits (and formerly by goats), while a rank growth of "Alexanders" is gradually spreading over the whole island, and is exceptionally tall and thick at the west end where gulls find shelter in it for their nests. There are a few stunted trees at the eastern end. Some seventy years ago the island was fortified and this involved a great deal of excavation for batteries, "powder house" and so on, while in addition a "barracks house" was erected and still stands. It seems probable that these operations affected the Puffins and other birds which are said to have bred there in large numbers in former days, but do not now.



Steep Holm, June 15th, 1930, showing Eastern landing beach and ruins of hotel as well as North end, where Peregrine and Ravens nest.

Photographed by W. C. TAUNTON.

A more recent important human influence on the bird population is that for many years eggs of the Herring- and Lesser Blacked-backed Gulls were collected for human food and since this practice ceased in 1922 these Gulls have shown

a steady increase. Under the present lessee, who protects the island, a still greater increase has taken place.

In this article I give a full list of the breeding birds and brief references to those which have been definitely recorded as visiting the island to the end of 1935. Birds seen near the island, but not actually on it, have been omitted.

The list below has been compiled from old records and from those of different individuals who have from time to time visited there. I think it only fair to say that the recent avian history of this island to the end of 1933 is practically the work of a few ornithologists who have made the birds of Steep Holm more or less their study; they are the Rev. F. L. Blathwayt, Mr. Geoffrey C. S. Ingram, Col. A. E. Lascelles, Mr. H. Morrey Salmon, Mr. B. W. Tucker, the late Dr. W. J. Wigglesworth, and myself. Probably I have visited the island most often, and I have most of the particulars relating to individual observations if they are required. Neither Thos. Sleeman nor Mrs. Smith and family, who resided on the island for many years, kept any bird records, and what they have to relate is purely from memory.

LIST OF BIRDS WHICH BREED OR HAVE BRED.

RAVEN (*Corvus c. corax*).—One pair resident and breeding.

CARRION-CROW (*Corvus c. corone*).—About three pairs resident. During T. Sleeman's occupation it was a fairly regular breeder, I was once shown a nest by him containing young placed in the rocks on the north side; the unusual position was I presume due to lack of suitable accommodation, but Sleeman also found the nest in low bushes. On May 26th, 1929, Mr. B. W. Tucker saw an empty nest in a small sycamore. Two were seen round the rocks on the south side on May 5th, 1935, by Mr. H. H. Davis.

STARLING (*Sturnus v. vulgaris*).—Occasional visitor in small and large numbers, also summer resident for breeding purposes. Nest and young seen on May 26th, 1934, and another pair said to be breeding. Mr. H. H. Davis reports three seen on May 5th, 1935, one pair was breeding in the barracks buildings.

LINNET (*Carduelis c. cannabina*).—Found breeding by Col. A. E. Lascelles and myself; nest and four eggs May 17th, 1919, when both birds flew up from the ground in front of me.

SKYLARK (*Alauda a. arvensis*).—Spring and summer resident. Nests with eggs found and birds seen on several occasions by Mrs. and Miss Smith, T. Sleeman and myself: nests were found on the top of the island. Col. A. E. Lascelles also found it breeding.

MEADOW-PIBIT (*Anthus pratensis*).—Resident. I always found a few pairs breeding on the top of the island, and found nests with full sets of eggs, these were also found on many occasions by Mrs. and Miss Smith. Also found breeding by Rev. F. L. Blathwayt, Col. A. E. Lascelles and Messrs. Ingram and Salmon.

ROCK-PIBIT (*Anthus s. petrosus*).—Resident. Nests with full sets of eggs found by the Smiths, Dr. W. J. Wigglesworth, myself and others. I remember seeing a nest with eggs in a hole in the masonry of the barracks house.

SPOTTED FLYCATCHER (*Muscicapa s. striata*).—Spring and summer resident. Two pairs seen by Messrs. Ingram and Salmon on June 2nd, 1923. On June 21st, 1926, I saw a pair and found the nest almost completed in ivy growing thickly on the south side of the barracks house. A pair seen on May 21st, 1935, by Mr. H. Cox.

WHITETHROAT (*Sylvia c. communis*).—Spring and summer visitor in small numbers. Seen by myself on April 18th, 1919, also a nest with four eggs in the following May. Seen by the Rev. F. L. Blathwayt, April 20th, 1900, and by Mr. H. Tetley, May 26th, 1934.

SONG-THRUSH (*Turdus e. ericetorum*).—A common resident. Birds seen and nests with eggs found by several visitors to the island including Messrs. Ingram and Salmon and myself.

BLACKBIRD (*Turdus m. merula*).—A common resident. Building in holes in masonry as well as in bushes.

ROBIN (*Erithacus r. melophilus*).—Resident and breeding in very small numbers. I found an empty nest in 1919. Also recorded by Rev. F. L. Blathwayt, Col. A. E. Lascelles, Messrs. Ingram and Salmon Mr. H. Tetley and others.

WHEATEAR (*Enanthe æ. ænanthe*).—Occasional spring and summer resident for breeding purposes. I watched a pair for some considerable time on May 17th, 1919, on the sloping ground a little east of the barracks dwelling house: the hen carried nesting material down out of sight.

HEDGE-SPARROW (*Prunella m. occidentalis*).—A few pairs resident. Nests and eggs found by self, also recorded breeding by Messrs. Ingram and Salmon, and Col. A. E. Lascelles and others.

WREN (*Troglodytes t. troglodytes*).—Few pairs resident. Eggs were found by the Smiths and nests were found by Mr. H. Tetley and myself.

[LITTLE OWL (*Athene n. vidalii*).—One seen by me in May, 1925, and by at least one other. There seems little doubt that it breeds, but there is no definite proof.]

PEREGRINE FALCON (*Falco p. peregrinus*).—One pair resident and breeding.

KESTREL (*Falco t. tinnunculus*).—Two pairs resident and breeding. Eyries found with eggs or young on earth shoulder in the cliffs, once in an old Carrion-Crow's nest. Recorded by Messrs. Ingram and Salmon, the Rev. F. L. Blathwayt and others.

CORMORANT (*Phalacrocorax c. carbo*).—Spring and summer resident for breeding purposes, its numbers augmented in autumn and winter by the arrival of birds that use the waters around the Holms as a fishing station. Recorded on numerous occasions for many years past, and breeding suspected. Although recorded by Wiglesworth as breeding in 1917, this was erroneous and due to a misunderstanding, the nest referred to being that of a Herring-Gull. On May 17th, 1919, I saw a party of ten leave the rocks on the north side and encircle the island. The first breeding proved, was on May 26th, 1934, when ten nests were seen on the north side. Two contained three and four young, and in a third the eggs were hatching. On June 23rd, 1935, about twenty nests were counted by Mr. H. Tetley and Mr. H. Cox.

SHELD-DUCK (*Tadorna tadorna*).—Numerous resident; breeding in rabbit holes and in shelter of rocks, ivy, and brambles, three and four ducks sometimes laying in the same nest.

MALLARD (*Anas p. platyrhyncha*).—I found a nest with hatched out eggshells on July 8th, 1929, in the shelter of some brambles on the south side. The down and feathers were clearly those of a Mallard.

OYSTER-CATCHER (*Hematopus o. occidentalis*).—More or less resident, has bred. A bird flew from rocks at the east end June 21st, 1926, and eggshells were picked up a week later and given to me. Six on the south side May 5th, 1935, Mr. H. H. Davis.

BRITISH LESSER BLACK-BACKED GULL (*Larus f. graellsii*).—Now breeding plentifully and still increasing. In 1902, Knight recorded few pairs breeding. In 1904 the Rev. F. L. Blathwayt stated that about 25 pairs of Herring and Lesser Black-backs were breeding together on the north face (*Zool.*, March 15th, 1904, p. 94). Eighteen years later in May, 1922, Col. A. E. Lascelles computed the number breeding at 30 to 40 pairs. On May 11th, 1924, my estimate of breeding pairs was 100. The above figures exclude immature and non-breeding birds. Thus in two years from 1922 when the island became uninhabited, a good increase was noticeable. In 1933 Mr. Harry Cox (the present lessee) put the number of Gulls breeding at 1,200 pairs, Herring-Gulls being greatly in the majority, so a fair computation perhaps would be 500 pairs. To-day both species are about equal. Formerly they bred in closely placed, but separate communities at the north-west end, but with the recent increase the Lesser Black-backed has spread along the west side and well towards the top of the island, and I have found nests on the very doorsteps of the barracks house. It is difficult to walk through the tall Alexanders (*Smyrniium olusatrum*) in June without stepping on eggs or young.

HERRING-GULL (*Larus a. argentatus*).—This has a similar history to the preceding species, but in numbers, while formerly it was always in the majority, at the present day the two species are about equal. Always considered to be the commonest bird on the island, its numbers in various years have been estimated as follows: Knight, 1902, fifty birds: Col. A. E. Lascelles, 1922, fifty pairs: an increase of 100 per cent. in twenty years; but during this time no protection whatever was afforded them and the eggs were collected for food. Lewis, 1924, one hundred and fifty pairs: Cox, 1933, seven hundred pairs. The birds now nest practically over the whole of the island accepting any port of shelter, and often on the bare soil.

GREAT BLACK-BACKED GULL (*Larus marinus*).—Less than six pairs more or less resident and breeding. It is given as breeding in *Montagu's British Birds*, in 1813, and T. Hayward wrote in 1858: "Used to breed, but now only rarely." While in 1869 Cecil Smith in *The Birds of Somerset*, stated: "Used to breed but do so no longer." The first definite record of its breeding in recent times was in 1923 when on May 7th Col. A. E. Lascelles found a nest containing eggs; another nest was found on May 14th with three eggs, these being taken; while on June 2nd Messrs. Ingram and Salmon photographed a nest containing three chicks, so two pairs were "definitely" proved to be breeding. From then to the present day three pairs have bred regularly and possibly more occasionally.

RAZORBILL (*Alca torda*), SOUTHERN GUILLEMOT (*Uria a. albionis*), SOUTHERN PUFFIN (*Fratercula a. grabæ*).—These three species no longer breed, but were no doubt amongst those which once populated the island in great numbers and whose eggs were collected and sent to sugar refineries in Bristol. In 1829 Rutter refers to "vast numbers of sea birds which resort to the ledges and crevices of the rocks for the purpose of incubation . . . the eggs being sometimes collected as a source of profit." J. Hayward writing in 1858 states that the Guillemot is found "in considerable numbers" and is more common than the Razorbill, which breeds in company with it. Of the Puffin he writes

that it may be found "in the greatest abundance" in the breeding season but is not seen after that time. He also remarks "It is easily shot as by making a noise it comes out of its holes in great numbers." Hayward is, however, the only writer who gives definite information as to which species made up the great numbers of birds breeding on the island in remote times. Nor is it known to me when they ceased to breed. A very old resident of Weston-super-Mare assured me that sea birds had their eggs on the ledges in 1880. It seems likely that the Puffins did not survive very long after the construction of the batteries in 1867, but the Guillemots and Razorbills may well have continued until later.

OCCASIONAL VISITORS.

The following is a list of birds which have been noted as visitors to the island:—

JACKDAW (*Colæus m. spermologus*).—Occasionally seen, but no proof of breeding.

ROOK (*Corvus f. frugilegus*).—One which came to the island became tame and lived there several years. It was seen by Messrs. Ingram and Salmon in June 1911.

HOUSE-SPARROW (*Passer d. domesticus*).—One was seen in June, 1911, and T. Sleeman informs me that a flock appeared in the summer of 1917 during a plague of caterpillars and remained for some time feeding on them and then disappeared as suddenly as they had come.

GREENFINCH (*Chloris ch. chloris*).—Twice observed.

TREE-PIPIT (*Anthus t. trivialis*).—Occasional visitor, *c.g.*, May 17th, 1919, and June 21st, 1926, but no proof of breeding.

GREAT TITMOUSE (*Parus major*).—One May, 1926.

COAL-TITMOUSE (*Parus ater*).—One April, 1898.

PIED FLYCATCHER (*Muscicapa h. hypoleuca*).—One reported April 29th, 1934.

BLACKCAP (*Sylvia a. atricapilla*), WILLOW-WARBLER (*Phylloscopus trochilus*), CHIFF-CHAFF (*Ph. collybita*).—Spring and summer visitors in small numbers, and satisfactorily identified on various occasions.

REDSTART (*Phænicurus ph. phænicurus*).—Occasional visitor—one May 11th, 1924, several males April 20th, 1900.

CUCKOO (*Cuculus c. canorus*).—A male heard and seen by me on May 11th, 1924.

SHAG (*Phalacrocorax g. graculus*).—I saw three sitting on the rocks on May 17th, 1919, and so far as I know this is the only definite record, though doubtless it fairly frequently visits the island.

WOOD-PIGEON (*Columba p. palumbus*).—Once seen in June, 1935.

TURTLE-DOVE (*Streptopelia t. turtur*).—A pair reported in May, 1935.

REDSHANK (*Tringa totanus*).—One seen by me in 1928.

DOTTEREL (*Charadrius morinellus*).—One shot on May 1st, 1869, was identified by Murray A. Mathew.

WHIMBREL (*Numenius ph. phæopus*).—Seven seen by me on May 11th, 1924.

LAPWING (*Vanellus vanellus*).—One on May 11th, 1924.

NOTES

SCANDINAVIAN JACKDAWS IN SCOTLAND.

THE Scandinavian Jackdaw (*Colæus m. monedula*) has only recently been definitely added to the British List, and the only positive examples recorded hitherto were two from Suffolk by Dr. C. B. Ticehurst (*cf. antea*, Vol. XXVIII, p. 90).

It is therefore of interest to note that in a recent paper in *The Scottish Naturalist* (1936, p. 61) on birds from Fair Isle, Mr. George Waterston states that among some Jackdaws wintering on Fair Isle Mr. G. Stout noticed two with patches of white on the sides of the neck and on one of these (a female) being procured on February 20th, 1936, it proved to be an example of the Scandinavian form. This bird by the kindness of Mr. Waterston, I had the pleasure of examining.

Another example of this race was reported from Tongue, Sutherland, on April 14th, 1934. This bird bore one of Mr. Skovgaard's rings (No. K. 11046) which was put on at Tylstrup, Jylland, on May 24th, 1933. Both forms occur in Jylland, the Scandinavian form being found in the north, and *C. m. spermologus* in the south, while between them intermediates are found (see *Dansk Ornithologisk Forenings Tidsskrift*, 1930. Vol. XXIV., p. 95 and map). Dr. Finn Salomonsen informs us that Tylstrup being in Vendsyssel, in the far north of Jylland, the bird ringed there and obtained at Tongue, was certainly of the Scandinavian race, as indeed Mr. Jourdain had already pointed out to me.

Another Danish ringed Jackdaw (No. D. 11123) was reported from Norwich, on December 10th, 1933. This, however, was ringed at Skaerbaek in Slesvig, in the south-west of Denmark, and here Dr. Salomonsen informs us birds are most like *C. m. spermologus* though inclined to be intermediate.

H. F. WITHERBY.

NESTS AND BROODS IN 1936 IN WHIPSNADE BIRD SANCTUARY, BEDFORDSHIRE.

DURING the breeding season of 1936 a record was kept by Keeper E. A. Billett of nests in the Bird Sanctuary at Whipsnade Zoological Park (Bedfordshire). The total number was 173, belonging to 23 different species, the most numerous being Song-Thrush (*Turdus e. ericetorum*) (40), Blackbird (*Turdus m. merula*) (23), Blue Tit (*Parus c. obscurus*) (16),

Chaffinch (*Fringilla c. caelebs*) (13), Greenfinch (*Chloris ch. chloris*) (12), Great Tit (*Parus m. newtoni*) (11), and House-Sparrow (*Passer d. domesticus*) (10), while the most notable were single nests of the Wood-Warbler (*Phylloscopus s. sibilatrix*), Garden-Warbler (*Sylvia borin*), Tree-Creeper (*Certhia f. britannica*), Turtle-Dove (*Streptopelia t. turtur*) and Marsh-Tit (*Parus p. dresseri*).

The area of the Sanctuary is about 5.9 acres, thus the density of breeding pairs is extremely high, viz., over 29 to the acre: 42 of the nests were in nesting boxes, of which more than 130 are provided, and here a record was kept of numbers of eggs laid and of young hatched and fledged. The following table shows the results for nests of the Blue Tit, Great Tit and Starling (excluding those in which no eggs were laid), together with the total for all species (with some exceptions); and also excluding Wrens which could not be examined.

It will be seen that the percentage of hatching and fledging is rather high. It is proposed to continue the work during the coming year, after which a more detailed analysis will be made.

TABLE I.—HATCHING AND FLEDGING RECORD.
NESTBOXES IN WHIPSNADÉ SANCTUARY.

						AVERAGE PER NEST.		
		Nests Laid in	Eggs Laid	Young Hatched	Young Fledged	Laid	Hatched	Fledged
Blue Tit.	No. ...	15	130*	99	93	8.7	6.6	6.2
	Percentage ...		100	76.2	71.5			
				100	93.8			
Great Tit.	No. ...	10	65†	56	50	6.5	5.6	5.0
	Percentage ...		100	86.1	76.9			
				100	89.4			
Starling.	No. ...	9	47	38	38	5.2	4.2	4.2
	Percentage ...		100	80.8	80.8			
				100	100			
All species using nesting boxes	No. ...	38	265	210	196	7.0	5.5	5.2
	Percentage ...		100	79.3	74.0			
				100	93.3			

*Including three nests containing 22 eggs, deserted before hatching or prolonged incubation.

†Without any deserted nests.

JULIAN S. HUXLEY.

WATER-PIPIT IN KENT.

WHILE walking along the sea wall on Stoke Saltings, Kent, on November 1st, 1936, I saw a Water-Pipit (*Anthus s. spinoletta*). The note of the bird was what first struck me, as it was slightly sharper and possibly quicker than that of the

Rock-Pipit. Though generally like a Rock-Pipit, the white marks on the two outer tail-feathers were quite noticeable, as well as the dark legs. I may mention that I became acquainted with the bird in the Pyrenees. H. W. MADOC.

CONTINENTAL GOLDEN-CRESTED WREN IN LANARKSHIRE.

A MALE Golden-crested Wren obtained near Carmunnock, Lanarkshire, on February 17th, 1935, during a rush of migrants, would seem to be referable to the Continental race *Regulus r. regulus*, owing to the grey tint of the hind-neck and mantle.

The specimen was unfortunately too badly damaged to be preserved, but I was able to make a good comparison with several of the British form obtained at the same time.

This, therefore, constitutes the first record for Lanarkshire.

PHILIP A. CLANCEY.

THE BOOTED WARBLER ON FAIR ISLE. A NEW BRITISH BIRD.

ON September 3rd, 1936, George Stout obtained on Fair Isle, a Warbler which afterwards proved to be the Booted-Warbler (*Hippolais caligata*) a species which hitherto has never been recorded in the British Islands. This bird was obtained on a day of moderate S.E. wind, the weather on the preceding day being light east wind. It was the forerunner of a small rush of such species as Blue-headed Wagtails, a Northern Bullfinch, Bluethroats, Barred Warblers and Pied Flycatchers, which all appeared on September 4th.

This specimen which was a female, has a wing measurement of 57 mm. and a wing formula as follows:— 1st primary minute, 4.5 mm. longer than longest primary coverts; 2nd primary between 6th and 7th primaries; 3rd primary longest, being 1 mm. longer than 4th; 3rd, 4th and 5th emarginate. The bird has a white chin and throat with the breast slightly darker. Upper-parts, uniform dark fawn; the tail and cheeks are of a slightly lighter shade. Light buff edges to primaries; small patch of white just noticeable above eye. Bill and legs, very dark horn colour.

The range of this species is given by Hartert, (*Vögel pal. Fauna*, Vol. I, p. 576) as follows: Breeds in eastern Russia, at least from Olonetz and Moscow to the Khirghiz Steppes, in west Siberia (Yenesei) to the Altai, Turkestan, Bokhara, Transcaspia, also in Kashmir. Winters in north and central India.

We are greatly indebted to Messrs. N. B. Kinnear, H. F. Witherby and C. B. Ticehurst for independently establishing the identity of this specimen.

GEORGE STOUT.

GEORGE WATERSTON.

BLUETHROATS IN KENT AND SUSSEX.

On September 18th, 1936, Mr. J. Tart of Dungeness, reported to me that he had seen a bird, quite close to, facing him, with a white throat, and a black mark on each side of it; otherwise it reminded him of a Robin. Dr. N. F. Ticehurst was able to name this for him as a young Bluethroat (*Luscinia svecica*). The night before there had been a rush of passage-migrants. I had spent the night at the lighthouse, and had ringed as many as ten young Pied Flycatchers (*Muscicapa h. hypoleuca*) out of a total of sixteen birds ringed. On the night of September 21st-22nd there was another rush, and in the morning there were many migrants in the gardens near the lighthouse. They were behaving in quite a different way to the majority of the migrants I had seen before. Instead of being found as rather wild birds among the bushes, they were very tame, feeding among the cabbages, etc. Among them was a Bluethroat in adult, full summer plumage, with a conspicuous white spot in the middle of the breast, and there was also a young bird.

From October 3rd-6th there was an adult Bluethroat in winter plumage, which had a drooping wing. These were all easily observed by waiting quietly for them to come out.

NORMAN H. JOY.

On September 19th, 1936, my son, R. N. Ticehurst, and I were examining a line of gorse, broom and sloe bushes at the Midrips for migrants. We had seen a Chiffchaff (*Phylloscopus collybita*) in a small garden and the beach was covered with scattered Meadow-Pipits (*Anthus pratensis*), that were waiting for a thick fog to lift, for when the sun came through at 10 a.m. they at once began to move off in parties to the east, *i.e.*, coastwise towards Dungeness. In less than an hour they had practically all gone. The bushes yielded nothing except a few resident Blackbirds, until we reached the last small patch of stunted sloe and rough herbage. This held four birds, which at length revealed themselves as three Chiffchaffs and a larger and darker bird. After some time the latter perched in the lower twigs of a sloe bush and gave us a clear view of its back at ten yards distance. It was in size and shape a Robin, but of a uniform dark, grey-brown colour. When it turned its head it showed a light yellowish white throat with a well-defined dark stripe down each side. It was clearly identical with an

unknown bird that Mr. Tart had described to me at Dungeness the day before. A few moment's thought established its identity as a juvenile Bluethroat. A minute or so later, as it flew away, it revealed the tawny-red basal half of its tail, which confirmed the diagnosis. Thirty years ago this bird was very familiar to me in Norway, but this was the first I had seen in England.

In the afternoon we went to the Hoppen Pits on Dungeness and examined the willow bushes surrounding them. Nearly every bush held one or more Chiffchaffs and there was a sprinkling of Sedge-Warblers (*A. schænobænus*) and Common Whitethroats (*S. communis*). Amongst them was a second Bluethroat. This bird at first showed us the same back view, as the first had done, in the lower part of a bush, but soon obligingly flew out on to the shingle and gave us a splendid view of it at twenty-five yards range. It was clearly an adult female.

It will be interesting to learn whether Bluethroats have been more than usually numerous this year on the Norfolk coast, for they have *apparently* always been of very infrequent occurrence on the coasts of Kent and Sussex. The last one I have heard of before these was one that got up from the roadside at Brenzett in front of my son, H. F. Ticehurst, who was bicycling across Romney Marsh, on September 19th, 1934. As it dashed into the roadside hedge it gave him a clear view of its characteristic tail.

N. F. TICEHURST.

ON September 22nd, 1936, I saw a Bluethroat (*Luscinia svecica*) at Eastbourne. This is the fourth that I have noted in over thirty years and, strange as it may seem, they have all been within a hundred yards of the same spot, which has nothing unusual about it. Houses are now rapidly approaching this spot and it will be interesting to see whether the Bluethroats will appear in future on adjacent ground or whether Eastbourne will become an abandoned route.

E. C. ARNOLD.

WHITE-TAILED EAGLE IN NORFOLK.

ON October 27th, 1936, I was walking in Gunton Park with Mr. F. R. Hoare and as we approached the Great Water we saw a large bird, which flew across the water and was immediately mobbed by masses of Rooks and Jackdaws. Ducks and Gulls were flying all round. We saw that the bird was much too large for a Buzzard. It then came right over us and we saw clearly its very powerful pale yellow bill. It only needed to see its legs to be able to identify it as a White-tailed

Eagle (*Haliaeetus albicilla*). We watched it for over 20 minutes and it often came so close as to be within easy shot. At last it made for a dead tree at the side of the lake, dropped its legs to perch, and we saw plainly that the tarsi were unfeathered. Its plumage was dull and rather ragged, the mantle being pale brown and mottled and the tail brownish and mottled with white, not barred. Its flight was slow and heavy, with primaries very splayed out and turned up. It was the largest Eagle I have ever seen; I know the Golden very well. I saw the bird again the following morning but it has not been seen since. M. BARCLAY.

HERON AND CATTLE.

WHILE in a marshy field near the River Wey between Pyrford and Ripley (Surrey) on October 4th, 1936, I saw a Heron (*Ardea cinerea*) alight among some cows about two hundred yards away. The cows were feeding and walking round the field. The Heron, as soon as the last cow had passed, started to run after it until it was amongst the herd again. Then it would stand for some minutes and perhaps stalk a few paces nearer one of the cows. At last I saw it strike into the grass and when it raised its bill could distinguish the yellow legs of a frog. A second later and it was off to a stream (or dyke) on the far side of the field. I could not see what happened there but the bird was only absent about a minute when it re-appeared and settled down again amongst the cows. This happened no less than four times in about an hour, and on two more occasions I saw it strike when it did not carry off a victim, but either was mistaken or the object was small enough to be eaten on the spot. D. G. PUMFRETT.

PUFFINUS KUHLII OFF THE SUSSEX COAST.

WHILST travelling on the day boat from Dieppe to Newhaven on September 21st, 1936, I watched a large Shearwater about half an hour before reaching Newhaven. Being familiar with *Puffinus kuhlii* in the East Mediterranean I recognized it at once as some form of Great Shearwater. The large size, long tapering wings and contrasting brown upper- and white under-surfaces were diagnostic. Careful observation failed to show any white area over the tail and the head did not contrast markedly with the back—the distinctive characters of *Puffinus gravis*, the Great Shearwater usually stated to be numerous off the British coasts. In fact, I could not distinguish this individual from birds seen in the Mediterranean.

I have since consulted a paper by Wynne-Edwards ("Distr. Bds. in N. Atlantic"—*Proc. Boston Soc. N.H.* 1935, XL., iv., pp. 233-346) in which it is stated that *P. gravis* keeps to the West of Ireland and Scotland and that Great Shearwaters seen commonly in September between Brittany and Devon or Cornwall are most probably referable to *P. kuhlii*, presumably to the North Atlantic *P.k. borealis*. In view of this it is quite evident that the bird which I observed was an example of *Puffinus kuhlii*.

It is to be hoped that anyone crossing the Channel will look for Great Shearwaters with a view to obtaining additional evidence upon the point. The figures in the paper cited above will be found of the greatest value in distinguishing *P. gravis* and *P. kuhlii*.

CHARLES M. N. WHITE.

UNUSUAL NUMBERS OF LITTLE STINTS.

IN addition to the notes published under this heading in our last issue (p. 195) we have received those printed below. Further notes are not required unless they refer to unusual numbers or localities.

ORKNEY.—Three at Skail Bay on September 13th, four at the same place on the 20th, two about same date at Tankerness and one at Orphir. (A. Wood).

EAST LoTHIAN.—Two at Aberlady Bay on September 4th and 5th, and two on October 2nd. (D. I. Molteno.)

YORKSHIRE.—About six at White Holm Reservoir, Blackstone Edge (1,250 ft.) on September 13, dwindling in number subsequently until only one, with damaged wing, was left. The Little Stints were in company with eight to ten Curlew-Sandpipers and during August and September, a Ruff and several Sanderlings and Turnstones were among the waders seen at the same place. (Walter Greaves).

LINCOLNSHIRE.—One near Tetney Haven on September 1st and then almost daily in varying numbers up to sixteen, until October 1st when last seen. (Bernard A. Pye).

DEVONSHIRE.—Ten to fifteen viewed at very close quarters at Axmouth, near Seaton on October 18th. (Arthur Adams).

GLAMORGAN.—One at Aberthaw on October 22nd. (John G. Williams).

GLAUCOUS GULL IN DENBIGHSHIRE.

ON October 20th, 1936, after a strong northerly gale there was an immature Glaucous Gull (*Larus hyperboreus*) at Llandulas, Denbighshire. When I first saw the bird it was resting on the shingle in a group of Herring and Great Black-backed Gulls. The notes I made at the time were: Size corresponding with that of Great Black-back, colour a uniform light buff with entire absence of black on tail and primaries and the almost owl-like appearance lent by the rounded wings as the bird rose.

M. MITCHELL.

RARE BIRDS IN FAIR ISLE.—Mr. G. Waterston gives details (*Scot. Nat.*, 1936, pp. 61-64) of a number of interesting birds, which have occurred in Fair Isle and have not hitherto been recorded. Amongst these we may mention the following :—

TAWNY PIPIT (*Anthus c. campestris*).—One is recorded as having been obtained in the spring of 1933 and another (a first winter bird) got on October 8th, 1935, is now in the Royal Scottish Museum. The bird had not previously been recorded for Scotland.

AQUATIC WARBLER (*Acrocephalus paludicola*).—One was obtained on October 4th, 1935.

REDWING (*Turdus musicus ?coburni*).—In the summer of 1935 a pair reared two young on the island and Mr. G. Stout is convinced that these were of the Iceland form but none were examined in the hand. Mr. Stout is familiar with the typical bird and has correctly identified an example of the Iceland race taken in the winter of 1935-6.

BLACK-BELLIED DIPPER (*Cinclus c. cinclus*).—A female was got on March 30th, 1934.

GARGANEY (*Anas querquedula*).—A pair in spring, 1935.

KING-EIDER (*Somateria spectabilis*).—An adult male shot on December 11th, 1935.

SURF-SCOTER (*Oidemia perspicillata*).—One washed up in the winter of 1934 was identified as of this species by Mr. George Stout, who also states that he has seen "numbers" of these birds in Sumburgh Voe. One was also seen at the North Haven on February 8th, 1936.

PRATINCOLE (*Glareola pratincola*).—One is recorded for May, 1934, on Mr. G. Stout's authority and another for May, 1935, but without details.

LITTLE GULL (*Larus minutus*).—One identified by Mr. G. Stout in June, 1934.

SCANDINAVIAN LESSER BLACK-BACKED GULL (*Larus f. fuscus*).—Stated by Mr. G. Stout to occur on autumn passage.

IVORY-GULL (*Pagophila eburnea*).—One identified by Mr. G. Stout on December 28th, 1933.

It is also mentioned that a Goldfinch was seen on September 9th, 1929, a Skylark, which appears to be a rather aberrant example of *Alda a. intermedia* was obtained on November 3rd, 1935, and an adult White-tailed Eagle passed over the island on September 18th, 1935.

GREAT GREY SHRIKES IN SURREY AND DERBYSHIRE.—Mr. Howard Bentham informs us that he saw a Great Grey Shrike (*Lanius excubitor*) on Walton Heath on October 24th, 1936. Another has been reported to us by Miss D. Steinthal, who, with Miss V. Maynard, watched the bird for about half an hour near Little Pond, Frensham, on November 1st. Mr. L. S. V. Venables also writes us that he saw a Great Grey Shrike, perhaps the same bird as the last mentioned, to the south of Frensham Common on November 8th.

Mr. R. E. Knowles informs us that one was seen in January, 1936, by Mr. B. R. S. Pemberton at Alstonfield, Derbyshire.

BLACK REDSTART IN SURREY.—Mr. L. S. V. Venables informs us that he saw a Black Redstart (*Phaniceurus o. gibraltariensis*) on November 10th, 1936, on the outskirts of Frensham Common.

BARN-OWL IN INNER LONDON.—Col. H. W. Madoc states that while watching the Starlings assembling round Trafalgar Square on October 30th, 1936, at about 5 p.m., he saw a Barn-Owl (*Tyto alba*) flying across the Strand, plainly illuminated by the street lamps.

LETTER.

MÉNAGE À TROIS IN THE MUTE SWAN.

To the Editors of BRITISH BIRDS.

SIRS,—I am much interested in Dr. J. M. Dewar's notes under this heading in the November number of *British Birds* (*antea*, pp. 178-9) as I have some rather similar notes on the Mute Swan.

In Bretton Park, near Wakefield, Yorkshire, in May, 1934, there were three nests of the Mute Swan on the shores and an island of a 19 acre lake. Two of these nests had eggs; of the third I am not certain as it was on an island and nothing hatched from it. These two nests were specially protected as the owner of the land was anxious to have some cygnets, and in consequence I did not inspect them or count the eggs as I did not wish to abuse the owner's kindness in any way for allowing me free access to the Park.

There were only two cobs on this lake, and one refused to allow the island cob to go anywhere near the other two nests which produced 5 and 2 young respectively. (I learned afterwards that there were some unhatched eggs—whether addled or infertile I had not the opportunity of discovering.)

The cygnets hatched in both nests within a day or two of each other, and then both broods and both pens amalgamated and went about together without either being hindered by the cob.

I took this, together with the cob's toleration of the second pen when off the nest during incubation, as proof of the cob's sireing both broods.

He was extremely intolerant of the island pair and indeed of any other Swans which approached its territory.

At the end of 1934 the total Swan population including cygnets was 32, and the acreage of water $19 + 36 = 55$ (two lakes).

In 1935 one pair hatched 5 cygnets in late May or early June on the 36-acre lake but after a few days the parent birds lost all interest in their offspring which died, apparently of neglect as they were uninjured, before they had begun to feather. This nest was touching another which failed to produce young, and I rather think both these nests may have belonged to the same cob, but unfortunately I cannot prove it as there were so many Swans about.

This year (1936) all attempts at breeding have proved fruitless, the only nest constructed having addled eggs. I rather think that the lakes in question are very much over-populated to allow breeding for, although numbers have shrunk to 25-27 due to 5 birds, or perhaps 7, being full winged, the Swans spend most of their time in the earlier part of the nesting season in making vain attempts to secure territory.

JOHN C. S. ELLIS.

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CONTENTS OF NUMBER 8, VOL. XXX., JANUARY I, 1937.

	PAGE
On the Breeding Habits of Leach's Fork-tailed Petrel. By John A. Ainslie and Robert Atkinson	234
Birds in Middlesex. By William E. Glegg.	249
Dr. Charcot and the Birds of Rockall. By Hugh S. Gladstone	251
Recovery of Marked Birds	254

Notes :—

The Range of the Hebridean Hedge-Sparrow and Stonechat (P. A. Clancey)	259
Red-necked Grebe, Purple Sandpiper and Kittiwakes in Middlesex (W. E. Glegg)	259
Sandwich Terns in Pembrokeshire (R. M. Lockley)	260
Gulls taking Ants off Surface of Lake (P. F. Holmes)	261

Short Notes :—

Early Snow-Buntings in Kent. Great Grey Shrike in Stafford- shire, not Derbyshire— <i>Correction</i> . Late Hobby in Wiltshire. Whooper Swans in Cambridgeshire and Hampshire. Bewick's Swan in Merionethshire. Goosander in Wiltshire. Little Gulls in Sussex	261
---	-----

Reviews :—

<i>Enigmas of Natural History</i> . By E. L. Grant Watson ...	262
<i>Report on the Birds of Warwickshire, Worcestershire and South Staffordshire, 1935</i>	263

Letters :—

Cuckoo calling with Bill open (Fr. Haverschmidt)	263
Woodland Bird Enquiry (D. Lack)	264



ON THE BREEDING HABITS OF LEACH'S
FORK-TAILED PETREL.

BY

JOHN A. AINSLIE and ROBERT ATKINSON, B.A.

(Plate 5.)

OUR observations on the little observed Leach's Fork-tailed Petrel (*Oceanodroma l. leucorhoa*) are the result of twenty-seven consecutive days and nights (from July 16th to August 12th, 1936) of intensive study on the island of North Rona. The island lies approximately 40 miles N.W. of Cape Wrath and consists of some 300 acres of rough grass and sedge. It has been uninhabited since 1844; now the only signs of past habitation are the ruins of half a dozen semi-underground crofts. This "village" forms the chief breeding ground of Leach's Petrels on the island and their concentration there makes the colony relatively easy of study.

On occasion comparison has been drawn between this bird and other Petrels; here we are indebted to R. M. Lockley whose detailed work on the breeding habits of the Storm-Petrel (*Hydrobates pelagicus*) and the Manx Shearwater (*Puffinus p. puffinus*) has been of the greatest value. Our thanks are due to T. H. Harrison who generously lent us his unpublished notes on Leach's Petrel, compiled from observations made both on the Rona and St. Kilda colonies. We can never adequately thank Mr. K. MacIver for his many kindnesses, especially in arranging for us a passage to Rona by steam drifter.

The method of checking the adults' visits to their burrows was similar to that adopted by Lockley (8) on Skokholm. A light lattice of match sticks, etc., set up across the entrance, was easily brushed aside by birds entering or departing. Observation windows were cut over those nesting chambers under observation and fitted with a bung cut from a tuft of thrift or covered with a flat stone. In this way, by inspecting the burrows at approximately 45 minute intervals during the night, a fairly accurate check was kept on the birds' movements. Every night during our stay observation was carried out from dusk until about 3 a.m.

DISTRIBUTION AND NUMBERS.

So far as is known the breeding colonies in the British Isles are restricted to three—possibly four—small groups of islands off the N.W. coast of Scotland; it is possible that a few pairs still nest on islands off the west coast of Ireland. Outside British Isles there is a colony on the Westmann Isles, off Iceland. In America breeding colonies occur from the Aleutian



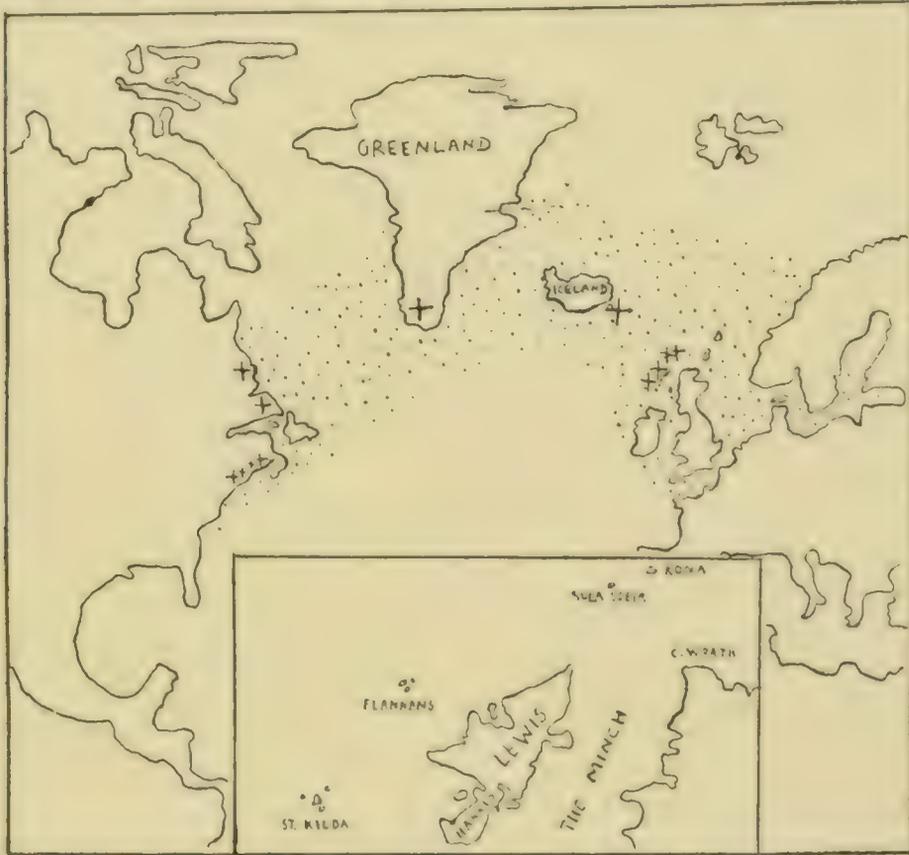
Upper—Adult Leach's Fork-tailed Petrel by entrance to burrow.
(Photographed by flashlight by Robert Atkinson.)

Lower—Young Leach's Fork-tailed Petrel.
(Photographed by Robert Atkinson.)



Islands nearly to the Pacific coast of the United States and from the coast of Maine to Greenland on the Atlantic side (1).

The three British islands with colonies, and the possible fourth, form together an open line, a sweeping arc lying right outside the rest of the Outer Hebrides, nowhere less than forty



Map showing greatest Density of Plankton (dotted area) and Breeding Stations (crosses) of Leach's Fork-tailed Petrel in North Atlantic. Inset: British Breeding Stations.

miles from the mainland. It is evident that this species is the most oceanic in habit of all British breeding birds and, at its nesting haunts, the most inaccessible. This, coupled with the facts that the bird is on land entirely nocturnal and nests underground, easily explains why it has been so little studied.

Of the British colonies the most northerly is that on North Rona. Here the majority of nests are situated in and around the thrift covered ruins on the south side of the island, within an area of about half an acre. By means of marking occupied burrows as they were discovered each night during our stay we arrived at a total of 327 nests for the village area. In addition there were at least 50 pairs nesting among Puffin burrows and under loose stones elsewhere. The minimum population is therefore about 380 pairs.

Far fewer Storm-Petrels nested within the ruined area—about 20 pairs—but elsewhere, especially among the piled boulders of the Storm Beach, they were numerous. Outside the ruined area, however, no attempt was made to estimate their numbers.

St. Kilda holds what is probably the most populous British colony and at the same time the most accessible. It is therefore surprising that so little information is available about it. In 1885 Dixon (3) reported the species numerous on Dún. Eggs have been obtained from Boreray and Soay; in 1931 David Lack found three nests on Dún and a dead bird was picked up on the Cambir (6). Harrisson has guessed the total population to be at least 1,000 pairs—"certainly many more than on North Rona."

The third British colony is situated on the Flannan Isles. Of this colony W. Eagle Clarke (2) has written: ". . . the Flannan Isles may be regarded as one of the chief breeding stations of this species in the British Isles . . . On Eilean Mor they are abundant. . . ." He adds that the birds nested in "holes under stones among turf; in turf overgrown with grass yet not showing the slightest sign of the incomings or outgoings of the parents; and among the stones forming the old buildings." In 1932 Malcolm Stewart (10) was informed by one of the lighthouse keepers that there were about 40 pairs, confined chiefly to the area of high ground near the flag staff on Eilean Mor. Both authorities considered Leach's more numerous than Storm-Petrels.

It is probable that a colony exists on Sula Sgeir, a sheer sea-rock some twelve miles west of Rona. The only naturalist who has spent a night on the island is Malcolm Stewart; he visited it in 1932 (10). He had experience of the species during visits to North Rona in the two previous years and feels certain that it will eventually be definitely proved to breed among the stone "cleits" built by the men who visit the island annually to collect young Gannets.

With regard to the Irish colonies, G. R. Humphreys, who is at present engaged on a new list of Irish birds, writes that, as far as he is aware, there is no proof of breeding in Ireland for fully 30 years. His remarks in the Irish bird list are: "A very few have been found breeding on islands off Mayo and Kerry, and this species may have another breeding-place off Slyne Head, Galway (Thompson, *Nat. Hist. of Ireland*, iii., p. 417, Ussher, *Clare Island Survey, Aves* (1912), p. 44)." The Galway reference is very old and evidence by the production of the egg has only been forthcoming from the Kerry and Mayo islands.

NESTING BURROWS.

On Rona the thrift-grown banks and tumbled walls of the village area are riddled with nesting burrows of Leach's Petrels. As many of the burrows follow more or less natural tunnels between stones they show great variety in shape and size. Away from the banks and walls, on flat ground, burrows are commonly excavated beneath large stones. As the sites vary, so do the burrows themselves. Perhaps the most frequent type on Rona was a straight or winding burrow in a bank of thrift with an entrance not less than $1\frac{3}{4}$ inches across, and ending in a rounded nesting chamber. The shortest measured two feet from the entrance to the end of the nesting chamber; the longest four feet. Common accessories to these simple tunnels were from one to four diverticulæ, anything up to 8 inches long. These would seem to be rather a waste of time on the part of the excavator but they were often used when two adults visited the nest at the same time. One bird would remain either in the passage or in one of the diverticulæ and call to its mate on the nest. Only twice did we find a single entrance in a thrift bank serving two occupied nesting chambers, but Prof. Harold Heath (1) records that ". . . in extreme instances tunnels have been opened having a length of fully six feet and from two to five birds occupy this in common, each nest being placed in one of the lateral offshoots from the main trunk." Not infrequently a single nest had two entrances, both of which were used, and nesting tunnels within the stone walls often inter-communicated. Two nests were found under piles of loose stones in positions identical with those used by several Storm-Petrels laying close by.

There are no rodents or Shearwaters on Rona and only two pairs of Puffins nest among the ruins. Burrows are obviously excavated by the birds themselves. On several occasions we watched birds burrowing; in every case the feet alone were used. The legs were straddled out on either side of the body and the earth thrown backwards as far as 8 inches behind the burrowing bird. This seems to be an efficient method of working, though the beak may also be used. Several times we saw adults with earth-covered beaks. Lockley (8) has recorded this for Storm-Petrels. As the passages got worn with frequent visiting, loose earth was often ejected, to keep the tunnel clear, but we never saw an entrance worked at. This is understandable, as the first inch or two, usually through tough thrift, is the only really resistant part of the burrow.

A puzzling feature of the night life of the Leach's Petrel was the way in which unfinished burrows were spasmodically worked at, even so late as August. Occasionally we found

a bird digging in a tunnel, perhaps a foot long ; birds would often sit in these half-excavated burrows and call. Such burrows were never completed.

Though both Dixon (3) and Bent (1) found eggs laid on the bare earth, all the tunnels we opened contained some form of localized nest. These nests varied from a loose mat of thrift rootlets to quite a substantial pad of dead grass (stems and roots), moss, lichen and occasionally sheep's wool. All



Opened Burrow of Leach's Fork-tailed Petrel.

The stick marks the entrance.

(*Photographed by John Ainslie.*)

these materials are found about the village ; the ones used in any burrow are probably the handiest. The rocks and earth were infested with earwigs, centipedes, woodlice and various beetles, so it is unlikely that any special significance need be attached to their frequent presence in the burrows. Lockley (8) considers anything in the way of nesting material in a Storm-Petrel's nesting chamber to be purely accidental. Here, therefore, there is a marked contrast between the nesting habits of the two species.

NOTES ON INCUBATION.

There is no definite information about either courtship or fledging period. We visited the colony too late in the season to study the first and for too short a time to be able to estimate the second. The incubation period has been given by Hantzsch (11) as "about five weeks".

Laying almost certainly begins earlier than any Storm-Petrels nesting in the same areas. Thus, on July 16th, we found several young Leach's at least a week old; by August 12th, most, if not all fertile eggs had hatched, whereas on this date the majority of Storm-Petrels were still brooding eggs. Clarke (2) states that on the Flannans Leach's are earlier than Storms and records the earliest egg on May 20th. Seton Gordon (5) and Mrs. Audrey Gordon (4) recorded that in a Hebridean colony of Storm-Petrels, most of the birds had laid by July 15th. On August 23rd, at the same colony, two chicks were seen, one about a week and the other about a fortnight old.

Like the Storm-Petrel, Leach's Petrels readily desert their eggs if the sitting birds are interfered with too much. Most of the birds we had under observation were marked with B.B. rings, and by inspecting them as infrequently as possible, we were able to collect a certain amount of information about incubation.

Both parents brood, apparently in stretches of a few days each. A similar state of affairs occurs among Storm-Petrels (8) and Manx Shearwaters (9). The sitting bird was visited by its mate at night, and so, presumably, fed, though we never actually witnessed this. Several times birds which had been incubating, without relief, for several days and which had not been fed for at least one night, left their burrows at dawn and flew straight out to sea. Either of the adults returned next night and incubation was continued—or thereafter the egg was totally deserted. In either case, the embryo probably perished. Similarly two nests which we excavated during the day contained cold eggs with no adult present, though in both cases the birds returned the following night. Lockley (8) has a note that two Storm-Petrels which he had under observation, neglected their eggs for a single night during the early stages of incubation, but the Leach's eggs were, I think, fairly well advanced. This appears to be an extraordinarily inefficient method of brooding; we refer to it again under "Mortality Factors." If the egg became accidentally cracked or the birds deserted through our interference, the egg was sometimes left for two or three days, after which one of the parents would return and brood it for a single night before deserting totally.

Egg-shells are not removed from the nests. The newly hatched chick has thick, almost black down, closed eyes and very pale feet, legs and beak, which rapidly darken to black. There is no bald spot on the crown—so noticeable in young Storm-Petrels. The parents seldom brooded their chicks after

the first day or two subsequent to hatching, though we have two records of single adults spending one day in the nest when their young were half-fledged. (See under "Irregular Feeding").

CALL NOTES.

In direct contrast to Storm-Petrels, Leach's call frequently on the wing at night, when there are both young and eggs in the burrows. The Leach's Petrel has two, quite distinct common calls. What we took to be the typical cry, has been variously described as "a distinctly enunciated call of eight notes, with a curious crowing quality" (I) and as "a nasal squeak, in several syllables, delivered in a jerky way" (I). We figured it as a high-pitched

Her-kitti-werkě-

followed by a rather lower pitched and slurred

-Kěk-ěk-(ěk)-ěroo.

Both phases, especially the second, are subject to considerable variation and abbreviation, some of which Harrisson figures as:

Her-kuta-werke—kikaroo.

Her-kuta-werke—her-ker-koo-kerrickaroo.

and Her-kerrick.

The last we heard fairly frequently.

This (or its variations) was the only call made by birds in flight. Almost equally frequently it was uttered in the burrow, by a single bird alone, or to its mate, or sometimes by both birds together.

The second type of call was heard from the burrow only, under similar circumstances to those mentioned above. It is a peculiar continuous crooning noise:

. . . . -r-r-r-r-r-r-r-ooee-churr-r-r-r-r-r-r-r-ooee-churr, etc.

The -ooee- was high-pitched, yet soft and curiously sweet.

The -churr- deep and emphasized.

The -r-r-r-r- long drawn and undulating.

There was a hardly perceptible break between the end of one phrase (ooee) and the beginning of the next (churr) though the effect was continuous and was often heard without a break for several minutes together. This call bears a recognizable resemblance to the typical note of the Storm-Petrel, which Lockley (8) has figured as

Purr-r-r-r-r - chikka

But this is both shorter and considerably harsher than the Leach's call; the two could not be confused.

In the burrow both calls were often slurred together.

A third call heard less frequently was a harsh scream which we figured on different occasions as

Kwee and Skhee

It probably indicates anger and was usually heard when two birds were known to be together in the same burrow; these calls were often followed by the speedy ejection of one of the birds. They could be artificially stimulated, so to speak, by introducing the wrong bird in to the wrong burrow.

The chick utters a plaintive Peee-pee-pee- with beak closed. We once heard a day-old chick emit an almost inaudible clicking noise. Older birds, when handled, prolonged the "Pee" to

Peee-e-e-e—pee-eee-e-e-e.

This, therefore, probably denotes fear or anger. The young Storm-Petrel makes a more or less similar noise, figured by Lockley (8) as

Teep - teep or Tee-e-eeep in anger.

The normal call was heard at night when the adult was with the chick, or in the passage to the nesting chamber. Occasionally the call issued from a burrow by day—once, in the case of a newly-hatched chick, the whole day, while the parent was brooding it.

AERIAL ACTIVITY.

The most remarkable feature of the habits of the Leach's Petrel is the extraordinary night flying above the nesting colony, in which the birds indulge. No birds were seen anywhere near the island during the day. Usually the first signs of life in the evening were one or two birds leaving the colony and flying silently out to sea, anything up to 20 minutes before any incoming birds were noted. Shortly afterwards a single bird would be seen rapidly circling round in the half-darkness, then others would appear and calling would begin from two to 20 minutes later. Soon the air was filled with flying calling shapes, swooping among and above the dark ruins. Every bird seemed to be in a great hurry; there was a feeling of enormous energy and purpose about these dashing flights. Birds were everywhere, brushing the grass, skimming along the walls, turning aside at the last moment to avoid ourselves. Often we heard collisions; once we saw two birds collide head-on in mid-air. Both tumbled to the ground but fluttered away unharmed. Harrisson has seen the same. Outlandish calls came from the darkness on every side, from the air, from the hollow walls and from underground, where they mingled with the chicks' excited peeping. Away from the sea-cliffs Rona is far noisier by night than by day. The frantic energy of the flying birds, their extraordinary calls, the whole midnight ritual above the dim ruins on a deserted island in an empty sea, make a never to be forgotten impression. Yet,

in the last hundred years, less than a dozen people have witnessed this nightly scene on Rona.

On light nights birds came in from the sea later than on dark nights. The time difference was not great; one hour and forty-two minutes, as compared with one hour and eight minutes after sunset, being the outside limits. Strong wind was an important factor in the time of arrival. A calm night usually made for early arrival, whereas during an easterly gale the colony was practically deserted the whole night; then, the few birds which did come, arrived much later than would have been expected. This is illustrated in the table compiled from observations made before two otherwise reliable watches succumbed on the same day.

TABLE OF ARRIVAL TIMES

(Important variations from average times have been put in capitals.)

		<i>Time of Arrival.</i>		<i>Wind.</i>	<i>Notes on Weather, etc.</i>
<i>Date.</i>	<i>Hours & Mins. after Sunset.</i>				
July	18th	1.08	CALM.		VERY DARK AND MISTY.
„	19th	1.29	Northerly, Moderate.		Dark and misty.
„	20th	1.33	Ditto.		Lighter but cloudy.
„	21st	1.23	Northerly, Slight.		Ditto.
„	22nd	1.37	East, Slight.		Cloudless but no moon.
„	23rd	1.42	EASTERLY GALE.		VERY DARK AND WET.
„	24th	1.24	South, Slight.		Overcast.
„	25th	1.16	CALM.		OVERCAST.
„	26th	1.23	West, Moderate.		Half-moon obscured.
„	27th	1.36	Calm.		Moon unobscured.
„	28th	1.39	CALM.		MOON UNOBSURED.
„	29th	1.35	North-west, Moderate.		Ditto.
„	30th	1.23	South,-West, very strong.		Dark and wet.
„	31st	1.12	South-west, Slight.		Dark.
Aug.	1st	1.21	South, Slight.		Rather lighter.
„	2nd	1.10	NORTH-WEST, MODERATE.		DARK AND WET.
„	3rd	1.11	North-west, Stronger.		Dark.
„	4th	1.38	NORTH-WEST, SLIGHT.		FULL MOON UNOBSURED.
„	5th	1.26	Calm.		Full moon obscured.

Moonlight is worthy of consideration because of its effect on the behaviour of Leach's and other Petrels (see table). Lockley (8) states that to some extent Storm-Petrels "shun the land on very bright moonlight nights though they are not so particular in this respect as the Manx Shearwater (*Puffinus p. puffinus*)."

The only direct effects on Leach's appeared to be:

(1) That, as was to be expected, on a night when the moon rose early, birds were later in arrival; similarly, if the moon was still shining brightly at about 2 a.m. (G.M.T.), they left rather earlier than usual.

(2) In addition to the fact that birds were later in arrival the majority of burrows were visited considerably later under moonlight than on a dark night.

(3) The amount of calling on moonlight nights was up to average, in direct contrast to the reaction of Manx Shearwaters to moonlight.

A careful study of the night flight of Leach's Petrels revealed that there were two distinct types of aerial activity :

(A) A rapid erratic flight, up to 30 feet from the ground, accompanied by much calling. Though confined to a restricted area of the nesting colony, it is doubtful whether any definite flight tracks were observed. One bird, however, possessed of a remarkable and unmistakable falsetto voice, was always heard from the same part of the village. It is possible that each bird tends to fly roughly, and certainly erratically, above its burrow. As the time for visiting the nest approached the flight became more localized until the birds were flying rapidly up and down outside their burrow entrances. On occasion several "false landings" were made near the hole and each time the birds took off again. Finally they landed just outside the entrances and shuffled in rapidly. Birds leaving burrows remained to fly about if the night was still young ; if not, then they circled round once or twice and flew out, so far as we could see, towards the north or north-west. There was no regular time at which burrows were visited, though the lattices across most of the entrances under observation were usually down by 1 a.m. However, the increasing localization of flight always seemed to precede a visit.

(B) A slower and apparently more purposeful flight, low over the grass and walls, the birds' wings vibrating rapidly. There were frequent pauses while birds hovered or stood with raised wings, apparently picking something off the ground. (B) flight was accompanied by calling, but probably not quite so much. The obvious inference is that the birds were taking insects and or vegetable matter. Dixon (3) records sorrel (*Rumex acetosa*) from a bird's stomach. On one occasion we found a fragment of silverweed (*Potentilla anserina*), which grows in profusion all round the ruins, in the vomit of a bird taken as it was about to feed its young. Several times we flushed birds from the ground, marked the spot exactly, and in the morning found silverweed plants with small pieces neatly nipped out of the leaflets. Sometimes we were sure we heard the noise of a snapping beak from flying birds, but we tried in vain to establish definitely that insects were being taken. Once or twice we smeared a brew of treacle and rum, similar to the entomologist's "sugar," on some rocks. This

attracted many large moths and smaller night-flying insects and it certainly seemed to us that the Petrels' flight became localized around these spots. One experiment, which we considered justifiable in the circumstances, was to attach a moth to a stick by a long piece of black cotton and let it fly freely, which it did. We did not see it taken but by morning the cotton was broken and the moth gone. The experiment was not repeated. The *Practical Handbook* mentions that insects have been recorded among the stomach contents of Storm-Petrels obtained inland.

FOOD AND IRREGULAR FEEDING.

The chicks were visited irregularly during the night, sometimes by both adults, sometimes by a single parent (of either sex), and sometimes not at all. The following table, drawn up from observations on four typical burrows, illustrates the irregularity of parental visits.

TABLE TO SHOW IRREGULAR FEEDING OF YOUNG.
NO. OF TIMES NESTLING WAS VISITED EACH NIGHT.

Date.			Nestling.			
			A	B	C	D
July	19th	...	1	1	1	—
„	20th	...	1	No	1	—
„	21st	...	No	2	1	2
„	22nd	...	2	No	No	2
„	23rd	...	No	1	No	No
„	24th	...	1	No	1	2
„	25th	...	2	1	1	2
„	26th	...	2	No	1	1
„	27th	...	2	2	1	No
„	28th	...	1	1	1	2
„	29th	...	1	1	1	No
„	30th	...	1	No	No	No
„	31st	...	2	1	1	2
August	1st	...	1	1	1	1
„	2nd	...	2	1	1	2
„	3rd	...	1	No	1	1
„	4th	...	1	1	1	1
„	5th	...	1	1	No	1
„	6th	...	No	1	1	1
„	7th	...	1	No	No	1
„	8th	...	2	1	1	2
„	9th	...	1	1	1	2
„	10th	...	2	1	1	1

On July 17th, during the day, when the nest C was found, the adult was present. On July 23rd one of the parents of A spent the day in the nest.

This irregular feeding appeared to be linked up with similar variations in the amount of aerial activity and calling. Doubtless it is to some extent dependant on the food supply. The food supply is therefore considered before the subject is discussed further.

The principal food supply lies in the vast body of floating organisms known as Plankton. The map (p. 235) illustrates the area of the greatest density of Plankton in the North Atlantic. It will be seen that Leach's Petrels nest only within that area. Generally speaking, Plankton occurs in shoals, and drifts, as its name suggests, in oceanic currents. In addition daily vertical migrations take place, so that Plankton is most abundant in the surface waters during the night and sinks to lower levels during the day. Thus it is apparent that, from the Petrels' point of view (and undoubtedly they feed by day), food is never so plentiful as it might be. On the other hand the the stirring-up action of a storm renders available a greater than usual quantity of Plankton in the surface waters. What is still more important is that the planktonic creature we found most commonly in the adults' vomit, and in the stomachs of dissected birds, swarms on the surface during the spawning season. This animal is *Meganyctiphanes norvegica*, one of the many species of Euphausiid shrimps and an important and constant constituent of northern oceanic Plankton. Just when the spawning occurs varies with the location, but north of Rona and, it is interesting to note, off the coast of Maine, spawning continues throughout the summer. Successive shoals, spawning at intervals, may provide a large and easily accessible source of food, over a considerable period. Stomach contents and vomit also contained fragments of fish. The *Practical Handbook* (II), on Leach's food, records "fish, copepoda (*Timora longicornis*) and stalk-eyed crustacea. Saunders also mentions floating greasy matter as well as small mollusca and crustacea."

Any hypothesis which sets out to explain irregular feeding must take count of two facts: (1) that an individual young bird is fed irregularly and (2) that on a single night one young bird may be fed twice, another once and another not at all. We suggest that there are at least two distinct factors influencing these irregularities in parental attention:

(1) The relative amount of food available and accessible in the surface waters during the day, which varies with weather, spawning of Plankton, etc.

(2) The weather conditions prevailing during the night. A calm dark night is the most favourable for birds coming to land; a wild night, especially with the wind in the east, the most unfavourable.

Thus, as would be expected, on a night following a storm (*i.e.*, when the food has been churned up), the majority of young birds fed showed a marked and sometimes startling increase in weight: for example, a weight increase of 12.8 gms.,

from 34.4 to 47.2 gms. in 24 hours. The number of young birds fed was roughly proportionate to the number of adults present during the night, which in turn depended on whether or not the storm had abated. On the other hand, towards the end of our stay we had a succession of fine days and calm nights. Then there were plenty of adults present at night but their number did not necessarily bear any relation to the number of young fed. In other words, if the fishing had been poor during the previous day (as indicated by the negligible weight increase of those young which were fed), many adults came to land without visiting their young. It is perhaps significant to note that on these nights aerial activity of type (B) was particularly pronounced. Sometimes, however, a great many young were fed, with subsequent big weight increases, and we can only presume that the preceding day must have seen the spawning of a shoal of Plankton within the range covered by the parents during their foraging expeditions.

To sum up. When the fishing has been good, then the adults will, if they can, come to land during the succeeding night; young fed then show a marked weight increase. If the weather conditions are favourable then the majority of adults will come to land, irrespective of what food they have collected, and may or may not visit their young. Whether the parents ever visit their chicks without feeding them we were unable to determine, for though an increase in weight certainly indicates that the chick has been fed, a decrease does not necessarily prove the opposite.

This hypothesis involves the assumption that out at sea the adults forage singly or in small groups. If it were not so, it is obvious that either all the young would be fed on one night, or none—which is not the case. It has been recorded, however, how readily Petrels congregate at the presence of food, where no Petrels were before. Our explanation of irregular feeding thus is based on the inference that the adults from Rona forage over a very large area.

When the chick is nearly fledged it appears to be intentionally neglected, as in the case of Manx Shearwaters (9) and Storm-Petrels (8). One nearly fledged young Leach's, observed by Harrison on Rona in 1931, sustained a six days' fast.

FLEDGING PERIOD.

There is considerable individual variation in the fledging period of young Storm-Petrels. Our observations on a number of growing young certainly led us to suppose that this would also be the case with Leach's. Lockley (8) suggests "food

supply, parental attention and temperament" as possible influencing factors. It should be borne in mind that whereas the adult bird is stenothermal (warm-blooded), in the young the thermotaxic arrangements are undeveloped and in this respect the very young are not far from reptiles, or in other words, their body temperature is to some extent dependant on their surroundings. The chicks we had under observation often showed marked individual fluctuations in body temperature and several young of approximately the same age differed from each other by as much as 8 F. We found that those birds maintaining the lowest temperatures showed least development during the period of observation (and these were the least frequently fed).

MORTALITY FACTORS.

Infertility and bad brooding are high; of the 30-40 nests which we examined on Rona two contained old cracked eggs alone and one had two old eggs as well as the fertile egg of the current year. Another held an old egg and the skeleton of a young chick. Two eggs of the current year proved to be infertile. Harrisson found three addled eggs in the 30 burrows he examined in the Rona colony in 1931. The Great Black-backed Gull (*Larus marinus*) takes its toll of adults. In 200 carcasses and castings, left by Black-backs, we found the remains of 14 Leach's and 2 Storm Petrels. Incidentally it is interesting to speculate as to when and how the clumsy diurnal Black-back manages to capture active and nocturnal Petrels. Some of the carcasses we found were quite fresh. Harrisson found 5 on St. Kilda and 4 on Rona, mostly some months dead.

Judging by the number of dead or exhausted Leach's Petrels picked up inland, winter-time storm casualties must be fairly numerous. During the breeding season the mortality factors mentioned above operate against eggs and young as well as adults. Also many fledged young probably do not survive the journey to the sea. Yet, in spite of all this, the colony appears to maintain, if not augment, its numbers. Leach's Petrels were first reported from Rona in 1883 by Swinburne and have been "reported regularly in the village area by subsequent visitors" (7). The only estimate of the number of breeding birds, other than ours of 380 pairs in 1936, was made in 1931 when the number was estimated at 120 pairs. (7).

MISCELLANEOUS NOTES.

When handled adult birds raised their crown feathers and bit, though not so energetically as Storm-Petrels. Occasionally they uttered a low plaintive monosyllable, though

total silence was more usual. Several times adults were taken from the passage of their burrows preparatory to feeding their young. All these vomited after the manner of an adult Fulmar (*Fulmarus g. glacialis*), not spitting like a nestling Fulmar. Chicks pecked furiously and sometimes coughed like young Fulmars; we never saw any oil ejected.

Adults reacted sharply to light. A torch directed on the mouth of a burrow from which sounds were issuing caused an abrupt silence. Birds on the ground caught in the torch-beam vanished underground with startling rapidity. Yet Clarke (2) records that birds occasionally visited the lantern on the Flannans. Young chicks showed no tendencies in either direction.

Any birds we saw on the ground moved rapidly on their toes, in a kind of shuffling run, sometimes, but by no means invariably, with raised wings. Bent (1) says they can only rise from the ground with difficulty; but several birds we watched took off from level ground with perfect ease. Like other Petrels Leach's cannot support themselves upright on their tarsi.

The smell of the colony was peculiar and persistent; it has been described as musty. Once we located an occupied burrow by its smell. The smell was still most marked in the remains of birds found in Black-backed Gulls' castings. Recently we were so unwise as to smell a dead Fulmar and rather to our surprise it reeked of exactly the same odour—quite unlike the stench normally associated with this bird!

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Note.—Unnumbered references to Harrisson indicate his unpublished notes.

BIRDS IN MIDDLESEX.

BY

WILLIAM E. GLEGG.

THE Goldeneye, generally recognized as a marine bird during winter, has been a winter resident on the fresh water at Staines for some years and two other species of similar habit have made their appearance. A single Long-tailed Duck has spent four successive winters on the reservoir and has appeared again this year. It is remarkable that only one of the species should stay although small parties have made brief halts. One can only suppose that it is the same bird which appears annually and if this is so it is additional evidence that the homing powers of birds may be as sensitive in returning to the winter quarters as they are known to be in the selection of nesting sites. Red-breasted Mergansers have been on the reservoir for some weeks in two successive winters [see *British Birds*, Vol. XXVIII., p. 350]. The writer is responsible for the following records unless otherwise stated.

ROCK-PIBIT (*Anthus s. petrosus*).—One with a flock of Meadow-Pipits at Littleton Reservoir on October, 7th 1936.

YELLOW WAGTAIL (*Motacilla f. rayi*).—One at Hampton on March 24th, 1936. This is the earliest date for the county, previously April 4th. An albinistic bird, back and head impure white and breast whitish-yellow, at Staines on April 12th, 1936.

BLACK REDSTART (*Phoenicurus o. gibraltariensis*).—A female on the concrete parapet at Littleton Reservoir on November 6th, 1935.

SWIFT (*Apus a. apus*).—On May 24th, 1936, six dead Swifts were removed from Staines Reservoir and at least three more on May 31st. Three were taken from Littleton Reservoir, one on May 25th, and two on June 10th. The death of these birds may be attributed to the wintry north-east wind prevailing at the time.

PEREGRINE FALCON (*Falco p. peregrinus*).—On April 28th, 1936, I found the remains of eight domesticated or carrier pigeons on or near the baffle at Littleton Reservoir. I associated this slaughter with a Peregrine but could not find the bird. On May 6th, a pigeon flew past close to me, and it was immediately followed by a Peregrine, apparently an immature bird. I was hidden from the approaching birds by the ornamental masonry, which explains why I had such an excellent view of both. On May 18th, I had another opportunity to watch the Falcon when it flew low over the reservoir, settled on the concrete slopes and bathed. The bird must have spent some time in the vicinity as the freshest of the dead pigeons must have been killed over a week before they were seen by me.

COMMON HERON (*Ardea c. cinerea*).—In *Birds of the Green Belt*, p. 186, appears the following astonishing statement: "one greatly wonders whether the flourishing state of the heronry at Sion House is not due to the abundant opportunities of good fishing afforded by the numerous West London reservoirs a little further up river. I have not had the good fortune to see this heronry, which is on the north side of the river opposite Kew Gardens, but rely on the evidence of Mr. E. V. Lucas, who has written of a prosperous colony in the cedars there." Although I had not the slightest hope of finding a heronry there, I have made a thorough search of Syon Park but failed to obtain the faintest

confirmation of this story. I made an especially careful examination of every cedar I could find. One or two Herons were flushed from one of these trees and there were indications that it was used as a roost. Mr. J. F. England, who has been at Syon Park as head gardener for sixteen years assures me that there has been no heronry in the park during that period. It is very unsatisfactory that such a statement should have been accepted from a source presumably not ornithological without an attempt having been made to investigate its reliability. The belief exists locally among the uninitiated that a Heronry does exist at Syon Park. The stretch of the Thames at Syon Park, probably owing to the fact that the birds are undisturbed there, has always been to my knowledge a favourite haunt of Herons and it is this which has created the impression that there is a heronry.

SHELD-DUCK (*Tadorna tadorna*).—Eight, the largest party for the county, were seen on Littleton Reservoir on May 6th, 1936. The bird which appeared at Staines on October 16th, 1932, was still there on October 18th, 1936.

PINTAIL (*Anas acuta*).—At Littleton Reservoir three males and one female were seen on April 28th and two males and one female on May 6th, 1936.

SHOVELER (*Spatula clypeata*).—The status of this species appears to be altering and it may have to be described as a resident. Its behaviour is, however, a mystery. It has been present at Littleton Reservoir through the nesting season of 1936 in some numbers; ten adult males were seen on June 10th. It was confident that the birds must be breeding but in spite of regular visits I have failed to get the necessary evidence, neither eggs nor young having been seen.

TUFTED DUCK (*Nyroca fuligula*).—A nest with six eggs was found on June 10th, 1936, among nettles at the end of the baffle at Littleton.

GOLDENEYE (*Bucephala c. clangula*).—A brown-headed bird was seen at Staines Reservoir on October 4th, 1936, the earliest date for the county, previously October 14th.

LONG-TAILED DUCK (*Clangula hyemalis*).—One appeared at Staines Reservoir on October 11th, 1936.

RED-BREASTED MERGANSER (*Mergus serrator*).—At Staines Reservoir, two brown-headed birds on January 26th, 1936, and one on several occasions from February 23rd to April 5th.

TURNSTONE (*Arenaria i. interpres*) and **SANDERLING** (*Crocethia alba*).—One each at Staines Reservoir on May 24th, 1936.

RUFF (*Philomachus pugnax*).—Three, sex unknown, at Littleton Reservoir on September 21st, 1935.

LITTLE STINT (*Calidris minuta*).—One at Littleton Reservoir on September 15th and 18th, 1936.

COMMON CURLEW (*Numenius a. arquata*).—Fourteen were seen at Littleton Reservoir on September 9th, 1936.

BLACK TERN (*Chlidonias n. niger*).—Mr. A. Holte Macpherson saw twenty-one at Staines Reservoir on September 10th, 1936. This equals the largest number for the county.

COMMON TERN (*Sterna h. hirundo*), **ARCTIC TERN** (*Sterna macrura*).—From four, one of each species was identified at Littleton Reservoir on September 9th, 1936.

LITTLE TERN (*Sterna a. albifrons*).—One mature bird was seen at Staines Reservoir on October 22nd, 1936.

LITTLE GULL (*Larus minutus*).—A party of five with seven Black Terns was seen at Littleton Reservoir on May 6th, 1936. Some at least had the dark hood of the breeding plumage.

RED-LEGGED PARTRIDGE (*Alectoris r. rufa*).—One found dead in Staines Reservoir on May 17th, 1936. See my article (*antea*, p. 38).

DR. CHARCOT AND THE BIRDS OF ROCKALL.

BY
HUGH S. GLADSTONE.

THE tragic fate, in September, 1936, of Dr. Jean Baptiste Etienne Auguste Charcot, who perished with all his companions save one in the French Polar expedition in the "Pourquoi Pas?" reminded me of a correspondence I had with Dr. Charcot, in 1921, about his landing on Rockall that year on 29th June, and 1st July.

I wrote to him, asking if he had made any notes as regards the birds he saw there and he sent me a photograph (6 in. by 4 in.) reproduced below with the accompanying letter:—

29 Rue St. James,

Neuilly-sur-Seine.

11th December, 1921.

DEAR SIR,

Our landing on Rockall was specially for geological purposes and oceanographical observations in the neighbourhood.

Nevertheless we took interest in all the details concerning this curious rock. My love for animals is such that I never let one be killed or even bothered when it is not absolutely necessary either for science or for living. We have in our collections samples of all the birds that we saw on Rockall, so we let them to their business, and very thankful they became very friendly.

On the sketch in the lower right corner of the included photo you will find "l'emplacements" on the summits of Rockall of the different groups of birds we noticed. With a magnifying glass you may easily read the names. We had no specialist with us and many details may have escaped us but at all events what we have noted is exact.

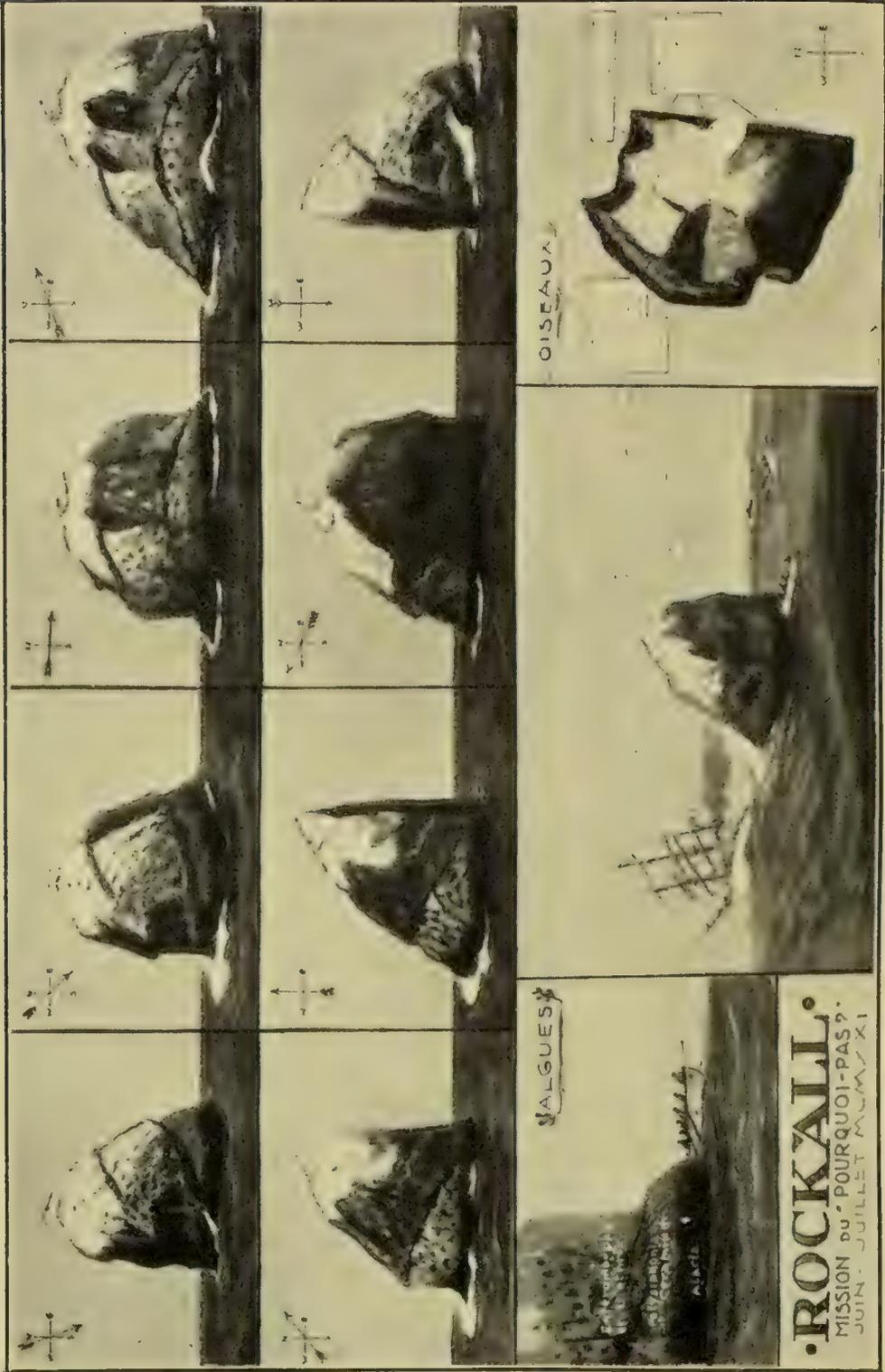
Very pleased if I can be agreeable, believe me, dear Sir,

Yours truly,

J. CHARCOT.

A summary of Dr. Charcot's expeditions is given in *The Times* of 17th September, 1936, and a detailed account of his obsequies will be found in *L'Illustration* of 17th October, 1936.

I believe that landings were made on Rockall in 1811 by men from H.M.S. *Endymion*, and in 1861, from H.M.S.



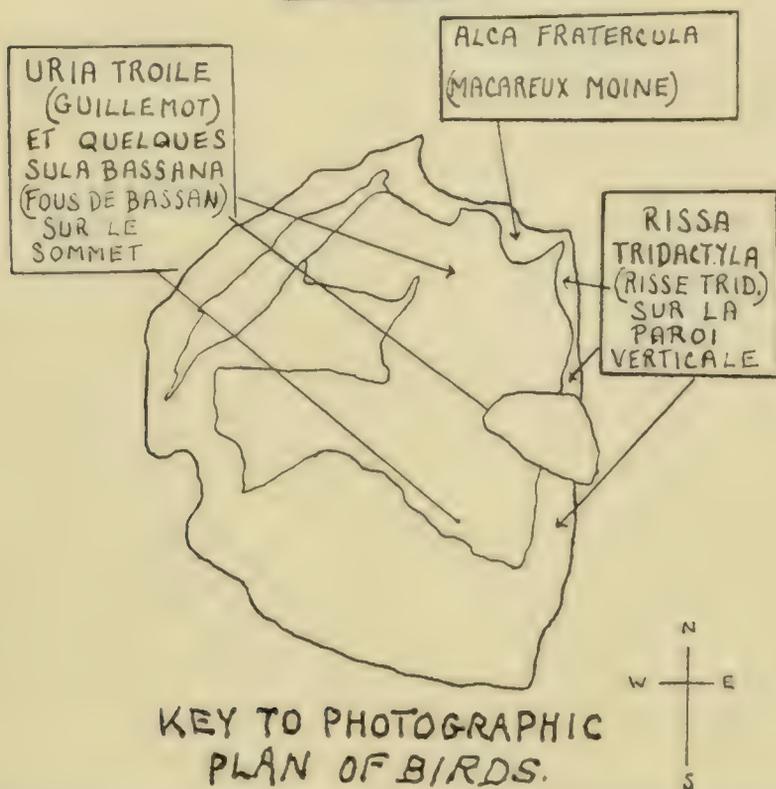
OISEAUX

ALGUES

•ROCKALL•
 MISSION DU "POURQUOI-PAS ?"
 JUIN - JUILLET MCMXXI

Porcupine. Mr. Miller Christy* and Dr. J. A. Harvie-Brown† have written about Rockall but, in view of the lack of

OISEAUX.



information, Dr. Charcot's letter and photograph would seem to be of sufficient interest to publish.

* Reprint from *The Yachtsman* : 2nd May, 1895.

† Reprint from *Proceedings of the Royal Physical Society of Edinburgh*. 23rd March, 1895. Also J. A. Harvie-Brown and R. M. Barrington "On the Ornithology of Rockall" in the *Trans R. Irish Acad.* XXXI, part III, pp. 66-75 (1897).

RECOVERY OF MARKED BIRDS.

Jackdaw (*Colæus m. spermologus*).

RINGED AS NESTLINGS.

RECOVERED WHERE RINGED.

No.	Ringed	Recovered.
RV.8854	Shipley (Yorks), 2.6.35, by C. Wontner-Smith.	16.10.36.
RV.8858	Ditto 2.6.35.	27.5.36.

RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

RT.5742	Shipley (Yorks), 15.5.33, by C. Wontner-Smith.	17.5.36.
RT.5746	Ditto 14.5.33.	May, 1934, 1935, 1936.
RV.2009	Ditto 26.5.34.	20.5.36.

Magpie (*Pica p. pica*).

RT.6735	Bridge of Weir (Renfrew) 1.10.35, ad., by F. J. Ramsay.	Where ringed, 6.4.36.
RV.7669	Ascott - under - Wychwood (Oxon.), 14.9.35, ad., for Oxford Orn. Soc.	Where ringed, 5.4.36.

Jay (*Garrulus g. rufitergum*).

RT.7634	Evesham (Worcs.), 4.6.34, young, by A. J. Harthan.	Where ringed, 26.7.36.
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Starling (*Sturnus v. vulgaris*).

RINGED AS NESTLINGS.

OL.929	Stanford-on-Avon (Warwick), 4.6.36, for Rugby School.	Cottingham (Northants.), 12.7.36.
ZP.686	Crowthorne (Berks.), 28.5.36, for Wellington College.	Watlington (Oxon.), —.8.36.

RINGED AS FULL-GROWN.

GM.351	Ullswater (Westmor.), 21.1.36, by H. J. Moon.	Labiau, East Prussia, 18.8.36.
OA.505	York, 14.2.36, for Bootham School.	Sheriff Hutton, (Yorks), —.6.36.
ZL.369	Ditto 16.1.36.	Stickney (Lincs.), —.7.36.
FB.745	Ditto 16.2.34.	Greifenberg, Pomerania, —.7.36.
J.1560	Eastham (Ches.), 2.3.36, by E. Sumner.	Ebeltoft, Jylland, Denmark, 30.5.36.
ZM.352	Wilmslow (Ches.), 18.1.36, by E. Cohen.	Dalston (Cumb.), —.6.36.
GP.756	Alderley Edge (Ches.), 18.10.34, by E. Cohen.	Littleborough (Lancs.), —.11.36.
YF.699	Gt. Budworth (Ches.), 20.12.33, by A. W. Boyd.	Crewe (Ches.), —.5.36.
YF.544	Ditto 7.12.33.	Trögstad, (Ostfold), Norway, 1.6.36.
GK.337	Ditto 5.11.34.	Skyllberg, (Örebro), Sweden, 15.5.36.
GK.438	Ditto 14.11.34.	Roke (Scania), Sweden, —.7.36.
ZT.734	Ditto 23.12.35.	Holsted, Jylland, Denmark, —.5.36.

No.	Ringed.	Recovered.
Starling (<i>continued</i>).		
RINGED AS FULL-GROWN.		
ZX.663	Malvern (Worcs.), 14.6.36, by P. Morshead.	Knightwick (Worcs.), —.7.36.
ZX.597	Ditto	13.6.36. Birdlip (Glos.), —.10.36.
ZA.172	Ditto	8.12.35. Ashby-de-la-Zouche (Leics.), —.4.36.
ZS.453	Ditto	17.1.36. Tilsit, East Prussia, —.8.36.
ZS.77	Ditto	17.12.35. Stallupönen, East Prussia, 30.6.36.
ZS.395	Ditto	16.1.36. Hattem (Guelderland), Holland, 30.9.36.
OC.26	Stanway (Glos.), 17.2.36, by G. Charteris.	Alcester (Warwick.), 7.12.36.
OC.263	Moreton - in - Marsh (Glos.), 21.2.36, by G. Charteris.	Labes, Pomerania, —.4.36.
ZW.118	Oxford, 10.1.36, for Orn. Soc.	Hemel Hempstead (Herts.), 17.7.36.
ZR.694	Ditto	2.1.36. Bentheim, Hanover, 20.6.36.
ZW.177	Ditto	17.1.36. Tandslet, Alsen, Denmark, —.7.36.
OW.767	Whipsnade (Beds.), 21.10.36, for Zool. Soc.	Cardiff (Glam.), 7.11.36.
ZJ.179	Chorley Wood (Herts.), 28.10.35, for Cheltenham College.	Jaunjelgava, Latvia, 13.6.36.
XF.87	Seaton (Devon), 14.12.33, by A. Mayo.	Kilby (Leics.), 12.9.36.
XF.122	Ditto	5.2.33. Perleberg, Brandenburg, —.10.36.
FJ.935	Branscombe (Devon), 27.12.33, by P. Morshead.	Pyritz, Pomerania, 22.8.36.
Greenfinch (<i>Chloris ch. chloris</i>).		
RINGED AS NESTLING.		
OD.959	ShipleY (Yorks), 13.6.36, by C. Wontner-Smith.	Bramhope (Yorks), 22.8.36.
RINGED AS FULL-GROWN.		
ZT.759	Gt. Budworth (Ches.), 3.1.36, by A. W. Boyd.	Altrincham (Ches.), 22.6.36.
GT.469	Ditto	14.12.35. Ormskirk (Lancs.), 16.8.36.
ZK.434	Cressage (Salop.), 7.3.36, by Geoffrey Pollitt.	Atcham (Salop.), 12.6.36.
Linnet (<i>Carduelis c. cannabina</i>).		
LG.572	Malvern (Worcs.), 24.6.36, juv. by P. Morshead.	Loupiac (Gironde), France, 17.10.36.
Chaffinch (<i>Fringilla c. cœlebs</i>).		
RINGED AS FULL-GROWN.		
FR.422	Kendal (Westmor.), 9.3.35, by M. Monro.	Turnhout, Belgium, 15.11.36.
LL.139	Evesham (Worcs.), 11.2.35, by A. J. Harthan.	Antwerp, Belgium, 8.10.36.
MM.974	Toddington (Glos.), 26.12.34, by G. Charteris.	Turnhout, Belgium, 3.10.36.

No.	Ringed.	Recovered.
	Reed-Bunting (<i>Emberiza s. schæniclus</i>).	
MD.290	Oxford, 23.12.33, ad., for Oxford Orn. Soc.	Where ringed, —.4.36.

Meadow-Pipit (*Anthus pratensis*).

RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

LE.35	Oxford, 29.1.35, for Oxford Orn. Soc.	Feb., March, 1936.
MR.472	Skokholm, (Pem.), 27.7.34, by R. M. Lockley.	13.4.36.
LL.727	Ditto 10.7.35, for Skokholm Bird Obs.	25.4.36.
LL.770	Ditto 29.8.35.	27.4.36.

Rock-Pipit (*Anthus s. petrosus*).

ZA.412	Skokholm Bird Obs., 2.9.35, juv.	Where ringed, 17.4.36.
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Great Tit (*Parus m. newtoni*).

GV.271	Oxford, 16.11.35, ad., for Oxford Orn. Soc.	Noke (Oxon.), 14.3.36.
KH.614	Ditto, 5.12.35.	Eynsham (Oxon.), 10.5.36.

Blue Tit (*Parus c. obscurus*).

H.6597	Arnside (Westmor.), ad., by J. Barnes.	17.9.30, Where ringed, 17.5.36.
H.6566	Ditto 14.12.30.	Ditto 9.12.36.

Mistle-Thrush (*Turdus v. viscivorus*).

RINGED AS NESTLINGS.

203781	Whipsnade (Beds.), 5.5.36, for Zool. Soc.	Albury (Herts.), 28.8.36.
AS.2936	Wittersham (Kent), 27.4.36, by R. G. Williams.	Lydd (Kent), 22.8.36.

RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

AP.5601	Birmingham (Warwick.), 18.2.33.	by W. E. Kenrick. 26.2.36.
AP.5605	Ditto 20.12.34.	15.2.36.

Song-Thrush (*Turdus e. ericetorum*).

RINGED AS NESTLINGS.

OA.225	Barbon (Westmor.), —.5.36, by H. J. Moon.	Threlkeld (Cumb.), 14.10.36.
ZJ.868	Higher Hodder (Yorks.), 11.5.36, by Oakes & Battersby.	Sottevast (Manche), France, 23.10.36.
YF.901	Shiple (Yorks.), 25.4.33, by C. Wontner-Smith.	Knocklong (Limerick), 1.11.36.
ZW.908	Reading (Berks.), 4.5.36, for Leighton Park School.	Amersham (Bucks.), 26.7.36.
OE.184	Bealings (Suffolk), 22.4.36, by A. Mayall.	Harleston (Norfolk), 28.6.36.
MF.429	Peasmarsh (Sussex), 1.6.32, by R. G. Williams.	Ewhurst (Sussex), 19.6.36.

No.	<i>Ringed.</i>	<i>Recovered.</i>
Song-Thrush (<i>continued</i>).		
RINGED AS FULL-GROWN.		
ZR.706	Isle of May, Scotland, 7.10.35, for Isle of May Bird Obs.	Arbroath (Angus), 31.10.36.

Blackbird (*Turdus m. merula*).

RINGED AS NESTLINGS.

F.4895	Wistaston (Ches.), 21.5.29, by J. Mayne.	Where ringed, 5.7.36.
OH.284	Peasmarsh (Sussex), 6.5.36, by R. G. Williams.	Horsham (Sussex), 24.10.36.

RINGED AS FULL-GROWN.

ZR.816	Birmingham, (Warwick), 12.12.35, by H. G. Alexander	Stourport (Worcs.), —.9.36.
FD.89	Belfast (Antrim), 14.2.36, by J. Cunningham.	Vesteras (Västmanland), Sweden, 17.8.36.

Wheatear (*Ænanthe æ. ænanthe*).

LL.716	Skokholm Bird Obs. 6.7.35, juv.	Where ringed, 10.8.36.
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Robin (*Erithacus r. melophilus*).

LL.801	Skokholm Bird Obs., 30.8.35, ad.	Where ringed, 18.9.36.
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Hedge-Sparrow (*Prunella m. occidentalis*).

RINGED AS NESTLING.

LR.421	Arnside (Westmor.), 26.4.36, for Bootham School.	Heversham (Westmor.), 13.6.36.
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RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

MH.449	Skokholm (Pem.), 8.10.33, by R. M. Lockley.	29.8.35. 18.5.36.
MR.700	Ditto 26.8.35, for Skokholm Bird Obs.	6.4.36.
LL.731	Ditto 6.8.35.	9.4.36.
LL.774	Ditto 29.8.35.	7.4.36.

Swallow (*Hirundo r. rustica*).

RINGED AS NESTLINGS.

(a) RECOVERED AWAY FROM WHERE RINGED.

KC.958	Cumdivock (Cumb.), 3.7.35, by R. H. Brown.	Bethlehem, O.F.S., South Africa, 11.11.36.
JJ.629	East Norton (Leics.), 8.9.36, by P. Morshead.	Billesdon (Leics.), 29.9.36.

(b) RECOVERED WHERE RINGED.

LW.242	Salthouse (Norfolk), 4.7.35, by R. M. Garnett.	6.8.36.
LG.790	Laugharne (Carms.), 30.7.35, by J. F. Thomas.	17.8.36.
LG.829	Ditto 2.8.35.	24.8.36.
LG.830	Ditto 2.8.35.	17.8.36.
LG.836	Ditto 3.8.35.	18.8.36.
LG.837	Ditto 3.8.35.	3.8.36.
LN.717	Ditto 8.8.35.	7.8.36.
MP.512	Ditto 16.8.34.	31.7.36.
NW.920	Ditto 4.8.34.	18.8.36.

Swallow (*continued*).

RINGED AS FULL-GROWN.

(d) RECOVERED WHERE RINGED.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
Mytton,	Lancs.,	(Oakes & Battersby).	Laugharne (J. F. Thomas.)		
			L.5079	14.8.31.	4.8.36.
KH.128	2.9.35.	—.6.36.	LG.834	3.8.35.	7.8.36.
			<i>(Mother of LG.836-7 above.)</i>		
Peover, Ches.,	(A. G. Haworth).		LN.725	15.8.35.	5.8.36.
NM.205	5.6.35.	4.8.36.	LN.754	19.8.35.	30.7.36.
NX.344	25.7.34.	6.6.35.	LN.755	19.8.35.	7.8.36.
	<i>(Mates in 1935, not in 1936.)</i>		LN.765	19.8.35.	3.8.36.
Capel, Surrey,	(W. A. Cadman).		LN.804	22.8.35.	29.7.36.
			LN.839	23.8.35.	31.7.36.
NJ.254	21.7.33.	15.7.35.	MP.565	20.8.34.	31.7.36.
		16.8.36.	NW.901	3.8.34.	30.7.36.

Sand-Martin (*Riparia v. riparia*).

No.	Ringed.	Recovered.
MS.211	Shipley (Yorks.), 24.6.34, ad., by C. Wontner-Smith.	Where ringed, 28.6.36.

Little Owl (*Athene n. vidalii*).

RT.7723	Olney (Bucks), 28.4.33, young, for Rugby Sch.	Yardley Hastings (Northants), 25.8.36.
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Barn-Owl (*Tyto a. alba*).

401121	Shipley (Yorks), 1.4.35, ad., by C. Wontner-Smith.	Where ringed, 3.5.36.
AB.3301	Braddan, I. of Man, 16.6.35, ad., by W. S. Cowin.	Where ringed, 28.6.36.
AB.3306	Andreas, I. of Man, 28.7.35, young, by W. S. Cowin.	Onchan, I. of Man, 7.7.36.

Kestrel (*Falco t. tinnunculus*).

RV.9851	Cardewlees (Cumb.), 25.6.35, young, by R. H. Brown.	Gretna (Dumfries), 29.6.36.
RW.9420	Sedbergh (Yorks), 14.7.36, young, for Sedbergh Sch.	Garborn Pass (Westmor.), —.8.36.

Common Buzzard (*Buteo b. buteo*).

AB.6147	Westmorland, 28.6.36, young by R. H. Brown.	Marske (Yorks.), 28.10.36.
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(To be continued.)

NOTES

THE RANGE OF THE HEBRIDEAN HEDGE-SPARROW AND STONECHAT.

MR. C. M. N. White's notes (*antea*, p. 83) on the distribution of the Hebridean Hedge-Sparrow (*Prunella m. hebridium*) prompt me to go still further into this matter.

A series of winter and early spring Hedge-Sparrows from north Ayrshire and Renfrewshire, when carefully compared with the material from the Outer Hebrides in the Natural History Museum, were found to be identical with the Hebridean form.

This discovery now brings *P. m. hebridium* further east and south than heretofore, and it would seem that all the Clyde Hedge-Sparrows will have to be relegated to this sub-species.

Several specimens from north-western Lanarkshire appear to be intermediate between *P. m. occidentalis* and *P. m. hebridium*, while others are indistinguishable from typical *P. m. occidentalis* from the south of England (Kent).

Prunella m. hebridium is a good and easily distinguishable race, but its exact distribution in this part of Scotland demands much more extensive research.

As shown by me in the *Scottish Naturalist* (1936, p. 150), the Stonechat of north Ayrshire is *Saxicola t. theresæ*, and not *S. t. hibernans*. Since this discovery I have been able to examine specimens from Renfrewshire, which I also consider referable to the Hebridean race.

The Rev. J. M. McWilliam (*Birds of the Firth of Clyde*, p. 60) states that birds taken by himself and Mr. A. B. Duncan in Bute were like the Hebridean form, so that it would seem likely, as suggested by Mr. McWilliam, that this form will have to be substituted for the English race in the Clyde list.

My best thanks are due to Mr. E. Richmond Paton, for permitting me to examine the skins in his collection.

PHILIP A. CLANCEY.

RED-NECKED GREBE, PURPLE SANDPIPER AND KITTIWAKES IN MIDDLESEX.

MR. D. GUNN saw a Red-necked Grebe (*Podiceps g. griseigena*) at Staines Reservoir on November 21st, 1936, and it was still there on November 30th. During its stay it was seen by several observers, including the present writer. Six years have elapsed since this species was recorded.

I observed a Purple Sandpiper (*Calidris m. maritima*) at Staines Reservoir on November 29th, 1936, and it was later shown to Dr. G. Carmichael Low and Mr. A. Holte Macpherson, the latter seeing it again next day. The short orange-coloured legs were a very noticeable feature. The wader was tamer than a Phalarope and although we were only fifteen feet away it preferred to run past us than fly over the water. That the note, harsh and monosyllabic, might be heard I was obliged to clap my hands and even then the bird rose only about a foot and dropped back. This is the first time that this species has been observed in the County and it brings the list of waders up to thirty-five, a remarkable number for a small inland area and only three behind the large neighbouring county of Essex with its extensive seaboard.

I saw at Littleton Reservoir on November 13th, 1936, an adult Kittiwake (*Rissa t. tridactyla*). It was obviously suffering from some disability and was probably the bird which I found dead on November 21st. On the latter date I saw also an immature Kittiwake which was very badly oiled and could fly only a short distance but I saw nothing of it on subsequent visits. On November 22nd, I found a dead mature Kittiwake at Staines Reservoir. This species seems to suffer when driven from its marine haunts, for of the total previous Middlesex records, namely fourteen, five referred to dead birds.

WILLIAM E. GLEGG.

SANDWICH TERNS IN PEMBROKESHIRE.

It is curious that such a pelagic species as the Sandwich Tern (*Sterna s. sandvicensis*) has been recorded so rarely in South Wales, although breeding in North Wales and Ireland. It has only once been recorded previously in Pembrokeshire, when Messrs. Chas. Oldham and Bertram Lloyd saw four at Newport on June 3rd and 5th, 1928 (*Brit. Birds*, Vol. XXII., p. 169).

With this record may now be placed that of two adults seen in company with some Common Terns by Mr. H. Morrey Salmon at 8 a.m. on September 17th, 1936, when he was crossing to Skokholm, the boat being then about half a mile north-west of St. Ann's Head.

On November 6th, 1936, a very late date for the species, I saw an immature Sandwich Tern fishing for some hours in front of my house in Dale. The long wings, short blunt forked tail, high (almost Gannet-like) dives, and size approximating that of the Black-headed Gulls fishing with it, made identification conclusive.

R. M. LOCKLEY.

GULLS TAKING ANTS OFF SURFACE OF LAKE.

IN the late afternoon of August 26th, 1936, an extensive marriage flight of ants took place over the North Basin of Lake Windermere. The species has been kindly identified for me by Mr. H. St. J. K. Donisthorpe of the British Museum (Natural History) as *Acanthomyops (Chthonolasius) flavus* F. Huge numbers of these got caught on the surface of the water and were unable to get off, with the result that the surface of the North Basin, which was calm, was covered with these floating ants. A mixed collection of about forty gulls were swimming on the surface of the lake picking off the ants, rather after the fashion of a Red-necked Phalarope. The species observed doing this were Lesser Black-backed Gull (*Larus f. graellsii*), Black-headed Gull (*L. r. ridibundus*) and a few Herring-Gulls (*L. a. argentatus*). Although there were still plenty of ants in the air, no birds were catching them on the wing.

There have been records of several species, including Gulls, feeding on ants during their marriage flights, but they have been seen taking them on the wing. The more passive method of catching them, recorded here, seems rather unusual.

P. F. HOLMES.

[I know of no previous record of *L. ridibundus* feeding on ants floating on the water though they have been recorded as taking them on the wing. Ants have not been recorded as food of *L. f. graellsii* or *L. argentatus*.—F.C.R.J.]

EARLY SNOW-BUNTINGS IN KENT.—Capt. G. E. Took informs us that he saw a flock of five Snow-Buntings (*Plectrophenax nivalis*) at Sandwich on October 10th, 1936. This is unusually early for the appearance of the bird on the south coast.

GREAT GREY SHRIKE IN STAFFORDSHIRE NOT DERBYSHIRE—*Correction*.—On page 231 *antea* we recorded a Great Grey Shrike as seen at Alstonfield, Derbyshire, whereas the county should have been Staffordshire.

LATE HOBBY IN WILTSHIRE.—Mr. C. M. R. Pitman, informs us that on November 14th, 1936, a Hobby (*Falco s. subbuteo*) was brought to him injured but alive. The bird was found in a field near Salisbury and had apparently hit some telegraph wires. The injuries appeared to be quite recent and the bird died the same evening.

WHOOPEER SWANS IN CAMBRIDGESHIRE AND HAMPSHIRE.—Mrs. Brindley informs us that she watched two Whooper Swans (*Cygnus cygnus*) near Sutton in the Isle-of-Ely on

December 1st, 1936. The birds were in company with some Mute Swans, and although more uneasy than these, allowed approach within eighty yards. There are few recent records of the Whooper in Cambridgeshire.

Sir Thomas Troubridge writes that six Whooper Swans appeared on the Beaulieu River in the middle of November, and are usually to be seen feeding within thirty yards of a main road, and are undisturbed by passing cars and pedestrians.

BEWICK'S SWAN IN MERIONETHSHIRE.—Mr. A. W. Boyd informs us that a young Bewick's Swan (*Cygnus b. bewickii*), still retaining many ashy-brown feathers in its plumage, was found dead on or about November 9th, 1936, at Cwm Mein in the parish of Llandderfel, Merioneth—a few miles east of Bala. It seems that this or another similar bird had been seen in that district since the beginning of the month, that it fed with tame geese and that it later became too weak to feed. The bird was brought to Mr. Boyd by Mr. A. S. Irvine. Bewick's Swan is only occasionally recorded in North Wales.

GOOSANDER IN WILTSHIRE.—Mr. C. M. R. Pitman informs us that an adult female Goosander (*Mergus m. merganser*) was brought to him on November 29th, 1936. The bird had been shot as it was flying up the Avon at Salisbury. Mr. Pitman states that this is the first record of the species in Wiltshire that he can trace since 1892.

LITTLE GULLS IN SUSSEX.—Mr. A. R. Sumerfield informs us that he saw a Little Gull (*Larus minutus*) at Pevensey Sluice beach on November 15th, 1936. Mr. Sumerfield sends us sketches and description of the bird from which it is evident that it was in first winter plumage.

A skin of a Little Gull, in similar plumage, has been sent to us for examination by Miss M. M. Hutchinson, who informs us that the bird was picked up dead at Midhurst, on November 18th. The stomach contained elytra of beetles.

REVIEWS.

Enigmas of Natural History. By E. L. Grant Watson. (Cresset Press). 6s.

THIS is a series of twenty-four short papers on some of the more remarkable life-histories of European and Australian animals. They are pleasantly written and cover an exceedingly wide field, but here we are concerned only with the five which deal with birds. "The Owl and the Beetle" treats of the Little Owl. We are first told that it was introduced by Lord "Milford" (*sic!*) in Cambridgeshire, a misleading statement to begin with. Then the story of killing young Pheasants and chickens

and using them as bait to attract burying beetles, is told at length as if it were the result of independent close and careful observations, whereas it has been reported by one observer and received a warm welcome from the daily papers. Although frequently repeated, no confirmation of the statement has ever come to hand and it is probable that the recorder was mistaken in his theory. Two thousand pellets only produced less than 50 carrion-beetles— $2\frac{1}{2}\%$! In the complete absence of proof, our author's speculations as to the origin of the habit lose their point. In the next article on Swallows and Starlings we are told that the House-Martin is generally the first to arrive ; also that if a Swift settles on the ground it cannot rise again, and that the male Swifts drive their reluctant mates to their nests with loud screechings ! Needless to say, all three statements are quite erroneous. The hibernation of Long-tailed Tits in parties of twenty or so in a hollow branch is also new to ornithologists, while the surprising statement that the Razorbill and apparently the Guillemot are double-brooded is contrary to the experience of all who know these birds. Apparently the author has spent much of his life in the Antipodes and finds it difficult to distinguish between scientific work and the wild and inaccurate statements on British birds which appear so frequently in the daily press. This is a pity, as when the facts are drawn from reliable sources, the articles are effectively written, but the mixture of truth and error destroys all confidence on the part of the intelligent reader. F.C.R.J.

Report on the Birds of Warwickshire, Worcestershire and South Staffordshire, 1935 (Obtainable from Cornish Bros., Birmingham. Price 1s. 6d.).

IN this second annual report of the " Birmingham Bird Club " the area of operations has been enlarged to include the southern half of Staffordshire. Very wisely a map has been incorporated in the Report to show the whole area and its limits. Besides the main account of the birds in systematic order, this Report contains short articles on Bartley, Bittell, Gailey and Bellfields Reservoirs and Curdworth Marsh. There are also special accounts of the status of the following: Dipper, Nightingale, Redstart, Wryneck, Woodpeckers, Corncrake and Pochard, while at the end is a table of arrival and departure dates of migrants.

Among classified notes there are a number of interesting items of which we may mention the following : Swallow, one at Selley Oak on December 24th ; Pintail, several records at reservoirs between March 16th and April 23rd, one December 1st and one February 7th ; Gadwall, one Lesser Bittell, April ; Garganey, two Curdworth, July 25th ; Velvet-Scoter, one Shustoke, January 30th ; Grey Plover, one Upper Bittell, November 21st. It may be suggested that it would be useful if in future Reports a reference to previous publications of any record were given.

The Report is well drawn up and with such an excellent foundation as is shown by its carefully edited first two Reports we hope that the Birmingham Bird Club may expand and add to its usefulness.

LETTERS.

CUCKOO CALLING WITH BILL OPEN.

To the Editors of BRITISH BIRDS.

SIRS. —In *Songs of Wild Birds* (1936) Mr. Nicholson states on page 10 and again on page 105 that the Cuckoo (*Cuculus c. canorus*) habitually calls with his bill shut. In connexion with this statement the following observation may be of interest.

On June 5th, 1931, while watching a brood of Lesser Spotted Woodpeckers near Utrecht, Holland, it happened that a Cuckoo alighted on a dead branch near my hiding-place, where it stayed calling for rather a long time. Remembering having read in A. Thorburn's *British Birds* (1925) that the Cuckoo calls with his bill shut "as when a pigeon coos", I paid special attention to this calling Cuckoo, which I could observe at ease with powerful 10x binoculars under excellent light conditions so that I could see every detail.

I quite distinctly saw that this particular Cuckoo opened and shut his bill at each call, though he did it very quickly and only opened the bill a little at each call.

FR. HAVERSCHMIDT.

HAARLEM, HOLLAND.

[I used the word "habitually" on purpose instead of "always" or "most often" because although a number of observers such as the late A. Thorburn and Philip Rickman state that they have repeatedly verified that the cuckoo calls with its bill closed, I myself have seen it call with open as well as with closed bill. I know of no information which would enable us at present to decide the relative frequency of the two practices, and suggest that the point would repay more widespread observation.—E.M.N.]

WOODLAND BIRD ENQUIRY.

To the Editors of BRITISH BIRDS.

SIRS,—The woodland bird enquiry of the British Trust for Ornithology has been progressing well, and we are very grateful to all observers who have been taking part. The results are working out satisfactorily except that we still have too few counts in pure beech and pure birch woods to make really sound comparison with the large number of figures for other types. For this reason the enquiry is being extended to June, 1937, after which it definitely closes. Hence any other observers who could help in the enquiry would be very welcome, and a schedule will be sent to them on request.

I might mention again that the counts are comparatively simple to take and do not involve census work, and that they are required for this winter (up till mid-February, 1937) and also for the summer of 1937. Counts for beech and birch will be specially welcome, but all unmixed types of wood are of interest.

THE SCHOOL, DARTINGTON HALL, TOTNES.
December, 9th, 1936.

DAVID LACK.

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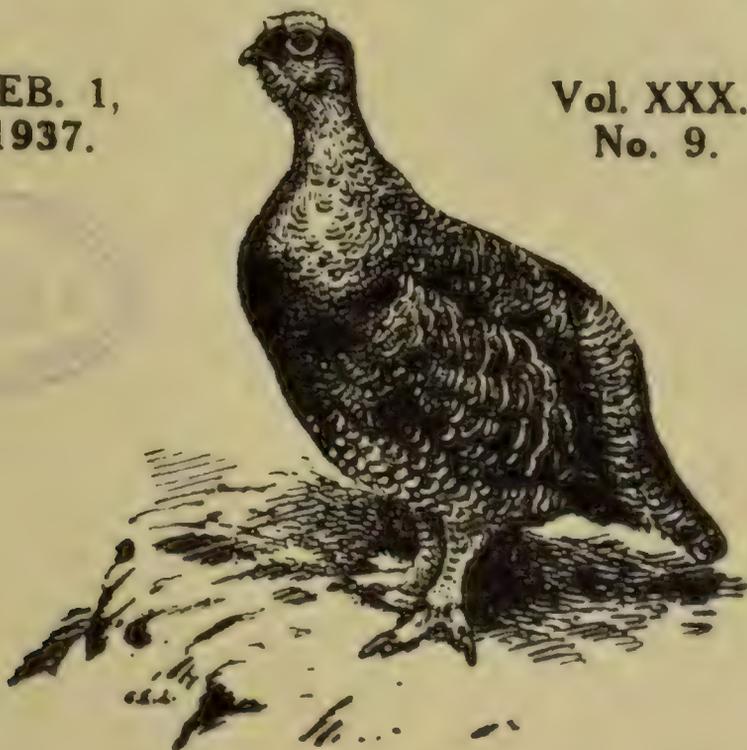
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CONTENTS OF NUMBER 9, VOL. XXX., FEBRUARY 1, 1937.

	PAGE
The Sexual Display of the Little Grebe. By P. H. Trahair Hartley, B.Sc.	266
On the Breeding Habits of Leach's Fork-tailed Petrel—a supplementary note on American observations. By John A. Ainslie and Robert Atkinson	276
Recoveries of Marked Swallows within the British Isles. By A. W. Boyd and A. Landsborough Thomson, C.B., B.Sc. ...	278
Departure of Summer Residents observed at Dungeness, Kent. By Norman H. Joy	288
Notes :	
Shore-Larks in North Kent (R. C. Homes)	291
The Nesting and Rearing of Young by an unmated Pied Wagtail (J. S. Elliott)	291
Collared Flycatcher in Sussex (N. F. Ticehurst)	292
Late Brood of Dartford Warbler (H. F. Pounds)	293
Continental Song Thrushes in Kent, Wiltshire and Avonshire (P. A. Clancey)	293
Food of Nestling Swallows (J. F. Thomas)	293
Results of Ringing and Trapping Swallows in Carmarthenshire (J. F. Thomas)	294
Peregrine Falcon taking Lapwing on Ground (D. R. Levick)	294
Common Eiders in Sussex (C. W. G. Paulson and G. des Forges)	295
Great Northern Diver in Surrey (E. G. Pedler)	295
Fulmar Petrels in Northumberland in 1930 (Miss Mary J. Levett)	295
Spotted Redshank in Sussex in Winter (G. des Forges) ...	296
Greenshanks Wintering in Merionethshire (E. H. T. Bible)	296
Status of Sandwich and Arctic Terns in Pembrokeshire (B. Lloyd)	297
Short Notes :—	
Unusual Birds in Outer Hebrides. Scarce Birds on the Isle of May. Black Redstart in Middlesex. Slavonian and Black-necked Grebes in Shropshire. Leach's Fork-tailed Petrel in Hampshire. Avocet recorded for Argyllshire.	297
Reviews :—	
<i>Thirty Years of Nature Photography.</i> By Seton Gordon ...	299
<i>Birds of the Wayside and Woodland.</i> Based on <i>The Birds of the British Isles.</i> by T. A. Coward. Edited by Enid Blyton	300

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THE SEXUAL DISPLAY OF THE LITTLE GREBE.

BY

P. H. TRAHAIR HARTLEY. B.Sc.

OBSERVATIONS made on Little Grebes (*Podiceps r. ruficollis*) at Fetcham Pond, in Surrey, during 1931-1933, were concerned chiefly with birds which were paired for life (Hartley, 1933). The drought season of 1934 interrupted breeding upon the pond. In 1935 some information upon the pairing up of Dabchicks was obtained; and observations on the sexual displays of mated birds were extended.

I. PAIRING UP.

The shrill, trilling "titter," which is so frequently uttered by paired birds, and during territorial encounters, is also used by unmated birds during the courting period. It would seem that this loud note is an expression of a heightened emotional state, and takes on a significance according to the circumstances in which it is uttered. The trill used during a territorial demonstration is very slightly different from that used sexually, being more "whirring," and a little lower pitched.

During February, 1935, there was much tittering among the Little Grebes on Fetcham Pond; but it was not until the beginning of March that any birds were paired up. Two birds would keep together for some while, and titter frequently, but soon after separating, one, or both, would call in other company. Occasionally three birds would titter together—but not four or more. These titters were uttered in the usual pose—head drawn in so that the chin rests upon the base of the throat, and beak pointing down. In this calling pose, the Fetcham Dabchicks differed from those observed by Huxley (Huxley, 1914), which, "come face to face, stretch up their necks, and emit the well-known cry." There was much chasing about, and some fighting, during the courting period: but none of the short rushes, with formal poses, and sounding of the "whirring" titter, which are used in, or instead of fighting in defence of territory. Some of these incidents involved four, or (once) five, Grebes. In addition to the vocal courting display, an antic display was twice observed; an antic which is interesting in its resemblance to incidents of the display of the Great Crested Grebe (*Podiceps c. cristatus*) and to the "display building" of paired Dabchicks.

February 16th, 1935: "12.19 p.m.—A light plumaged Grebe, L, was floating by the bank with a darker bird, D. D kept making small half-circles round L, pressing in upon it, and occasionally rotating a little. D kept its neck very upright, with beak sharply horizontal. Once D made a tiny dip of the head, reminiscent of a displaying Great Crested Grebe.

Suddenly a second light Grebe, L¹, appeared and set on D, catching hold of it by the back feathers, and splashing about. D retreated rapidly. L, L¹ and a fourth bird, X, all tittered softly."

" 12.57 p.m.—In the same place as at 12.19 a light Grebe, L, sat by the bank. A dark bird, D, tittered, then made a pressing half-circle round L, with some rotation on its own axis, and neck upright. D dived, came up near L, seized a stem of mare-tail and let it go again; picked up some weeds and placed them beside L; took up a big beakful and added it to the weeds already placed; moved to the other side of L, picked up some weeds, and added them to the other two lots. Then L dived. D remained in the same place, and L soon came up, and sat close by."

The courting Grebes showed all stages of colour from winter to almost complete summer plumage: one couple were still pale when they mated.

2. DISPLAYS OF MATED BIRDS.

The selection of a mate, and the acquisition of a territory seem to take place simultaneously. So long as the birds are only courting, the utterance of the titter between any two birds may take place anywhere upon the pond; but as soon as a couple of birds have paired up, they proceed to exclude other Grebes from a certain area. The paired birds may leave this area themselves, but it is only within its confines that they titter together. This area is in fact, their breeding territory and in its defence a special demonstration, and a special note (the "whirring" form of the titter) are used. When the breeding season is passed, paired birds still resort to special places within their territory, to titter in duet, or merely to sit quietly on the water together. The whole breeding territory is no longer defended, but other Grebes are driven away from the trysting places. In 1935 pairs of birds which had mated in the beginning of March, were observed to keep tryst regularly until mid-November when observation was cut short. Paired Grebes roost by their trysting places, away from the winter flocks.

The titter in duet is by far the most usual form of nuptial display, but occasionally Dabchicks perform antic displays reminiscent of the "weed-trick" of the Great Crested Grebe.

(1) *May 22nd, 1932.*—" 12.1 p.m. B.S.T.: One of a pair of Grebes, which had recently lost their brood, appeared to be holding a fine strand of weed, while tittering with its mate. At 12.3 they were again floating breast to breast, and one was holding weed. At 12.5 they floated breast to breast, and tittered loudly in duet. Both were diving excitedly and

carrying weeds, but did not seem to be building. Once, just after one had dived, the Grebes swam together and touched bills—perhaps some minute food was passed.”

(2) *March 2nd*, 1935.—“ 2.12 p.m. : Two Grebes were floating in their territory breast to breast. One bird picked up a strand of weed, and held it up. The second bird also picked up some weed, and each bird held up its fragment. Then one bird placed its strand of weed on one side, and the second on the other.”

(3) *March 30th*, 1935.—“ 11.57 a.m. : A Grebe, B, emerged from a dive right in front of its mate, K, and began to titter. Instead of tittering, K dived like a flash, with much splash, emerged with a trail of weed which it held up, dived again, and came up, still carrying some weed, and close to B. B dived, and when it emerged, both birds swam away.”

(4) *April 4th*, 1935.—“ 10.40 a.m. : B and K were near together : they dived and emerged about three feet apart. One of them, B, picked up some weeds, and carried them with very upright neck to its mate, K, as though about to hand them over ; but, keeping its neck stiff, B lowered them to the water before K. K picked up the weeds, held them for a moment with upright neck, and replaced them. B held up some weeds, and placed them. K did so too, then B did it again. After that one of them moved a little way away, but at 10.45 a.m., they tittered in the same place.”

(5) *May 12*, 1935.—“ 4.22 p.m. B.S.T. : Two Grebes dived, and, emerging almost breast to breast, tittered loudly while floating with their heads drawn in, in a stiff, conscious manner : meanwhile each bird rotated a little on its own axis.”

(6) *June 12th*, 1935.—“ 12.9½ p.m. B.S.T. : B swam to K with upright neck, carrying some weeds. K picked up some weeds, held them up and dropped them. B held up, and dropped, some more weeds. So did K. Then one swam to the other, carrying some weeds with upright neck. The second bird took hold of these same weeds and the heads of both swayed a little to one side, as though in a gentle wrestle with the stuff. Later, one bird carried some weeds with upright neck towards its mate, then turned round and added them to a little mound which it had built.”

(7) *June 8th*, 1935.—“ 11.53 a.m. B.S.T. : A single Little Grebe had been floating alone. A second Grebe swam out to it, whereon it picked up a stem of marestail, silently placed it before the newcomer, and then swam away.”

A rather different antic display was observed by G. Bird (1933) :—“ On April 2nd . . . the display of the male. His head was held well back, with the neck curved and wings and

feathers fluffed out, so that he presented the appearance of a floating feathery ball. As he approached the hen he seemed to be excited, and uttered a faint note, only audible at close quarters, pecking from time to time at the water. Then riding off some distance he made the well-known trilling call and (apparently by means of his feet) splashed water up over his back to a remarkable height for so small a bird. The hen remained quiet, and showed no excitement." This display was between paired birds on a pond in Suffolk.

Pecking at the water appears to be a sign of considerable nervous excitement. It was not observed at Fetcham during sexual display; but in the course of three territorial encounters in 1932, and two in 1935, one, or both, birds were seen to snatch at weeds, or splash the surface of the water with their bills.

When two birds are floating breast to breast in the tittering position, each must see the little patches of lemon yellow skin at the base of the mandible of the other, strikingly distinct against the rufous cheeks and dark throat. In this way a visual stimulus may be added to the vocal, as with Fulmars (*Fulmarus g. glacialis*) and Razorbills (*Alca torda*) (Selous, 1905).

The titter and the slight "weed-trick" do not form the initial part of a more complex series of reactions; they are purely self-exhausting. Another form of behaviour exists, which was referred to in my notes as "display-building." In the earlier part of the breeding-season this also is a self-exhausting display, and, indeed, differs from the "weed-trick" only in the more conscious disposal of the weeds. (Only a few instances of "display-building" can be quoted. It was much more frequently seen than the "weed-trick.")

(1) *March 28th, 1935.*—"12.30 p.m.: B began to place weeds—two bundles from the surface, one from a dive, three from the surface, one from a dive, and two more from the surface. One of B-K swam, carrying some weed with rather upright neck to its mate, then turned, carried it back (the distance was a foot or more), placed it and continued to build."

(2) *April 4th, 1935.*—"11.16 a.m.: B and K tittered while a yard apart; within half a minute both were busily piling mareetail (*Hippuris vulgaris*). At first each made a separate pile; then B transferred several beaksful to K's pile. Both placed weeds picked up from the surface on K's pile, then B floated quietly, while K continued to build."

(3) *March 30th, 1935.*—"11.8 a.m.: A and E were both building one platform, on to which one of them climbed." When both birds are building, one of them will climb on to

the heap, and either squat down and pull the weeds about, or stand, trampling and arranging the material.

It is doubtful whether any distinction, having a meaning in the life of the bird, can be drawn between "display-building" and work upon the first stages of a true nest. As spring advances, the performance of "display-building" often leads to the assumption of the crouching "invitation" pose by one bird.

May 4th, 1935.—"1.16 p.m. B.S.T.: B and K added material to a little heap of mareetail. Then one of them, K, got onto a minute platform of weeds close by, and on it assumed the invitation pose. B placed some weeds in front of, and behind, K. K went to the first heap, floundered up onto it and crouched again. B piled up weeds before K with great energy: the latter pulled some of them about and then went off."

The piling up of weeds around a crouching bird is a frequent response to the assumption of the "invitation" pose. A heap of mareetail rising well above the water is made so quickly that it is probable that the nest in which eggs are eventually laid is merely a superstructure on the platform whereon the hen sits most frequently before oviposition.

That there is no initial psychological difference between the true nest and the small weed-platform is suggested by the fact that the "invitation pose" and copulation take place upon both.

Both sexes add to the nest throughout the period of incubation. Cargoes of weed are brought in not only at changes of incubating duty, but also at the frequent interim visits of the free bird to the nest.

It is possible that reversal of pairing attitudes (Selous, 1902) takes place, as in the Moorhen (*Gallinula ch. chloropus*) and Great Crested Grebe. That is to say, it is possible for either sex to mount the other in order to effect copulation. When reversal takes place, it cannot be assumed that the mounted bird is necessarily the hen.

The assumption of the "invitation" pose by one Grebe signifies that the bird is strongly sexually excited, and is ready to receive its mate. The Great Crested Grebe has a rather similar position, by which both sexes can show their readiness to pair. Huxley (*loc. cit.*) gives an example of this:—

May 23rd, 1900.—"The hen incited the cock by lying along the water; the cock responded by also going into the passive attitude; the hen ascended the nest, and assumed the passive attitude, and the cock then attempted to pair."

The second Dabchick may react to its mate's invitation in four ways:—

1. It may ignore the invitation.
2. It may pile up weeds around its mate.
3. It may climb onto the nest beside the inviting bird, and itself assume the crouching pose.
4. Copulation may be effected.

In 1, there is no reaction. In 2 and 3 the reaction is of low intensity: the bird is sexually stimulated but cannot, or will not, pair. Reaction 3, since it is a form of behaviour first manifested later in the breeding season than reaction 2, is probably of higher intensity than 2, and suggests that the assumption of the crouching pose has two meanings:—

1. A true invitation pose.

2. That the bird is sufficiently sexually stimulated to take the passive part in copulation, and receive its mate, but cannot itself take the active part. There is no visible difference in position—the distinction is purely functional. When the *second* Grebe of a pair assumes the crouching pose, its behaviour may be interpreted as a reaction of inadequate intensity to its mate's invitation. It is probable, also, that in the first assumption of the "invitation" pose in the earlier part of the breeding season, the crouching bird is not physiologically ready to receive its mate, but is in a state of sexual excitement too high to be satisfied by "display-building."

The titter never appears as a reaction to the invitation. This confirms that it is a distinct, self-exhausting action, having no part in the behaviour pattern which leads to nest building and mating.

Upon two occasions (May 12th, 1935, 4.40 p.m. B.S.T.; May 18th, 1935, 10.59 a.m. B.S.T.) when the reaction of the second bird to the invitation of its mate has been of low intensity—building in each case—the inviting bird has risen, and turned upon the nest, so that on resumption of the "invitation" pose, the hind quarters, with the under tail coverts fluffed out, have been towards the sluggish partner. Before copulation takes place, the Grebe which will take the "active" part, floats for a few seconds behind its mate: this turn places the invited bird in that position, and is, doubtless, an invitatory action. During this pause before mounting the "active" Grebe may, with upright neck, make a rhythmic swing of the head from side to side. Perhaps this last action is auto-excitatory, and serves to raise the birds emotional tone to the maximal stage, wherein the "active" pose is assumed (compare Whitman, quoted by Howard, 1929). This rhythmic swinging of the head is sometimes accompanied by a soft, high-pitched whirring note, not heard at any other time.

During coition the " passive " bird always makes a similar rhythmic, side to side swing of the head : for example :—

1. *May 12th, 1935* — " 3.10 p.m. B.S.T : As B mounted, K drew in its head, and all through the mating made the rhythmic swing. The Grebes were exactly side on to me, and I noticed that K seemed to be rubbing the back of its head across B's lower breast—it seemed that K's nape was pressed against B's feathers the whole time. When B dismounted, it stood on the pairing platform in front of K, rather uprightly ; K bent down, stood upright, bent forward, and toyed with the weeds of the heap ; then both left."

2. *July 11th, 1935* — " 1.9 p.m. B.S.T : . . . the incubating bird, E, was in the crouched position ; the free bird A, on the water just behind it, and making a slight swing of the head. A then mounted E and copulation was attempted—probably successfully. E made the head-swing, but at first held its head low, gradually raising it, so that the nape rubbed first against A's belly, and then against its breast. When copulation was over, A was tipped off over E's head ; they both stood upright, and, I think, touched beaks, relaxed their pose, and straightened again ; then E walked off the nest, and A took over the duty of incubation. E brought four beaksful of weed to the nest."

If the rhythmic swing of the head have an auto-excitatory effect upon the " active " bird, it has doubtless a similar influence upon the " passive " one, and ensures a maximal emotional tone upon its part also. The greater the sexual ardour of the birds, the greater the probability of a successful coition. The stroking of the " active " bird's breast may be a fortuitous result of the position of the head and neck during copulation. Or, although originally a mere by-product, it may now form a significant part of the copulatory behaviour pattern, and serve to increase the pleasure of (that is, in effect, to stimulate) the active bird as well as the passive.

SUMMARY.

The suggested relationship between an increasing sexual excitement and the actions of the Little Grebe is shown in Table I.

Three distinct forms of behaviour are manifested. The first is the titter in duet, and the occasional " weed-trick." The second is the defence of territory. The mated Little Grebe is a passionately territorial bird. Defence of territory is as strong an indication of pairing up as the limitation of tittering to the area defended. A loud titter from each of the pairs of birds involved is the invariable end to a territorial demonstration ; but otherwise these two forms of behaviour are independent.

Both are self-exhausting and not stimulative to coition ; they are seen not only during the breeding-season but also in the winter months, when no excitatory actions are observed.

TABLE I.

BREEDING SEASON.		AUTUMN & WINTER.		
State of Sexual Excitement.	Manifestation.		State of Sexual Excitement.	Manifestation.
Maximal. ↑ Increasing	1ST BIRD True "Invitation" pose.	2ND BIRD "Active" Fairing pose. Λ	No increase	
	Auto-excitation of invited bird.			
	Assumption of "passive" pose as a reaction to the "Invitation" pose.			
	"Display-building."			
	Tittering in duet. Defence of territory. Occasional antic display.			Tittering in duet. Keeping of "Trysting-places." Occasional defence of territory.
Beginning.	Tittering in duet and trio. Rare antic display.		—	—
Non-Existent.	Birds unpaired.		Non-Existent.	Birds unpaired.

The third form of manifestation of sexual excitement is the behaviour pattern leading to nest building and mating—that is, the succession "display-building," assumption of the "invitation" pose, auto-excitation and the active and passive roles in copulation. Only the last of these actions are self-exhausting ; the others may lead on toward the end-point of the pattern. "Display-building" certainly has a highly important function in bringing about the construction of the nest ; but it may also be a stimulus to the assumption of the "invitation" pose, and a low intensity reaction to invitation. Squatting in the "invitation" pose is an action leading

solely towards coition, and forms a necessary part of the copulatory behaviour pattern. "Display-building," although serving a more obviously important purpose, is an incidental part of the pattern. That it has a place in the copulatory behaviour pattern at all, is perhaps explicable by the theory that nest-building arose from the originally purposeless antics of sexually excited birds (Selous, 1933)

COMPARISON WITH THE GREAT CRESTED GREBE.

The titter of the Little Grebe appears to correspond with the "bout of shaking" of the Great Crested Grebe.* The titter is the common form of nuptial display of the Dabchick, and is used after the successful defence of territory. The "bout of shaking" is the common display of the Great Crested Grebe, and is used after the expulsion of an intruder.

The occasional slight "weed-trick" of the smaller species is doubtless the same action as the "weed-trick" of the Great Crested Grebe; but it has never been developed to the elaboration of a "penguin dance."

The Little Grebes of Fetcham Pond maintain the strictest of breeding territories, from the time of pairing up until the autumn, when the young of earlier broods have been independent for some weeks. The territories have, in all probability, a value in the conservation of food supplies (Howard, 1920).

In some localities the Great Crested Grebe appears to be equally strictly territorial—for example, upon Hickling Broad, where food suitable for young Grebes is not plentiful (Turner, 1924). At Frensham Ponds, on the other hand, some of the Great Crested Grebes are non-territorial, and those which do maintain territories in the earlier part of the breeding season desert them when the young are hatched (Venables and Lack, 1936).

Since there is evidence that a strict territorial practice may, in some circumstances, be forced upon the Great Crested Grebe, Venables and Lack are probably correct in assuming that in those birds which show it incompletely, or not at all, territorial behaviour is vestigial, rather than less highly evolved, in comparison with the Little Grebe.

It seems that "display-building" (that is, building regarded as a manifestation of sexual excitement) is shown by the Great Crested Grebe. Huxley says of the construction of the true nest—"During the main building period . . . one bird might also lie along the nest in the passive pairing position, as an invitation to the other to pair. But apparently pairing and

*The nomenclature of the various actions in the display of the Great Crested Grebe is that used by Huxley.

pairing actions are gone through when the bulk of the nest is finished, or when a platform alone exists—nest construction appearing to use up most of the emotional energy of the birds." Both species of Grebe pair upon casually built "pairing-platforms" and on the true nest.

The elaborate "discovery ceremony" of the Great Crested Grebe, with the remarkably different positions of the two birds, has no antic counter-part in the Little Grebe. None the less, a "discovery ceremony" is often practised by Dabchicks: the birds either approach one another under water, and emerge breast to breast, to titter loudly; or one emerges from a dive close beside its mate, and both titter.

The Dabchick does not extend its neck in the "invitation" pose as the Great Crested Grebe does. The assumption of the "invitation" pose by a floating Little Grebe has never been observed—it is an attitude which seems to require a solid support.

The Little Grebe is a species which has evolved a vocal expression of its emotions—an inter-sexual display of sound rather than of action. Its slight antic displays are probably very like those of the ancestors of its genus; but in the Dabchick's small gestures may be seen the beginnings from which the elaborate and beautiful displays of the Great Crested Grebe have grown.

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ON THE BREEDING HABITS OF LEACH'S
FORK-TAILED PETREL
A SUPPLEMENTARY NOTE ON AMERICAN
OBSERVATIONS

BY

JOHN A. AINSLIE AND ROBERT ATKINSON, B.A.

AN interesting and valuable paper by William A. O. Gross—"The Life History Cycle of Leach's Petrel (*Oceanodroma leucorhoa leucorhoa*) on the Outer Sea Islands of the Bay of Fundy" (*Auk.*, Vol. LII., No. 4, October, 1935: pp. 382-399) was unfortunately overlooked when we were compiling our own article on this species—based on a month's visit to North Rona. The following note, then, is an attempt both to summarise Mr. Gross's paper and to compare his observations with our own, already recorded (*antea*, pp. 234-248).

Although there are many thousands of birds in the American colonies, they are decreasing in numbers. Marauding gulls are again cited as an important mortality factor. Herring and Black-backed Gulls "stand guard along the shore and exact a heavy toll upon the bewildered birds which come fluttering in from the sea at night time." A laboratory experiment was carried out in which a captive Black-backed Gull swallowed (whole) five adult Petrels in twenty minutes!

The American burrows are described as containing little or no nesting material, "a feather or a twig or two generally suffice." On Rona the nests were for the most part substantial pads of thrift roots, dead grass, etc. Mr. Gross records that birds use both beak and feet in digging and adds that little soil is actually removed from burrows—it is only pressed down.

As Mr. Gross was fortunate enough to observe the courtship of these birds, we will quote his description in some detail.

That the male does all the nest building is suggested by the fact that seven birds found digging all proved to be of this sex. "About three days are consumed in building the burrow. During the first evening the site is chosen and the entrance-way constructed. By the end of the second night the burrow is half completed, and the bird will remain at its digging during the following day instead of retreating out to sea. After three days the nest is completed, and the birds are usually found mating that very night." During courtship the females flutter over the breeding colony and the males call from the burrows with the "staccato-like call of their clan" (presumably the typical "flight" call). The females reply and "by calling back and forth the birds become mutually attracted and finally mate." During copulation they trill a rhythmic series of notes:—

" mmmmm, mmmmmmm-mm, mmmmmmm-mm,"

with a short break between the first and last part. This call is only heard by night during mating and for one night only from each burrow. The nests are usually deserted during the following day, after which the females lay.

Mr. Gross found that both males and females incubate in alternate spells of approximately 96 hours (on Rona we noticed no such regularity, times ranging from one to four days). He states further that during these periods the bird does not leave the nest and that the mate does not bring food nor even enter the burrow; this is certainly directly opposed to our own observations. There is still no definite record of either incubation or fledging periods. Forty-two days was the longest stretch of incubation observed and it probably amounts to quite fifty; the total, including incubation, is given as about 120 days. The egg may be deserted for several days at a time (as on Rona). Four eggs kept on a laboratory table dropped in temperature from 85°F. to 45°F. after 8 days, yet still contained living embryos (the average burrow temperature, taken at mid day, is 40°F. to 65°F.). This important adaptation to environment considerably lessens the significance of haphazard incubation as a mortality factor.

We could find little mention of irregular feeding and none of total neglect. It is, however, remarked that the "daily weight variations show considerable irregularity . . ." and an accompanying graph records a chick's fluctuating weight increase, which did nevertheless rise from three to seventy grms. in the first 40 days and then sunk to normal adult level (c. 42 grms.) before flying. Four of the young which we had under constant observation at North Rona showed the following changes in weight and all remained perfectly healthy.

	A	B	C	D
July 25.	(grms.) 26.4	30.2	32.8	24.0
August 10.	(grms.) 46.0	52.4	38.4	24.2

Mr. Gross gives an extremely interesting detailed series of observations on the growth of a chick during the first fifty days of its life, yet his article and our own, covering between them months of intensive observation, still leave many gaps and perplexities in our knowledge of this puzzling bird. There may be factors in its life cycle as yet hardly suspected, and Mr. Gross, for instance, suggests that "the musk smell, which we associate with all Petrels, may be a highly differentiated characteristic of the individual bird." "If this latter is true," he continues, "we can explain the ability of the birds to single out their mates in the dead of night."

PUBLICATION OF THE BRITISH TRUST FOR
ORNITHOLOGY,

RECOVERIES OF MARKED SWALLOWS WITHIN
THE BRITISH ISLES.

BY

A. W. BOYD and A. LANDBOROUGH THOMSON, C.B., D.Sc.

THE purpose of this paper is to analyze the records of Swallows (*Hirundo rustica rustica*) ringed under the BRITISH BIRDS marking scheme and subsequently recovered within the British Isles. Part of its intention is to supplement the two reports already published by Boyd (1935, 1936) on the results of the special Swallow Enquiry of the British Trust for Ornithology, dealing with size of brood, nesting habits, abundance, and other points.*

The total number of birds of this species marked up to the end of 1935 was 34,243. With a very few exceptions these were ringed either as nestlings or as breeding adults at the nest. The nestlings constitute the great majority; complete figures are not available, but of the 13,692 Swallows marked during the last five years no less than 13,105 were nestlings, or over 95 per cent.

The number recovered up to the middle of 1936 was 285, including 24 recorded from abroad, as follows:—

<i>Circumstances of Recovery</i>	<i>Marked as nestlings</i>	<i>Marked as adults</i>
Near nest, same year	76	7
Elsewhere in British Isles, same year	15	0
British Isles, subsequent years ...	103	59
Abroad	22	2
Total recovered	216	68
Also one marked as a young bird on migration and recovered next year.		

Recoveries abroad are not dealt with here in detail, but it may be recalled that there are eight autumn or early winter records from France, one spring record from Spain, one December record from the Belgian Congo, and no less than

*In the present paper, one of the authors (A.W.B.) is mainly responsible for the analysis of the British marking data, and the other (A.L.T.) for the references to foreign results; the general conclusions are jointly agreed. Mr. H. F. Witherby and Mr. W. B. Alexander have made helpful suggestions, which are gratefully acknowledged.

fourteen records from South Africa. Particulars of these cases have been given by Witherby and Leach (1931, 1933) and by Witherby (1936). Furthermore there are various similar records for Swallows marked in other European countries; all except the more recent of these have been conveniently summarized by Schüz and Weigold (1931), and the records of Swallows marked in Germany and recovered on migration in Europe have been analyzed by Drost and Rüppell (1932).

Also excluded from further consideration here are the records of birds recovered in the same year, usually after only a short interval, at or near the nests where they were marked; these cases are of no particular interest. The remaining recoveries throw light on (1) pre-migratory movements of young birds in their first autumn and (2) return to the breeding area in subsequent summers.

AUTUMN MOVEMENTS OF YOUNG BIRDS.

Of birds marked as nestlings, fifteen have been recovered in the British Isles during the same year (excluding seventy-four recoveries actually at or near the nest within a few days of marking and two near the nest rather later).

Of these, three had gone in northerly directions: one 24 miles N., from Aldcliffe near Lancaster to Windermere, 35 days after ringing in August; one 6 miles N.W. near Glasgow, two months after ringing in June; and one 4 miles N. in Suffolk, 16 days after ringing in June.

One had gone 20 miles E. in Carmarthenshire, 25 days after ringing in August.

One had gone 23 miles S.W., from Dorney, Bucks. to Winchfield, Hants., 33 days after ringing in June. Five had gone from 2 to 5 miles S. from their respective places of marking, in periods of up to one and a half months.

Five others were found within from $\frac{1}{2}$ to $1\frac{1}{2}$ miles of their nests, after very short intervals.

These records presumably indicate a preliminary dispersal before migration proper begins. Of the journeys exceeding $1\frac{1}{2}$ miles, three were northerly and six southerly (plus one due east); of those exceeding 6 miles, one was northerly and one southerly (plus one due east). The dispersal thus appears to take place in all directions, and from such small numbers it would be unsafe to deduce any tendency to prefer one more than another; the distances covered are in any event not great. In the accompanying diagram the journeys are plotted as if they had a common point of origin.

Incidentally, it may be pointed out that the absence of corresponding records for Swallows ringed as adults* has not necessarily any special significance, seeing that the ringing of

*One adult was recovered 4 miles S.W. just over 3 weeks after ringing on July 29th.



Diagram shewing dispersal of young birds in Autumn.

perhaps twenty times as many nestlings has yielded only fifteen examples of pre-migratory dispersal. Similarly, the chances of autumn records for birds marked as nestlings become greatly diminished after the first year: such records would in any event be ambiguous, owing to uncertainty as to where the birds had nested in the year of recovery.

Foreign Data.

Drost and Desselberger (1932) have given evidence of a similar dispersal in the case of young Swallows marked in Germany. Following Geyr von Schweppenburg, the name "Zwischenzug" (literally, "between-migration") is used for this type of movement, particularly where it takes a direction more or less contrary to that of the true autumn migration which it precedes. These authors record ten journeys of 9 km. and over in northerly directions, the longest distances being 28 km. E.N.E., 52 km. W.N.W., 62 km. N.W. by W., and 102 km. N.N.E. Another bird was recovered twice, first

travelling 9 km. S.S.W., and then 22 km. N. by W. from there. This shows that part of the pre-migratory dispersal takes place to the northward, but a preference for that direction is not clearly shown to exist. The authors do, indeed, cite only four cases of southward movement (in addition to that of the bird which subsequently went north), and the distances covered are all under 20 kilometres; but they have excluded others on the ground that the journeys performed represent the first stage of true migration. Thus, Drost and Ruppell (1932), in the paper already mentioned, give nine cases of Swallows recovered in their first autumn at distances of from 9 to 161 km. in southerly directions from the places of marking. At least some of these last might equally, from their dates, be classed as pre-migratory, and their inclusion would counter-balance the apparent northward bias of the dispersal.

Passing reference may also be made to a House-Martin (*Delichon urbica urbica*) recorded by Skovgaard (1930) as having been marked as a young bird on Bornholm, Denmark, and recovered on Gotland, off the east coast of Sweden, on 20th July in the same year; the journey in this case was one of about 350 km. N.E. by N., but too much stress should not be placed on an exceptional record.

RETURN IN SUBSEQUENT SUMMERS.

Birds Marked as Nestlings.

There have been in all 103 recoveries in this country, in subsequent summers, of Swallows marked here as nestlings. Of these, 90 have been recorded at or near the respective places of marking and 13 elsewhere.

(1) The 90 records from the native localities show that the birds generally return to the district in which they were hatched, but very rarely to the identical spot or building.

Of the cases under review, seventeen were reported from the same place without a statement of the exact spot, so that it is unknown whether they were in the same buildings where they were hatched.

Only one bird is reported to have been found nesting in the same barn where it was hatched—ringed in 1934 in Carmarthenshire, nesting in the same barn in 1936 (it did not breed there in 1935, for another pair was caught and identified). Seventy-two birds have been found at distances of from a hundred yards up to 13 miles from their hatching places. Thirty-eight of them were within 1½ miles; twenty-six within from 2 to 6 miles; seven within from 7 to 10 miles; and one at 13 miles.

It must be remembered that more are likely to be found near the place of ringing, where ringers are looking out for ringed birds, but even when the recoveries have been made through casual reports of dead birds the very great majority had returned to some locality in the same neighbourhood.

To the BRITISH BIRDS cases may be added two recorded by Thomson (1921) from the former Aberdeen University scheme. One of these was recovered in the same village. The other was marked at Beaulieu, Hants., and recovered next year 18 miles away at Ringwood, where it was believed to be nesting.

(2) The exceptions are as follows :—

<i>Place and Date of Marking.</i>	<i>Place and Date of Recovery.</i>	<i>Distance.</i>
Yarm, N. Yorks. 24.8.31	Nr. Birmingham. 3.5.34	140 miles S.
Nr. Penrith, Cumberland — .7.34	Isle of Islay. 8.5.35	160 miles W.N.W.
Laugharne, Carmarthenshire. 31.7.25	St. Austell, Cornwall. 13.5.26	100 miles S.
Perthshire, 15.8.26	At sea, 150 miles N.E. of Lowestoft, Suffolk. 20.5.27	? 300 miles S.E.
Nr. Penrith, Cumberland. — .7.31	The Bishop, Isles of Scilly. 20.5.32	350 miles S.S.W.
Torrance, nr. Glasgow. 29.6.14	Skipton, Yorks. 23.5.15	160 miles S.E. (<i>in poor condition.</i>)
Nr. Penrith, Cumberland. — .6.33	Ayrshire, 29.5.34	90 miles N.W.
Petersfield, Hants. 4.9.15	Henfield, Sussex. 30.5.16	29 miles E.
Co. Kildare, Ireland. 17.7.17	Lurgan, co. Armagh. 11.6.19	75 miles N.
Nuisling, Hants. 2.8.11	Mill Hill, nr. London. — .6.12	75 miles N.E.
S.E. Durham, 2.9.31	Nr. Doncaster. 28.7.33	82 miles S.
Swordale, Evanton, Ross-shire. 5.7.11	Nr. Glasgow. — .7.20	125 miles S.
Trefnant, N. Wales. 11.6.24	Saltfleet, Lincs. — .8.27	155 miles E.

In addition, an interesting record is that of a young bird caught and marked on migration on Skokholm, off Pembrokeshire, on the 26th August, 1933, and recaptured on the 30th May, 1934, actually nesting on that island. Unfortunately its hatching-place is unknown ; it may have been at no great distance.

It will be noted that most of these recoveries took place early in the season, when the birds may still have been on the way to their destinations. Of the May records there are, indeed, five from localities south of the places of marking. These are capable of explanation on the basis that the birds were returning to their native districts. Although nothing can be proved, it seems highly probable, for instance, that the birds recorded in Cornwall and the Scilly Isles were on their way back to Carmarthen and Cumberland respectively. Even the bird recovered on the North Sea may have been returning to Perthshire, although the circumstances admit of

other interpretations. Of the other cases one recovered in May only 29 miles eastward of its birthplace may also have been returning to the latter, and was in any event not very wide of the mark.

The two remaining records for early in the season are of birds recovered northward of their places of origin, as if they had overshot their destinations. In both cases they were hatched in Cumberland, and were found next season on the west of Scotland. Although they may not have been settled in breeding-quarters at the dates of recovery, there are no grounds for suggesting that they were likely to retrace part of their way before doing so.

Of the recoveries later in the season, two were south of the hatching localities, as if the birds had failed quite to complete the return migration; and one was north, again as if the bird had overshot the mark. The remaining two were, respectively, north-east and east of the original points. This last, the bird marked in North Wales and recovered in Lincolnshire on the east coast of England, is the only case of an important lateral aberration on the part of one which had had time to complete its migration. It is certainly the most obvious instance of failure to return to the former locality, and the distance involved is only 155 miles. It should perhaps be explicitly mentioned here that there are no records of British Swallows being recovered abroad in circumstances suggesting that they had found breeding places there, although there are two records from France, in "summer" and August of subsequent years, which are capable of bearing this interpretation; the more probable explanation is that they were early autumn migrants, but there is no proof that they had, in fact, bred in the British Isles.

Birds marked as Breeding Adults.

All the 59 records are from the marking localities. These recoveries have almost all been made in the same buildings as those occupied by the birds when ringed, often in the same shed and the same nest; this is not always the case, however, for sometimes a different shed had been occupied and a different pair had been caught in the old shed.

On five occasions (all of them reported from Carmarthenshire by Mr. J. F. Thomas, who has paid great attention to the ringing and recapture of adults, and has already published notes on the subject) a pair of birds has been found nesting together in two consecutive years. On six or more occasions in various localities there was one of the old pair with a new mate. Mr. Thomas captured one adult which nested in the same shed in the August of four consecutive years; another

in four consecutive years which nested first in a different shed and then for two years in the original one ; and four others that nested in the same shed or others nearby for three years running.

Only three recoveries were made at any distance from their former homes, and these no further away than 700 yards, 2 miles E. and 5 miles S.W.

One additional case is recorded by Thomson (1921)—a bird which returned to the same farm.

It may be clearly concluded from these data, firstly, that Swallows commonly return to the places where they formerly bred ; and, secondly, that they do so with greater fidelity than in the case of yearlings returning to the places where they were born. The return of birds which have bred before tends to be exact, whereas the first return is only approximate.

The contrast is apparent from the recovery data which have been cited. It is also strikingly reflected in the statistics given at the beginning of this analysis. Very many more nestlings have been marked than adults, and in three out of the four recovery categories the former have yielded more than ten times as many records as the latter. In the fourth category, that of birds recovered in subsequent summers, the nestlings have yielded less than twice as many as the adults. The high proportion of recoveries at former breeding sites can be explained only on the basis of a tendency to return accurately and so to come under the special vigilance of the marker.

Foreign Data.

There are numerous series of records from different European countries which show that Swallows generally return to the same breeding area ; some of these also bring out the contrast between the commonly exact return of old birds and the less accurate tendency of young birds returning for the first time.

Von Szeöts (1914 *et antea*) gave a number of records from Hungary showing the return both of birds marked as nestlings and of birds marked as adults ; his area of marking and observation was wide enough to secure recoveries of birds returning to within a few kilometres. In France, on the other hand, d'Abadie (1925, 1926) drew attention to the fact that his recoveries were all of birds marked as adults. This can now be explained by the fact that his marking was on a small scale, and that, as retrapping was confined to a single colony, return to neighbouring localities escaped observation. Pfromm (1931) in Germany, showed that enlarging the area of observation brought in recoveries of birds marked as young, which were previously not obtained—the same point appears

in the course of the notes published in this country by Thomas (1930 *et seq.*), whose data are included in the present analysis.

Boley (1932) has given a detailed analysis of recoveries at a German locality. Of birds marked as nestlings, forty-one were recovered in the following two summers. Of these, only one was in the same stable but thirty-four were in the same village, within a radius of 400 metres: two others were in the next village, 2 km. away, and the remaining two at greater distances—one of them apparently on migration. Of birds marked as adults, sixty-four were recovered (77 times in all) in the following three summers, all of them in the same village and 61 per cent. of them in their original stables.

No attempt need be made here to cite all the literature. It has been summarized to some extent by Schenk (1929) and by Schüz and Weigold (1931). The former found 201 published records, including some of those forming the subject of the present analysis, of marked Swallows recovered in subsequent breeding seasons. Of these, he states that 195 were from within 10 kilometres (6.2 miles) of the places of marking, five from between 10 and 50 km., and one from between 50 and 100 km. There are now a few cases, foreign as well as British, of recovery at greater distances in the case of birds marked as nestlings: Skovgaard (1930), for instance, records one ringed in Denmark which was recovered in northern Germany when three years old, but as the date was in April it had possibly not completed its migration.

AGE.

The age distribution of the Swallows marked as nestlings and recovered in subsequent summers (not including recoveries abroad) is as follows:—

One year old	...	...	74
Two years old	...	...	19
Three years old	...	...	8
Four or more years old	...	...	2

103

Eight of those found abroad were more than one year old; four were $1\frac{1}{2}$ years old, one $4\frac{1}{2}$, and one just over 5 years old.

There are few records of birds which can be shown to have been more than three or four years old. Mr. Thomas caught a breeding male in 1931, and found it in the same shed in 1935 so that it must have been at least five years old. A nestling ringed on July 7th, 1924, in Stirlingshire was found dead in Dumbarton on May 2nd, 1929—almost five years old. A nestling ringed in Surrey on August 14th, 1927, was recovered in France in October, 1932—five years and two months old.

But by far the oldest bird recorded was that ringed as a nestling in Ross-shire in 1911 and recovered in 1920 near Glasgow, nine years later ; it was killed by a cat.

CONCLUSIONS.

The following conclusions are based on the analysis of the British records, but appear also to be generally in accord with the foreign data which have been cited.

(1) Young Swallows, in the year they are hatched, soon begin to move after fledging, and there is a tendency to disperse before true migration sets in. The movement takes place in all directions, including north, but does not seem to be of great extent. The records do not show whether there is any similar dispersion on the part of adults.

(2) Yearling Swallows very seldom return to the exact spots where they were hatched, but commonly to the same neighbourhood and within a few miles. There have been thirteen recoveries at greater distances, but in several cases the bird had probably not yet completed its migration and may have been on its way to the original locality ; the remaining cases are from distances of from 75 to 160 miles in various directions.

(3) Adult Swallows that have nested almost invariably return to the same place in subsequent summers, and often to the same nest. Not infrequently the same birds are paired in more than one season. There are no records of birds marked as adults being recovered elsewhere in the breeding season.

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DEPARTURE OF SUMMER RESIDENTS OBSERVED AT DUNGENESS, KENT.

BY

NORMAN H. JOY.

IT has often struck me that although there are many records of early arrivals of all our summer migrants, and late departures, there are very few records of *the exact dates on which they begin to leave England*. This side of the question has never been seriously considered, and references to it in books on British birds are very vague. Dr. N. F. Ticehurst, in his paragraphs on Migration in *A Practical Handbook*, brought things up to date (1920) on the information then available. Since then I have been able to find very few references to it in the various books I have been able to consult, and have had correspondence with some who I hoped would have been able to enlighten me on the subject, but they state that they are unable to do so.

Another question which has hardly ever been referred to by British ornithologists is whether, among the Passerines, the old or young migrate first. Dr. Landsborough Thomson tells us that this has been done to some extent in Heligoland. It was done many years ago with regard to the Waders (*Limicolae*), and Dr. C. B. Ticehurst refers to it in his *Birds of Suffolk*.

There were several reasons why I chose the exploration of the coast between Littlestone and Dungeness (5 miles), among them that Dungeness is recognized as a place from which our summer migrants set off across the sea.

After an absence on other ornithological work during June, I returned to Littlestone on July 1st, 1936, and fortunately came across Mr. J. Tart, a very keen bird-watcher, living near the lighthouse at Dungeness. He showed me the places where the Passerine migrants regularly visit, and was able to help me much afterwards.

I soon discovered some unexpected signs of migration among the Swifts (*Apus a. apus*). I have studied Swifts for many years, and realize that they will get miles away from their breeding localities, and how all those from quite a large district will congregate together any morning or evening. Before long I learnt that migrating Swifts could easily be recognized. The first date on which they were seen migrating was July 8th, when about seventeen went by singly, or in groups up to four. Others passed on the 9th and 10th. About sixty on the 11th went by Littlestone after 4.30 p.m., flying against a strong W.S.W. wind, some coming in from over the

sea, apparently from Hythe or Folkestone. Mr. Tart reported having seen these going straight out to sea. No more were seen until the 15th. On the 18th there was reported to be the most severe gale in July that there had been for several years. I saw at least three hundred going along the coast from Littlestone to Dungeness. I watched these battling their way against the wind, and saw some start off across the sea from the point at Dungeness.

From July 18th to 27th migrants were coming through nearly every day. On most days from July 27th to August 7th there were numbers of Swifts passing to and fro between Littlestone and Dungeness, or flying around by the lighthouse. On the evening of August 7th there was an exceptional number, some going quite a distance out to sea in circles; they were flying about until it was nearly dark. A lighthouse keeper reported to me the next day that when he started lighting up the lantern many came to the window sills, and during the night they remained there huddled together (he handled one), or clung to the sides of the wall. I have little doubt these were all the Swifts for miles around starting their migration,* because since then until August 31st I only saw seven.

Now comes the question: where did all the migrating Swifts come from between July 8th and 27th? On July 28th last year I was reading a book in a garden in Folkestone and happened to look up at 10.25 a.m., and saw Swifts passing by, which I at once regarded as migrating; fifty-five passed in forty-five minutes. Judging from how I have seen them arrive at Littlestone I feel sure that they have all passed through Folkestone.

The migration of the Sand-Martin (*Riparia r. riparia*) has been more puzzling than the Swifts. The first I saw of them was on July 21st. From 8.15 to 10.30 a.m. there were many flying about and settling on the sands at Littlestone; I saw eighty at one time. These scattered away to the west and south-west, and eventually some distinct migration set in, as small parties were flying in a typical migratory way about two hundred yards out at sea, the tide having risen. I understand there are no Sand-Martin colonies within ten miles of here. A single bird was seen on July 24th, and a few on most days until August 3rd: eight were seen to go out to sea on that day.

I only have room here to give the following notes about the Swallow (*Hirundo r. rustica*). I saw single adults emigrating on July 16th and August 8th and 14th; and Mr. Tart

* Dr. C. B. Ticehurst tells me "Swifts kept in a body here (Appledore, about 12 miles away), on August 9th, circling up until mere specks".

reported seeing three adults going straight out to sea on July 16th.

The first note I have of the House-Martin (*Delichon u. urbica*) migrating is August 16th.

So far I have brought forward evidence as to the first dates on which Swifts and the Hirundinidae have been seen to leave the south coast. With regard to the rest of the summer-visiting Passerines recorded here I did not see one actually leave the shore, but I consider that there is enough evidence now to conclude that when the urge to migrate has once come on a bird it will not turn back. We occasionally have instances of a bird stopping short of its usual distance of travel when it finds itself in the sort of situation in which it is used to living, but this certainly does not apply to the district around Dungeness; and it is well known that they may stop in an unsuitable place for a few days, waiting for suitable conditions of weather.

The following are recorded because they were seen on earlier dates than those suggested in a *Practical Handbook*, and so for the time being are the earliest recorded actual dates of departure.

The first Warblers to arrive at Dungeness were three Willow-Warblers (*Phylloscopus t. trochilus*) and an adult male White-throat (*Sylvia c. communis*) on July 22nd. Dr. N. F. Ticehurst tells me that in past years both these birds have been killed at the lighthouse on July 23rd. No more of either of these were seen until July 27th when there were five Willow-Warblers and two Whitethroats. The Willow-Warblers were all adults. A female Whinchat (*Saxicola r. rubetra*) was near the lighthouse on August 11th, and another on 16th and 17th.

Adult Yellow Wagtails (*Motacilla flava rayi*) were seen on August 15th and on the 17th.

There was a quite tame female Pied Flycatcher (*Muscicapa h. hypoleuca*) at Dungeness on August 8th, and another on the 18th; a male on the 22nd, and quite a number after this date.

With regard to the Waders, in spite of there being so many people about the sands, I am able to confirm that it is adult birds which first pass through these shores. On July 13th there were seven Dunlins (*Calidris alpina*) in summer plumage, and on the 20th fifteen, with eight adult Sanderlings (*Crocethia alba*). The first young Dunlin that was seen was on August 8th, and the first young Sanderling the 13th.

NOTES

SHORE-LARKS IN NORTH KENT.

WHILE walking along the sea-wall on the Isle of Grain on November 1st, 1936 with Messrs. J. E. Roberts and J. S. Wightman, I heard two birds fly over and suspected that they were Shore-Larks (*Eremophila a. flava*). The identification was confirmed when they alighted on some wrack at the edge of a small pool on the saltings. Their plumage was dull, but the yellow and black marking on the throat was quite prominent.

RICHARD C. HOMES.

THE NESTING AND REARING OF YOUNG BY AN UNMATED PIED WAGTAIL.

REFERENCE has been made previously (Vol. XXVII, p. 48) to a pair of Pied Wagtails (*Motacilla a. yarrellii*) that nested in the vicinity of my house in Worcestershire, the immediate surroundings of which are particularly favourable for watching their nesting habits. An open meadow of several acres with a stream running through adjoins the house and garden and the whole is practically closed in by woodlands.

During the spring of 1936 a pair of these Wagtails came here as usual and soon afterwards a second male bird was to be seen about the meadow for several days, but was evidently not welcomed, and it usually kept apart from the apparently mated pair. It is possible this male bird is the same as that referred to later. This pair subsequently nested in the gable of one of my outbuildings.

On April 25th I found a male bird on my tennis lawn within fifty yards of the nesting site, freshly killed with its head lacerated and I do not doubt it was the one of the nesting pair. During the following day only the hen bird was to be seen. On April 27th a cock bird was in the meadow in company with the female, but their actions did not appear to be very sociable, and when they rose on the wing they flew off in opposite directions, but next day a cock and hen were together on the outbuildings. The female had continued sitting in the meantime, but a day or so later I found the nest deserted and empty, having probably been visited by vermin. Another nest was then built under the eaves of the house roof immediately above the porch and entrance door and the male was constantly in company with the female. A brood of four young was successfully reared by both parents and a day or so after the young

left the nest, they all forsook the vicinity. This was about the middle of June.

Some two or three weeks later the hen bird only reappeared and I was particularly interested in its attachment to the vicinity of its former nesting site, and I frequently watched it passing in and out of the eaves without a thought that it was actually again nesting. At this stage I was away from home for four clear days and during this time a nest was evidently completed. On August 1st part of the shell of a recently hatched egg was found on the ground beneath and the bird seen carrying food to the nest. Only this one egg was apparently hatched.

During this period close watch was kept and Mr. Chas. Oldham made a special visit at my request and kindly helped in observations on August 13th and 14th. I will not give in detail all the observations made. On no occasion was a male observed and the hen Wagtail alone reared the single young one. She went away from the nest at night (my first actual note of this is on August 11th) and first appeared about 5 a.m. (G.T.) to begin feeding. The morning and evening flight-line taken to and from the nest passed high and directly over the Wyre Forest to the west so in all probability the roosting place was several miles distant.

The young one was flushed from the nest on August 15th, perhaps a day or so prematurely, and remained about the garden until August 19th before finally leaving. At that time the adult roosted in the bushes alongside the stream within my meadow. Occasional visits were made by an adult female and an immature bird until September 10th, a lone hen bird until about a month later.

Not only is it remarkable that an unmated Wagtail should carry out unaided the entire nesting and rearing of the young, but here arises also the question of a delayed fertilization by the parent bird. When coition actually took place must remain in doubt, possibly immediately before the hen bird returned to its former nesting site and I think it would be very unusual for this to take place away from the breeding haunt in such a species. The only alternative would be for fertilization to have remained effective from the second impregnation and that three of the four eggs were found to be unfertile tends to confirm this suggestion.

J. S. ELLIOTT.

COLLARED FLYCATCHER IN SUSSEX.

I WISH to put on record the occurrence of a fifth Collared Flycatcher (*Muscicapa albicollis*) in Sussex. The bird is an adult male and was shot by the gardener at Westfield

Place on May 5th, 1922. Pied Flycatchers (*M. h. hypoleuca*) had occurred several times on spring passage there and the gardener had been requested to look out for them and to shoot one. The result was the present specimen. It was given to me a few months later by Mr. W. H. Mullens with the request that I should not record it for a considerable period.

N. F. TICEHURST.

LATE BROOD OF DARTFORD WARBLER.

ON August 16th, 1936, in north Sussex, I examined a nest of a Dartford Warbler (*Sylvia u. dartfordiensis*) which held three young about 11-12 days old. As I have previously never found a nest of this bird with young so late as the middle of August, I think it is worth recording in view of its being a possible normal third brood. As to whether there had been any disturbance of previous clutches I am unable to say, but would mention that there do not appear to be more than two or three pairs in this particular haunt. HUBERT E. POUNDS.

CONTINENTAL SONG-THRUSHES IN RENFREWESHIRE AND AYRSHIRE.

THREE Song-Thrushes, a male obtained near Largs, Ayrshire, on August 25th, 1935, and two females from east Renfrewshire obtained on December 7th, 1935, and December 12th, 1936, respectively, have proved to be of the Continental race *Turdus e. philomelus*, on careful examination with the material in the Royal Scottish Museum.

These are, therefore, the first recorded examples of this race in Renfrewshire, and only the second for Ayrshire.

PHILIP A. CLANCEY.

FOOD OF NESTLING SWALLOWS.

BELOW will be found a further list of insects, brought by adult Swallows (*Hirundo r. rustica*) to their young during August, 1936, in Carmarthenshire; three other lists were published in Vol. XXVII., p. 231, Vol. XXVIII., p. 171, and Vol. XXIX., p. 244.

I am indebted to Dr. John Smart, of the Natural History Museum, South Kensington, who has very kindly identified the insects so far as their condition permitted.

Dilophus febrilis was again the most numerous of the Diptera, and two other orders are represented by a very small moth and a "flying ant." *Eristalis arbustorum* is much the largest of these insects, having a wing expanse = 22 m.m. and a length = 10 m.m.

Family.	Genus.	Species.	
DIPTERA.			
TIPULIDÆ	?		(1)
BIBIONIDÆ	<i>Dilophus</i>	<i>febrilis</i> L.	(21)
LEPTIDÆ	<i>Chrysopilus</i>	<i>cristatus</i> Fab.	(1)
EMPIDIDÆ	<i>Empis</i>	<i>livida</i> L.	(1)
DOLICHOPODIDÆ	<i>Poecilobothrus</i>	<i>nobilitatus</i> L.	(1)
SYRPHIDÆ	<i>Melanostoma</i>	<i>mellinum</i> L.	(1)
	<i>Eristalis</i>	? <i>arbustorum</i> L.	(1)
ANTHOMYIDÆ	?		(2)
LEPIDOPTERA.			
TINEIDÆ	<i>Ochsenheimeria</i>	<i>bisontella</i> Zell.	(1)
HYMENOPTERA.			
FORMICIDÆ	<i>Acanthomyops</i>	<i>niger</i> L.	(1)

The figures in brackets denote the number of specimens obtained; *D. febrilis* occurred five times, and the Anthomyidae twice.

J. F. THOMAS.

RESULTS OF RINGING AND TRAPPING SWALLOWS IN CARMARTHENSHIRE.

OWING to a reduction (about thirty per cent.) in the number of Swallows (*Hirundo r. rustica*) nesting during August, 1936, as compared with the same month of 1935, the results from re-trapping pairs in Carmarthenshire were rather poor, only 4 recoveries having been made out of 20 pairs as against 9 from 28 pairs in August, 1935 (see Vol. XXIX., p. 245).

Sheds 1-12.—Not nesting in August.

Sheds 13 & 14.—Both birds different.

Sheds 15 & 16.—Females different; males not caught.

Sheds 17-19.—One bird same (♂♀♀), mates different.

Sheds 20.—Male same; female not caught.

One bird, a male, turned up out of a pair ringed in 1931, and must therefore have been at least six years old; it was nesting 20 yards from its former site, a cottage which was then unoccupied, but which now has people living in it.

J. F. THOMAS.

PEREGRINE FALCON TAKING LAPWING ON GROUND.

WHILE in a boat on Loch Scammadale, Argyllshire, in August, 1936, I was able to observe at the distance of about 45 yards a large Hawk which by its large size, sharp wings and moustachial stripes could only have been a Peregrine Falcon (*Falco peregrinus*) drop from a considerable height on a Lapwing (*Vanellus vanellus*). The Lapwing was easily overpowered by the Falcon and made little attempt to save itself. After holding the Lapwing down for 4 or 5 minutes without making any attempt to kill, the Peregrine started to pluck

feathers from the neck and breast of the Lapwing. On seeing this I shouted and frightened the Peregrine which flew off up the glen. The Lapwing then got shakily up and flew to the other side of the loch, where it joined the flock to which it belonged.

D. R. LEVICK.

COMMON EIDERS IN SUSSEX.

RECORDS of the occurrence of the Eider (*Somateria mollissima*) off the south coast are rare so it will be of interest to note that on November 29th, 1936, when walking round Thorney Island, Chichester Harbour, we obtained an excellent view of a pair of these ducks swimming close in to the south-east corner of the island. Mr. P. A. D. Hollom informs us that he saw a drake and three ducks at the same place on December 19th.

C. W. GEOFFREY PAULSON

GRAHAME DES FORGES.

GREAT NORTHERN DIVER IN SURREY.

ON the morning of December 15th, 1936, I visited Barn Elms Reservoir and there observed one of the Divers, which I at once reported to Mr. A. Holte Macpherson, suggesting that it was a Great Northern. Dr. G. Carmichael Low saw the bird on December 16th and on the same date Mr. A. Holte Macpherson observed it again, and both agreed that it was a Great Northern Diver (*Colymbus immer*) in winter plumage but retaining a slight dark patch on either side of its neck.

It was a large heavy bird which dived frequently and remained under water longer than any of the aquatic diving species. It was still there on the 19th. EDWARD G. PEDLER.

FULMAR PETRELS IN NORTHUMBERLAND IN 1936.

THE following observations recorded for 1936 of Fulmar Petrels (*Fulmarus g. glacialis*) may be of interest.

BAMBURGH.—The Fulmars returned to Bamburgh Crag during December, 1935, and from January 3rd, 1936, steadily increased in numbers, the largest count being twenty-nine birds on February 22nd. Several pairs were sitting in June, and later in that month two broken eggs were found at the foot of the Crag. No chicks were seen and the site was deserted at the end of July.

DUNSTANBURGH.—The birds were first seen on January 2nd, 1936, the largest count being forty-two on May 2nd and 12th. Six eggs were laid during June—five of which had hatched out by July 16th. One chick only was reared and got away on August 31st.

A pair of Herring-Gulls nested for the first time on the same site and were probably responsible for the disappearance of the other chicks—they were seen several times attacking the Fulmars when in flight—the Fulmars making no attempt to defend themselves. The last bird was seen on October 5th.

CULLERNOSE POINT.—One bird was seen on January 4th—the largest count being forty-three on July 2nd. Six eggs were counted on June 9th. Two only hatched out, both chicks were taken when three weeks old on July 27th. The birds decreased in numbers after that time, the last being seen on August 3rd.

HOLY ISLAND.—A colony is established on the Castle rock, and one pair was reported to have bred on the Inner Farne Islands.

BERWICKSHIRE.—At Marshall Meadows, three miles north of Berwick-on-Tweed a colony was reported which was visited on June 15th—twenty-four birds were counted. Several pairs were seen sitting on the ledges of the sandstone cliffs which surround the bay. No details are recorded as to eggs or chicks.

MARY J. LEVETT.

SPOTTED REDSHANK IN SUSSEX IN WINTER.

ON December 6th, 1936, when walking along the east side of Emsworth Channel which is part of Chichester Harbour, I was fortunate enough to get good views of a Spotted Redshank (*Tringa erythropus*). The orange rather than red legs, the grey-brown upper parts except for the white rump and back and the characteristic call which I heard several times left me in no doubt as to its identity.

G. DES FORGES.

GREENSHANKS WINTERING IN MERIONETHSHIRE.

FOR the last four winters one, and sometimes two, Greenshanks (*Tringa nebularia*) have been found wintering on the coast of Merionethshire. I saw the first one on February 3rd, 1932, and it remained until April 12th. A single bird arrived again on October 16th and was seen at intervals until March 18th, 1933. It left some time between that date and April 7th. In the autumn of 1933 one arrived between October 21st and 27th and was seen frequently till April 7th, 1934. A second was first seen on February 1st and again on the 6th and 19th, but not later. That year one arrived on September 27th and was joined by a second on October 21st and except for between January 30th and March 18th, 1935, when only one was seen, both remained until April 5th. That autumn they arrived on October 2nd and 6th respectively and remained

until March 3rd, 1936, and one of them until the 31st. In 1936 the first appeared on September 18th and the second on October 10th. Both were seen on December 5th.

E. H. T. BIBLE.

STATUS OF SANDWICH AND ARCTIC TERNS IN PEMBROKESHIRE.

It seems evident that occurrences of the Sandwich Tern (*Sterna s. sandvicensis*) on the Pembrokeshire coast are a good deal more frequent than was formerly supposed. Thus two more records can be added to those given by R. M. Lockley in his recent note (*antea*, p. 260), both earlier than the observations in 1936 mentioned by him.

On July 5th, 1934—certainly a very unusual date for the species here—I watched two Sandwich Terns fishing and resting on the beach at Goodwick; and on September 29th, 1935, Charles Oldham saw two at Newport.

An Arctic Tern (*Sterna macrura*) watched by me resting on shore at Goodwick on August 13th, 1935, was in my experience a more uncommon visitor to the county, though M. A. Mathew writing in 1896 stated (probably erroneously) that this species was "seen commonly on passage in spring and autumn." (*The Birds of Pembrokeshire*).
BERTRAM LLOYD.

UNUSUAL BIRDS IN OUTER HEBRIDES.—The following are mentioned among others as observed in various years between October and February, by Dr. J. W. Campbell (*Scot. Nat.*, 1936, pp. 79-80).

CARRION-CROW (*Corvus c. corone*).—Two, N. Uist, January 6th, 1935. Scarce in outer Hebrides but has been recorded as breeding.

ICELAND REDWING (*Turdus m. coburni*).—Five obtained N. Uist, February, 1935.

SPARROW-HAWK (*Accipiter n. nisus*).—One Benbecula, November 24th, 1933. Very rarely recorded from Outer Hebrides.

GREY PLOVER (*Squatarola squatarola*).—A few in Benbecula, November 15th to December 6th, 1933.

GREENSHANK (*Tringa nebularia*).—Considered a regular winter visitor to N. Uist and Benbecula.

SCARCE BIRDS ON THE ISLE OF MAY.—The Midlothian Ornithological Club has organized a series of observers to keep watch and work their migration trap on the Isle of May in spring and autumn. The results of these observations for the autumn of 1935 and the spring of 1936 are now published in *The Scottish Naturalist* (1936, pp. 127-130 and 159-162). To keep up these observations a considerable number of observers is necessary to cover the chief migratory periods and the Club will welcome volunteers for the purpose. In the

autumn of 1935 there was unfortunately no observer on the island between August 24th and 30th when a very large migration was noted on Fair Isle, but during September and the first half of October a good many interesting birds were identified and still more in the spring of 1936. The chief of these are noted below.

CIRL BUNTING (*Emberiza cirrus*).—One caught in the migration trap, September 2nd, 1935, and another on 22nd.

ORTOLAN BUNTING (*E. hortulana*).—One seen September 1st, another on 4th and on October 3rd and 4th, 1935. One on May 7th and 8th, three on 9th, two on 10th, three on 11th and one on 12th and 13th, 1936.

Five are also recorded as seen on the Bass Rock on April 12th, 1936. (J. Campbell, *Scot. Nat.*, 1936, p. 142.)

BLUE-HEADED WAGTAIL (*Motacilla f. flava*).—One on May 6th and 7th, 1936, and another with a pale crown and ear-coverts on the 12th. The latter was thought to be of the *beema* type but this must remain uncertain.

GREY-HEADED WAGTAIL (*M. f. thunbergi*).—One noted from May 10th to 12th, 1936, was watched at close range by Messrs. Munro and Sandeman and identified as of this form by its dark crown and ear-coverts and absence of eye-stripe.

CONTINENTAL COAL-TIT (*Parus a. ater*).—A Coal-Tit caught in the migration trap on October 10th, 1935, was identified by Messrs. W. H. Thompson and L. S. V. Venables. The wing measured 66 mm. and the tarsus 16 mm., which point to the correctness of the identification, and the "stone grey" of the back, and pure white and black of the head were noticeable. This is the first definite record of the bird in Scotland.

REED-WARBLER (*Acrocephalus scirpaceus*).—One, October 3rd and 4th, 1935, and one, May 17th, 1936, the latter trapped.

BARRED WARBLER (*Sylvia n. nisoria*).—One trapped, September 11th, 1935.

WHITE-SPOTTED BLUETHROAT (*Luscinia s. cyanecula*).—One was carefully observed at close range by Messrs. Munro and Sandeman on May 10th, 1936.

CONTINENTAL HEDGE-SPARROW (*Prunella m. modularis*).—Hedge-Sparrows trapped on April 14th, 16th and 18th, 1936, were assigned to this race, but it is not stated on what characters.

Other birds noted were Red-backed Shrike (*Lanius collurio*) May 5th to 7th, and 17th and 18th, 1936, Scandinavian Chiffchaff (*Phylloscopus c. abietinus*) October 3rd and 4th, 1935, Lesser White-throats (*Sylvia c. curruca*) single birds, September 28th, October 3rd and 4th, 1935, and May 5th and several from the 6th, 1936, several Black Redstarts (*Phœnicurus o. gibraltariensis*) between May 7th and 10th, 1936, one or two Wrynecks (*Jynx torquilla*) between May 9th and 11th, 1936, (one also at the Bass Rock on May 10th, see page 142), two Wood-Sandpipers (*Tringa glareola*) May 7th to 10th, 1936, and a Great Shearwater (*Puffinus major*) off the shore in early October, 1935.

BLACK REDSTART IN MIDDLESEX.—Mr. O. Höhn informs us that he had a good view of a Black Redstart (*Phœnicurus o. gibraltariensis*) at the West Middlesex Disposal Works,

near Staines Reservoir on December 30th, 1936. The bird was either a female or young male.

SLAVONIAN AND BLACK-NECKED GREBES IN SHROPSHIRE.—Mr. E. Cohen writes us that on December 27th, 1936, in the neighbourhood of Ellesmere, he and his wife had very good comparative views of a Slavonian Grebe (*Podiceps auritus*) and a Black-necked Grebe (*P. nigricollis*) which were on the same water as Great Crested and Little Grebes.

LEACH'S FORK-TAILED PETREL IN HAMPSHIRE.—We are informed by Sir Thomas Troubridge that a Leach's Fork-tailed Petrel (*Oceanodroma l. leucorrhoa*) was picked up in a moribund condition about a mile from the shore at Beaulieu on November, 12th 1936, by J. Crouch, a keeper on the estate. The stomach was found to be empty, and the bird was thin and emaciated.

AVOCET RECORDED FOR ARGYLLSHIRE.—Mr. E. MacAlister records (*Scot. Nat.*, 1936, p. 164) that he watched an Avocet (*Recurvirostra avosetta*) on Loch Seil on September 19th, 1936. The observer states that when he first saw the bird it was swimming near the shore and " wallowing with its head under water." This action sounds more like a young Sheld-Duck and no indication of how the bird was identified is given. The bird is very rarely recorded in Scotland.

REVIEWS.

Thirty Years of Nature Photography. A personal record of two observers.
By Seton Gordon. Illustrated. (Cassell.) 21s.

MR. SETON GORDON was one of the early nature photographers, and the history he gives here of his first attempts and subsequent successes and those of his wife have considerable interest. He began as a boy over thirty years ago to photograph birds' nests and the first bird he photographed was a Bullfinch, which he gradually tamed until he could stroke it on the nest. Curiously enough the young birds showed alarm when the hen was not at the nest, but when she returned, would feed from the photographer's hand.

Other birds which Mr. Gordon photographed before the use of " hides " came in were a Ptarmigan and a Curlew. The latter he took on the nest at a distance of eight feet and this he also accomplished by gradual taming—a feat certainly, but the bird crouched and looked frightened.

The advent of the " hide " showed an immediate advance and the majority of the very beautiful photographs appearing in this book were taken with its help. They are of many species, all are good and many very beautiful. Very few are taken away from the nest, but there is a good one of a Gannet about to dive, a Black-throated Diver in the water, Blackcocks displaying and others of Puffins and Razor-bills. There are also excellent photographs of grey seal and red deer.

A few short chapters are given on various species and some interesting observations are made. Among these we note that a Curlew brooding eggs was heard to give its full song while on the nest, stimulated apparently by a passing mate. (But how did Mr. Gordon know that the sitting bird was a "she"?) His "hide" was within a few feet of the bird and the volume and purity of the sound, he says, was remarkable.

We congratulate the author and his wife on this excellent collection of photographs and it is worthy of note that in all the years he has been photographing Mr. Gordon has used only two stand cameras.

Birds of the Wayside and Woodland. Based on *The Birds of the British Isles.* By T. A. Coward. Edited by Enid Blyton. 300 coloured figures in 83 Plates. (F. Warne), 7s. 6d.

THIS is a condensed version of the late T. A. Coward's well-known work. The coloured figures taken originally from Lilford have been reduced to half the size they were in Coward's work and now appear four on a plate and are surprisingly effective for their size. The plates appearing in Coward's third volume are not given.

The main task of the editor has been to condense the letterpress. In this the account of each birds' distribution has suffered most, probably because in the original it was very meagre. In some cases an essential point has been missed (such as the distinctive "churring" note of the Crested Tit) while in the matter of sub-species a good many are referred to but others equally distinct and mentioned by Coward are ignored. Another method used to reduce the matter into the required space has been to put the account of a number of species very briefly in small type and there are many inconsistencies in the choice of these. The Chough, Snowy Owl, Leach's Petrel, Black-tailed Godwit, Avocet and Ptarmigan, for instance, are relegated to a few lines in small type while such birds as the Golden Oriole, Griffon Vulture, Bee-Eater and Stilt are fully treated in large type. There are other editorial inconsistencies.

Some species added to the list since the original publication such as the American Nightjar are included while others such as the Red-headed Bunting, Petchora Pipit, Paddy-field Warbler, Pallid Harrier and Bridled Tern are not mentioned.

There has thus been a good deal of loss which might have been avoided in the "boiling down" and no serious attempt has been made to bring the work up to date. It may be said that these defects are not of great consequence in a pocket book of this character, but inconsistencies are always misleading and admirers of Coward cannot but feel sad that his most excellent and careful work should have been deteriorated, not, we feel sure, for want of care but for lack of expert knowledge.

The book is as a whole, notwithstanding these defects, a useful pocket edition of "Coward," and the plates, although so much reduced, give excellent figures of the adult birds in one plumage. It is, indeed, wonderful value for the small published price.

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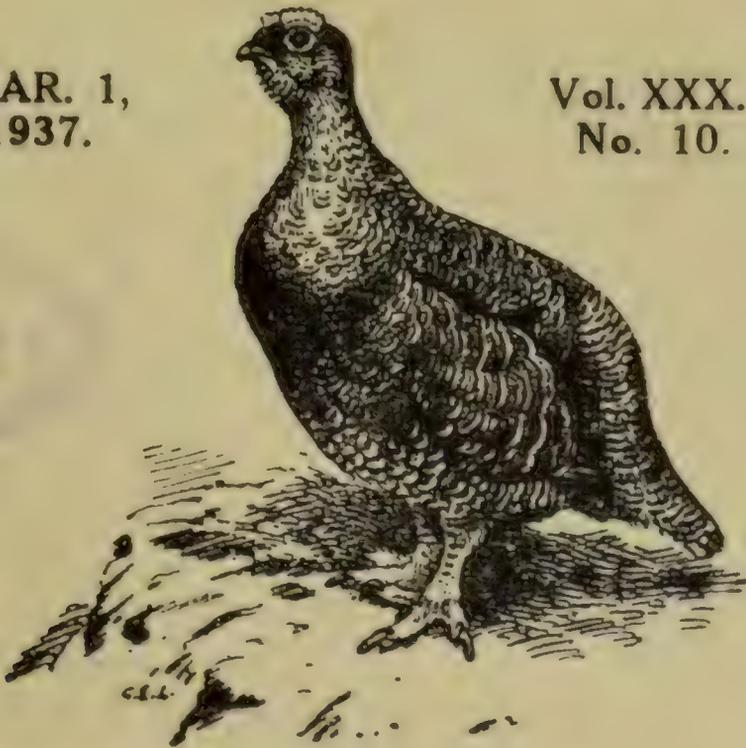
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ON THE BRITISH LIST

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CONTENTS OF NUMBER 10, VOL. XXX., MARCH 1, 1937.

	PAGE
Notes on Breeding-Habits of a Pair of Stock-Doves. By C. P. Freeman, assisted by G. L. Bates	302
The Song of the Mistle-Thrush. By G. Marples	305
Recoveries of Marked Birds	307
Notes :—	
Types of British Birds in the Tring Collection (H. F. Witherby)	317
On some Parasites obtained from Birds on Skokholm Island (G. B. Thompson)	317
Winter Gathering of Pied Wagtails in London Suburb (D. Seth-Smith)... ..	319
Redwings singing in November (Mrs. H. Rait Kerr)	320
Black Redstart in Inner London (E. M. Nicholson)	320
Movements of Hedge-Sparrows in Western Scotland (P. A. Clancey)	322
Duplicate Nest-Building by Swallow (J. F. Thomas)	322
Reflected Colour of Nightjar's Eyes (G. Marples)	322
Marsh-Harrier wintering in Norfolk (J. Vincent)	323
Common Eiders in Kent (Dr. N. H. Joy and Miss A. V. Stone)	323
Rare Birds in and near London (A. H. Macpherson, G. C. Low and E. G. Pedler)	323
Great and Sooty Shearwaters off the Hebrides (D. MacFarlane and A. MacRae)	324
Avocet in Cambridgeshire in Winter (K. B. Rooke)	324
Black-tailed Godwits in Carmarthenshire in Winter (J. F. Thomas)	325
Action of Jack Snipe in Feeding (G. E. Manser)	325
Black-backed and Herring-Gulls and Ravens feeding on Ants (R. M. Lockley)... ..	325
Short Notes :—	
Late Sand-Martin in Hertfordshire. Bewick's Swans in Merionethshire. Pink-footed Goose in Wexford. Slavonian Grebe inland in Kent. Avocet recorded for Argyllshire	326
Reviews :—	
"The Rookeries of Somerset," By B. W. Tucker, M.A., M.B.O.U. <i>Proc. Som. Arch. & Nat. Hist. Soc.</i> LXXXI (1935)	327
<i>Local Reports: Skokholm Bird Observatory Report for 1936. Report of the Oxford Ornithological Society, 1935. Hastings & E. Sussex Naturalist; Report on the Local Fauna, etc., for 1935. Proceedings of the Bournemouth Natural Science Society. Report on Birds for 1935</i>	329
<i>Das Leben deutscher Greifvögel.</i> By Dr. Heinz Brüll	330
Letters :—	
Cuckoo calling with Bill Open (Eliot Howard & H. H. Davis)	331
Habits of Starlings Roosting in London (Prof. Wm. Rowan)	332
The Scottish Ornithologists' Club (George Waterston)	332

NOTES ON BREEDING-HABITS OF A PAIR OF STOCK-DOVES

BY

C. P. FREEMAN assisted by G. L. BATES.

THE following observations on the breeding of Stock-Doves (*Columba ænas*) were made in a casual way during the first three years and it was only during the last year that there was any thought of making them methodical. Even then we were afraid to climb the tree too often for fear of scaring away the birds, and there was a long break during school holidays. The hole used by the Stock-Doves was about twelve feet up from the ground in an elm tree, about twenty yards from the house (in Essex). This hole is a little deeper than the length of the arm. Another hole was used for the last three broods, six feet higher up on the other side of the same tree. Stock-Doves had bred in the same hole for several years before these observations were started.

Most of the observations were made by Freeman, who climbed the tree and examined the nest with the help of an electric torch.

1933.

Two young ones (1 or 2 days old) were in the nest on June 25th, they were fully feathered by July 14th and were still in the nest on the 21st. Fledging period not less than about 28 days.

Three eggs were found in the nest on July 30th but only two were being incubated on August 10th (the other egg had been pushed to one side) and the brood came to nothing.

On September 2nd one egg was in the nest and on the 3rd there were two eggs there. Two young were there on the 25th, were fully feathered by October 12th and had gone by the 18th; they had almost certainly come out of the hole that morning as the young were then seen outside on a branch.

This was probably the 4th laying.

Combined incubation and fledging period not more than 45 days.

1934.

Two eggs were already in the nest by March 13th and fairly big young ones were seen on the 22nd, but the young were killed. (A stoat has been seen to climb a nearby elm.)

On June 3rd two young were 1 to 2 days old; one was ready to fly on July 2nd and they had gone by the 9th.

On July 9th two eggs were in the nest of which one was hatched by the 21st.

On August 20th Stock-Doves were seen fighting and two eggs were seen in the nest. By September 3rd a new empty nest had been built over these two eggs. On September 15th one egg was in the new nest and the two old eggs were pushed to one side. About the 29th one egg was seen hatching and about October 21st there was one fully feathered young which had gone by November 3rd. The two old eggs were still to one side.

1935.

On April 6th there were two eggs in the nest. These were hatched by the 12th and the young were fully feathered but still with down on the neck by the 29th; they had gone by May 11th (young seen outside that day).

The young of a second brood flew on July 17th.

The third laying of one egg about July 27th came to nothing after the bird had sat for exactly a month.

Early in September there was 1 egg and by the 9th there were 2 eggs. The first young was hatched on the 22nd and the 2nd on the 23rd. They were fully feathered by October 12th and had gone by the 23rd.

1936.

Three Stock-Doves were seen around in fine weather in January. The 1st egg was laid on March 9th and the second between 8.20 a.m. and 6 p.m. on the 10th. One young and one egg were seen on the 27th and two young were seen on the 28th. Incubation period 18 days. (Note that this was an especially cold month.) On April 22nd a young one flew up to the mouth of the hole and then flew back and two eggs were in the hole with the young birds and were still there on the 25th but the young had flown by the 26th. Fledging period 28-29 days.

The two eggs seen on April 22nd hatched on May 6th and (presumably) 7th. The young were in the nest on June 1st but had gone by 6.30 p.m. on the 3rd. Fledging period 26-27 days but possibly 28.

In another hole in the same tree two eggs were seen on June 18th and three on the 29th, but only two eggs hatched out by July 3rd (probably on the 2nd). The young had gone by August 1st.

Two young (about 10 days old) were in the nest on August 31st and remained there until September 16th, but had gone by the next day. Estimated fledging period 26-27 days.

An egg was noticed in the nest with the young on September 7th and two were seen on the 17th. One hatched out on the 23rd and had gone between October 14th and 21st.

Summary of 1936.

No. of the Brood.	First egg laid.	First egg hatched.	Young left hole.
(1)	March 9	March 27	April 26
(2)	Before April 22	May 6	June 2 or 3.
(3)	Before June 18	July 2	Between July 24 and August 1.
(4)			September 17.
(5)	On or before September 7	September 23	Between October 14 & 21.

GENERAL REMARKS.

In referring these notes to a *pair* of Stock-Doves, it is assumed that the same birds bred there through the four years, but, of course, we have no proof of this. On August 20th, 1934, two Stock-Doves were seen fighting while another looked on. On the same day there were two eggs in the hole.

On September 3rd these eggs had been covered over by a new nest. This may have been the result of the dispossession of one pair by another.

The number of layings of eggs each year were : 1933, probably four ; 1934, four ; 1935, four ; 1936, five.

The total number of young brought off during the four years was no less than twenty-four and the total number of eggs laid was thirty-three.

Incubation period : 18 days (1936) ; over 12 days (1934) ; not less than 15 days, probably more (1936).

Fledging period : 28-29 days (1936) ; 26-27, possibly 28 days (1936) ; between 22 and 29 days (1936) ; about 28 days (1933).

Combined incubation and fledging period : about 46-47 days (1936) ; about 45 days (1933).

Even when three eggs were laid no more than two eggs hatched:

Eggs laid on consecutive days were incubated as laid, and hatched out on consecutive days.

Twice eggs were laid in the nest when it was still occupied by two young ones, on one occasion for as long as nine days or more.

The neck and the part underneath the bill were the last to lose the nestling down.

The old birds did not mind my continually climbing the tree and looking into the hole. Towards the end of 1936 one of them would remain in the hole while I looked in ; but it might have been due to my constant visits that they changed to the other hole.

THE SONG OF THE MISTLE-THRUSH.

BY

GEORGE MARPLES.

IN *A Practical Handbook of British Birds* may be found the statement that the song of the Mistle-Thrush (*Turdus v. viscivorus*) is a "single phrase repeated again and again." Observations I have made of Hampshire birds do not confirm this as the following notes will show.

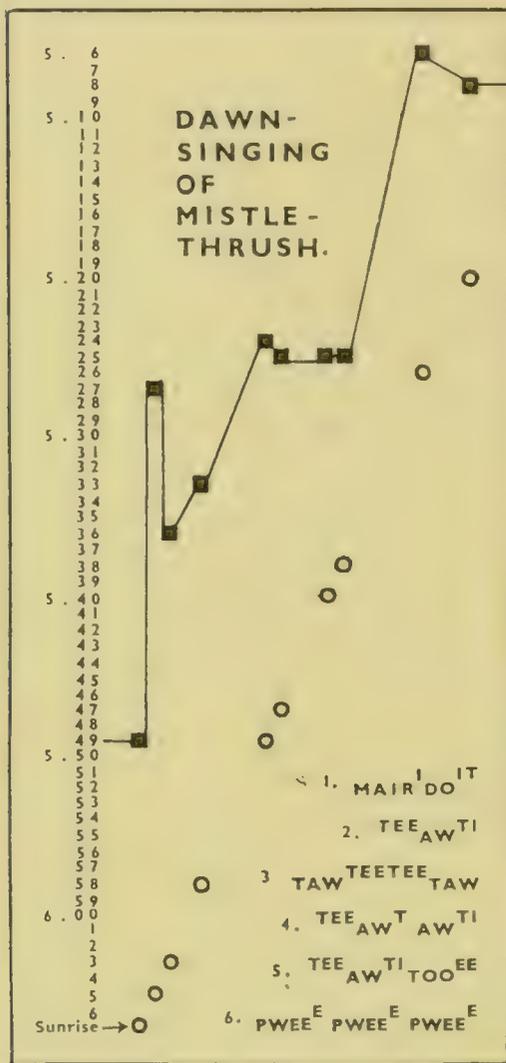
Intermittently throughout the winter two Mistle-Thrushes frequent my garden in Hampshire and they, or another pair of birds of the same species, have nested there for a number of seasons, in the years 1933-34-35 actually building in the same fork of the same oak tree.

The male bird usually sings from the top of some tree outside the garden though, occasionally, he uses an ash tree some thirty yards from the nest. He moves from tree to tree within a radius of about 300 yards, never staying on the same perch for long. Last year he was first heard to sing on January 24th and from that date he sang throughout the day from dawn to dark until the middle of May, a singing period of three and a half months. About May 15th he showed signs of slacking off, singing only in the early morning and sometimes in the evening while some days he was not heard at all. He sang a little on May 22nd and this was the last time I heard him as I left home that day. He usually began singing before sunrise, his average on ten mornings being 24.7 minutes before that event. But he was not so regular in finishing for, as was noted on three days, he ceased to sing an average of 24.6 minutes *before* sunset and on three other days an average of 11.3 minutes *after* sunset. He was never the first bird to begin singing any morning, being preceded by Robin, Black-bird, Song-Thrush and sometimes by Wren and Hedge-sparrow. Neither was he ever the last to finish, the above-mentioned species always continuing after he had closed down. Nevertheless his average daily singing time was just over 11 hours during which he sang almost continuously.

When he began singing in January, he confined himself to three phrases always given in the same order. These were (1) "Mairidoit," followed by an interval; then (2) "Teeawti," another interval, (3) "Tawteectetaw," a third interval, then the three phrases repeated, and so on through the day, never resting for long. I often timed him and found that, almost invariably, the three phrases occupied exactly seven seconds from "Mairi" to "Mairi."

After singing in this fashion for many days changes began to creep in. To "Mairi-do-it" was added, at times, "Quick-quick-quick," while "Tee-aw-ti" had the last two

syllables repeated thus: (4) "Teeawtiawti," or it became (5) "Teeawtitooee." Moreover, from this time, the phrases were given in irregular order and each might, on occasion, be repeated two or three times. By April 18th another phrase had been introduced, this being (6) "Pweeepweeepweee" given quickly without pause (See Diagram for variation of pitch of syllables). The constant use of three phrases and of



these triple notes are, doubtless, the origin of the country names of "Thrice Cock" and "Thrice-bird" although "authorities" give "thrice" as the equivalent of "thrush" making the name "Thrush Cock," which seems very unlikely, notwithstanding the alleged A.S. derivation.

The song is very loud, from which we get the Cheshire name of "Shrill Cock" and the Derbyshire "Skirl," and has at times a ventriloquial effect, for suddenly it will sound far away as though the bird had quickly been transported to a distant spot. It is possible that this is merely the result of the singer turning his head away and projecting his voice in a different direction.

Within hearing were two other singing Mistle-Thrushes neither of which

used quite the same phrases as did my bird or each other, though all the phrases were similar and were repeated in groups of three. The nearer of these Mistle-Thrushes, which had its singing perches about a quarter of a mile away, was in the habit of replying, seemingly, to my bird and during long periods would insert his phrases exactly into the intervals between the phrases of the bird in my garden, producing the effect of an echo.

The accompanying diagram shows the times of sunrise on ten days and the minutes before sunrise when the Mistle-Thrush began to sing as well as the pitch variations of the song syllables.

RECOVERY OF MARKED BIRDS.

*(Continued from page 258.)***Heron** (*Ardea c. cinerea*).

RINGED AS NESTLINGS.

No.	Ringed.	Recovered.
113166	Henley-on-Thames, 5.5.34, by Oxford Orn. Soc.	R. Teivy (Cardigan), 10.9.36.
112753	Walton-on-Thames, 12.5.34, by P. Hollom.	Where ringed, 24.7.36.
113207	High Halstow (Kent), 19.5.34, by P. Hollom.	Newark (Notts), 17.8.36.
114931	Beckley (Sussex), 9.5.36, by P. Hollom.	Le Pellerin (Loire Inf.), France, 2.9.36.
114934	Ditto 9.5.36.	Guérande (Loire Inf.), France, 10.10.36.
113224	Renvyle (Galway), 6.6.34, by E. M. Nicholson.	Ferbane (King's Co.), —.10.36.
119180	Clifden (Galway), 2.7.36, by S. Marchant.	Oranmore (Galway), 26.8.36.

Sheld-Duck (*Tadorna tadorna*).

AA.7903	Comlongan (Dumfries), 23.5.36, ad., by Lord Mansfield.	Cuxhaven, Germany, 6.9.36.
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Mallard (*Anas p. platyrhyncha*).

RINGED AS FULL-GROWN.

(c) RECOVERED AWAY FROM WHERE RINGED.

AB.1363	Loch Leven (Kinross), 12.6.35, by Lord Mansfield.	Faarup, Jylland, Denmark, 9.10.36.
401656	Leswalt (Wigtown), 14.3.36, by J. Law.	Corsewall (Wigtown), 5.11.36.
AA.8521	Ditto 8.3.34.	Borgue (Kirkcudbr.), 4.8.36.
AA.8554	Ditto 5.3.35.	Rügenwalde, Pomerania, 13.10.36.
401646	Ditto 29.2.36.	Ransäter (Värmland), Sweden, 19.8.36.
Or.874	Pembroke, 20.1.36, by Greenslade.	S. Trawsfynydd (Merioneth), 24.10.36.

(d) RECOVERED WHERE RINGED.

401647	Leswalt (Wigtown), 29.2.36, by J. Law.	—.9.36.
401655	Ditto, 14.3.36.	4.8.36.
Or.134	Pembroke, 17.9.35, by S. Greenslade.	27.10.36.
RW.6887	Essex, 15.2.36, by G. Fane.	14.10.36.

Teal (*Anas c. crecca*).

RINGED AS FULL-GROWN.

(c) RECOVERED AWAY FROM WHERE RINGED.

RW.6900	Essex, 31.10.35, by G. Fane.	Vardal, E. Norway, 23.8.36.
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Details of the following (as well as two of the Mallard above) have been kindly supplied by Messrs. C. W. Mackworth-Praed and H. A. Gilbert. The numbers are those of Orielton rings.

1025	Orielton, Pembroke, 24.9.36, by S. Greenslade.	Gower Pena. (Glam.), 22.10.36.
1246	Ditto, 2.11.36.	Amlwch, Anglesey, 16.11.36.
336	Ditto 22.11.35.	Holmesfield (Derby), 28.8.36.

No.		Ringed.	Recovered.
Teal (<i>continued</i>)			
RINGED AS FULL-GROWN.			
1514	Ditto	27.11.36.	Alton (Hants.), 2.12.36.
612	Ditto	20.12.35.	King's Lynn (Norfolk), 18.9.36.
199	Ditto	28.10.35.	River Alde (Suffolk), 7.8.36.
1389	Ditto	22.11.36.	Bridgwater (Som.), 11.12.36
481	Ditto	10.12.35.	Derrylin (Fermanagh), 26.10.36.
1091	Ditto	9.10.36.	Ballymitty (Wexford), 22.11.36.
386	Ditto	27.11.35.	Lake Ilmen, W. Russia, 16.5.36.
697	Ditto	25.12.35.	Nykarleby Arch'go, W. Finland, 8.10.36.
413	Ditto	1.12.35.	Rummelsborg, Pomerania, 19.7.36.
779	Ditto	29.12.35.	Wäse (Värmland), Sweden, 12.10.36.
486	Ditto	11.12.35.	Ställdalen (Örebro), Sweden, 14.9.36.
593	Ditto	19.12.35.	Hoburgen, Gotland, Sweden, 29.8.36.
265	Ditto	13.11.35.	Föhr, N. Frisian Is., 28.10.36.
795	Ditto	1.1.36.	Ditto, 1.11.36.
959	Ditto	13.2.36.	Eiderstedt, Schl.-Holstein, 4.10.36.
717	Ditto	26.12.35.	Makkum (Friesland), Hol- land, 28.9.36.
765	Ditto	28.12.35.	Ditto, 28.9.36.
597	Ditto	20.12.35.	Dordrecht, Zuid Holland, 5.9.36.
272	Ditto	14.11.35.	Hook of Holland, 18.11.36.
36	Horsted Keynes	(Sussex), 25.1.35.	Beilen (Drenthe), Holland, 5.8.36.
		(Taken from Orierton with clipped wings.)	

(d) RECOVERED WHERE RINGED.

Orierton, Pembroke (S. Greenslade).

66 30.1.35.

11.12.35 ; 22.11.36.

960 13.2.36.

14.12.36.

Twenty Birds, Autumn, 1935.

Autumn, 1936.

Wigeon (*Anas penelope*).

Or. 912	Pembroke, 2.2.36, ad., by S. Greenslade.	Itlar, Central Russia, 56°50' N., 39°15' E., —10.36.
Or. 793	Ditto	1.1.36. Rostof-on-Don, South Russia, 9.9.36.
Or. 1547	Ditto	29.11.36. East Swale (Kent), 7.12.36.

Shoveler (*Spatula clypeata*).

Or. 230	Pembroke, 3.11.35, ad., by S. Greenslade.	Rügenwalde, Pomerania, 30.8.36.
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No.	<i>Ringed.</i>	<i>Recovered.</i>
Tufted Duck (<i>Nyroca fuligula</i>).		
AA.8306	Molesey (Surrey), 3.12.33, ad., by P. Hollom.	Edmonton, N. London, 22.2.36.

Eider (*Somateria m. mollissima*).

113343	Collieston (Aberdeen), 27.5.34, ad., by M. Portal.	Where ringed, 21.6.36.
AB.1430	Tentsmuir (Fife), 29.6.35, ad., by Lord Mansfield.	Ditto, 14.6.36.
AB.1333	Ditto, 15.6.35.	Ditto, 3.7.36.

Cormorant (*Phalacrocorax c. carbo*).

RINGED AS NESTLINGS.

113975	Mochrum (Wigtown), 30.6.35, by Lord Dumfries.	Llanrwst (Denbigh), 11.7.36.
114137	Ditto	30.6.35. Totton (Hants), 22.8.36.
113965	Ditto	30.6.35. Montrose (Angus), 8.12.36.
114019	Ditto	3.7.35. Golfe du Morbihan, France, 15.8.36.
120330	Ditto, 15.7.36, by Lord D. Stuart.	Ile de Sein (Finistère), France, 6.9.36.
118843	Farne Is. (Northumb.), 21.6.36, by Bootham Sch.	East Linton (E. Lothian), 27.11.36.
118860	Ditto	21.6.36. Arbroath (Angus), 18.12.36.
119184	Ditto	28.6.36. Strathmiglo (Fife), 21.12.36.
119204	Ditto	28.6.36. Montrose (Angus), 10.12.36.
119218	Ditto	28.6.36. Ardlui (Dumbarton), 19.9.36.
119211	Ditto	28.6.36. River Orwell (Suffolk), 10.10.36.
112065	Ditto	7.7.35. Lorient (Morbihan), France, 18.8.36.
107668	Puffin I., N. Wales, 11.7.36, by T. Tallis.	Vannes (Morbihan), France, 21.11.36.
108024	Towyn (Merioneth), 7.6.36, by W. A. Cadman,	Belle Ile (Morbihan), France, —.12.36.
114874	Ballymore (Donegal), 5.7.36, by G. A. Metcalfe.	Kincaslugh, (Donegal), 2.11.36.
119150	Roundstone (Galway), 28.6.36, by S. Marchant.	Broadford (Clare), 29.11.36.

Shag (*Phalacrocorax a. aristotelis*).

118802	Calf of Eday, Orkney, 15.8.35, young, by C. Wontner-Smith.	Dunnet Bay (Caithness), —, 5.36.
101416	Edrachillis Bay (Suth.), 6.7.27, young, by W. Duncan.	Arisaig (Inverness), 1930 or 1931.
119238	Bass Rock, Scotland, 4.7.36, by Midlothian O.C.	Thetford (Norfolk), 11.12.36.
110221	Ditto	4.7.36. Rickmansworth (Herts.), 12.12.36.

Gannet (*Sula bassana*).

RINGED AS NESTLINGS.

118440	Ailsa Craig, Scotland, 29.7.35, by Lord Dumfries.	Texel, Holland, 11.8.36.
113842	Ditto	25.8.34. Esposende (Minho), Portu- gal, —.2.36.

No. Ringed. Recovered.

Gannet (*continued*).

RINGED AS NESTLINGS.

118752	Ditto	26.7.35.	Off C. Blanco, Rio de Oro, 16.12.36.
119291	Bass Rock, Scotland, Midlothian O.C.	4.7.36, by	Seaton Carew (Durham), 24.9.36.
114821	Ditto,	29.7.35, by H. W. Robinson.	Off Pte. de Penmarch, (Finistère), France, 30.8.36.
116045	Grassholm (Pem.), C. Wontner-Smith.	17.7.34, by	Crantock (Cornwall), 20.6.36.
117984	Ditto	29.6.35.	At sea, 47°30'N., 7°20'W., 25.8.36.

RINGED AS FULL-GROWN.

116973	Grassholm (Pem.), C. Wontner-Smith.	17.7.34, by	Where ringed, 9.6.36.
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Storm Petrel (*Hydrobates pelagicus*).

RINGED AS FULL-GROWN.

RECOVERED WHERE RINGED.

Skokholm Bird Observatory.

ZA.362	16.7.33.	10.8.35 ; 19.7.36.
[TY.240]		
MD.185	26.7.33.	14.7.36.
MR.502	9.8.34.	14.6.36.

REMOVED TO A DISTANCE FROM SKOKHOLM BIRD OBSERVATORY AND
RELEASED EXPERIMENTALLY.

ZA.519	Nesting adult. Released Start Point, Devon,	24.6.36. 18.6.36.
KW.343	Nesting adult. Released I. of May, Scotland,	16.8.36. 21.7.36.

Manx Shearwater (*Puffinus p. puffinus*).

RINGED AS NESTLING.

RX.4408	Skokholm Bird Obs.,	5.9.36.	St. Valery (Seine Inf.), France, 8.9.36.
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RINGED AS FULL-GROWN.

(c) RECOVERED AWAY FROM WHERE RINGED.

RX.1710	Skokholm (Pem.),	6.6.36, by	Mortehoe (Devon), —.7.36. E. Cohen.
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RINGED AS FULL-GROWN.

RECOVERED ON BREEDING-GROUND WHERE RINGED.

Skokholm Bird Observatory.

No.	Ringed.	Recovered.	No.	Ringed.	Recovered.
1 Bird	1930	1931, '32, '33, '34, '35, '36	7 Birds	1933	1934, '35, '36
1 Bird	1931	1932, '33, '34, '35, '36	1 Bird	1933	1934, '36
3 Birds	1931	1933, '34, '35, '36	2 Birds	1933	1935, '36
1 Bird	1931	1933, '35, '36	1 Bird	1933	1936
1 Bird	1931	1936	9 Birds	1934	1936
			29 Birds	1935	1936
			Skokholm (Oxford Orn. Soc.).		
			2 Birds	1934	1936

No.

Ringed.

Recovered.

Manx Shearwater (*continued*).

RINGED AS FULL-GROWN.

REMOVED TO A DISTANCE FROM SKOKHOLM BIRD OBSERVATORY AND
RELEASED EXPERIMENTALLY.

- RW.7577 Nesting adult. Released Start Skokholm, 18.6.36. (10 hours
Point, Devon, 18.6.36. later.)
- RV.7560 Nesting adult. Released Thors- Skokholm, 10.7.36.
haven, Færoes 29.6.36.
- RW.8058 Nesting adult. Released in Lat. Skokholm 10.7.36.
60°15'N. Long. 4°20'W
28.6.36 (100 miles S. of
Færoes.)
- RW.9015 Adult with young. Released Skokholm 1.8.36.
I. of May Scotland 21.7.36.
- RW.8080 Adult deprived of egg. Skokholm, 17.8.36.
Released I. of May 21.7.36.

RINGED AWAY FROM BRITISH ISLES.

- RW.7004 Koltur Færoes, adult with Skokholm, 17.8.36.
young. Released in Firth of
Forth, 8.7.36.

Stock-Dove (*Columba œnas*).

- RT.5021 Shipley (Yorks.), 26.8.33, Where ringed, 3.5.36.
young, by C. Wontner-Smith.
- RT.7040 Ditto 29.4.34, ad. Ditto, June, July, 1934;
Apr., 1935; Apr., May,
1936.

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

- RT.7064 Rye (Sussex), 7.7.33, young, Talais-Médoc (Gironde),
by P. Allen. France, 27.5.36.

Stone-Curlew (*Burhinus æ. œdicnemus*).

- RV.1001 Woodbridge (Suffolk), 29.6.35, Dullingham (Cambs.),
young, by G. Bird. 26.9.36.

Oyster-Catcher (*Haematopus o. occidentalis*).

RINGED AS NESTLINGS.

- RR.2222 Perth, 13.6.36, by Perth N.H.S. Tramore (Waterford), 14.9.36.
- RW.7333 Salthouse (Norfolk), 30.6.36, by Blakeney (Norfolk),—10.36.
Lond. N.H.S.
- 77219 Ditto, 21.6.34, by R. M. Mesquer (Loire Inf.), France,
Garnett. 2.11.36.
- RW.7536 Skokholm Bird Obs., 7.6.36. Swansea (Glam.), 10.10.36.

Lapwing (*Vanellus vanellus*).

RINGED AS NESTLINGS.

(a) RECOVERED AWAY FROM WHERE RINGED.

- AS.311 Almondbank (Perth), 11.6.34, Knocklong (Limerick),
by Lord Mansfield. 8.11.36.
- Y.5769 Thornhill (Dumfries), 1.6.26, Claremorris (Mayo), 25.11.36.
by H. S. Gladstone.
- AS.9827 Plumpton (Cumb.), 12.5.36, by Allonby (Cumb.), 26.10.36.
H. J. Moon.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
Lapwing (<i>continued</i>).		
RINGED AS NESTLINGS.		
S.1775	Penrith (Cumb.), —.5.29, by H. J. Moon.	Ditto, —.9.36.
AR.6554	Langwathby (Cumb.), —.6.34, by H. J. Moon.	Appleby (Westmor.),—10.36.
206947	Sedbergh (Yorks.), 12.6.36, by H. J. Moon.	Tebay (Westmor.), 12.10.36.
206969	Ditto	18.6.36. Heysham Moss (Lancs.), 12.12.36.
P.5550	Ingleton (Yorks.), —.5.31, by H. J. Moon.	Brest (Finistère), France, 29.10.35.
RV.3045	Ditto	15.7.36. Settle (Yorks), 10.11.36.
AP.1754	Ulverston (Lancs.), 19.5.33, by Mrs. Morley.	Barrow-in-Furness, 5.12.36.
207055	Burnley (Lancs.), 16.7.36, by Oakes and Battersby.	Skipton (Yorks.), 11.10.36.

(b) RECOVERED WHERE RINGED.

AM.695	Glenorchard (Stirling)	12.7.36, by J. Bartholomew.	21.11.36.
AR.6034	Raughton Head (Cumb.),	17.6.34, by R. H. Brown.	26.6.36.
AS.3176	Trearddur Bay, Anglesey,	8.6.36, by St. Edmund's Sch.	2.11.36.

Redshank (*Tringa t. totanus*).

LF.374	Glen Fruin (Dumbarton.),	31.5.36, young, by Mrs. Morley.	Millport, Great Cumbrae, Scotland, 12.7.36.
OH.935	Macclesfield (Ches.),	13.7.36, young, by R. E. Knowles.	Altrincham (Ches.), 5.10.36.

Curlew (*Numenius a. arquata*).

RINGED AS NESTLINGS.

AB.3191	Matterdale (Cumb.),	19.6.36, by H. J. Moon.	Ballina (Mayo), —.11.36.
AA.9119	Ullswater (Cumb.),	28.7.34, by H. J. Moon.	Killyleagh (Down), 15.9.36.
AB.5923	Blencowe (Cumb.),	25.6.36, by H. J. Moon.	Drimoleague (Cork), 9.11.36.
AB.1793	Shap (Westmor.),	17.6.36, by H. J. Moon.	Helsby (Ches.), 2.10.36.
AB.3185	Crosby Ravensworth (Westmor.)	17.6.36, by H. J. Moon.	Rhyl (Flint), 12.12.36.

Snipe (*Capella g. gallinago*).

RINGED AS NESTLING.

(a) RECOVERED AWAY FROM WHERE RINGED.

AS.596	Almondbank (Perth.),	23.5.35, by Lord Mansfield.	Whitehouse, Kintyre (Argyll), 7.10.36.
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(b) RECOVERED WHERE RINGED.

FF.405	Glenorchard (Stirling),	14.6.34, by J. Bartholomew.	30.9.36.
FF.313	Ditto,	21.5.35.	13.8.36.
OB.403	Florence Court (Fermanagh),	15.5.36, by A. Bracken.	1.10.36.

No.	<i>Ringed.</i>	<i>Recovered.</i>
	Woodcock (<i>Scolopax r. rusticola</i>).	
	RINGED AS NESTLINGS.	
	(a) RECOVERED AWAY FROM WHERE RINGED.	
201155	Haddo House (Aberdeen), 10.6.36, for Brit. Trust Orn.	Pennan (Aberdeen), 7.11.36.
AN.8233	Almondbank (Perth.), 30.4.33, by Lord Mansfield.	Strathord (Perth.), 6.11.36.
203039	Leckie (Stirling), 22.4.35, by J. Bartholomew.	Fintry (Stirling), 11.12.36.
200458	Buchanan Cas. (Stirling) 28.6.34 for Brit. Trust Orn.	Zeebrugge, Belgium 24.10.36.
AR.5536	Gosford (E. Lothian) 26.4.35 by G. Charteris.	Nunraw (E. Lothian) 14.11.36.
S.6164	Abbeystead (Lancs.) —.5.31, by H. W. Robinson.	Dunboy (Cork), 23.11.36.
202258	Lissadell (Sligo), 26.4.36, for Brit. Trust Orn.	Gortin-Omagh (Tyrone), 3.9.36.
	(b) RECOVERED WHERE RINGED.	
201358	Blacksboat (Moray), 16.5.36, for Brit. Trust Orn.	3.11.36.
AS.701	Dunoon (Argyll), 14.5.36.	28.8.36.
201523	Castle Coole (Fermanagh), 11.5.35.	26.12.36.
202600	Florence Court (Fermanagh), 24.7.36, by A. Bracken.	10.10.36.

Sandwich Tern (*Sterna s. sandvicensis*).

RINGED AS NESTLINGS.

AR.9180	Tentsmuir (Fife), 4.7.36, by P. Hollom.	Keta, Gold Coast,—. 11.36.
AR.3358	Leuchars (Fife), 6.7.35, by Perth N.H.S.	Assini, Ivory Coast, 21.7.36.
AP.5502	Farne Is. (Northumb.), 28.6.34, by Mrs. Hodgkin.	Hunstanton (Norfolk), 15.8.36.
AR.2678	Ditto 29.6.36.	Salthouse (Norfolk), 17.8.36.
AR.2672	Ditto 29.6.36.	Melilla, Spanish Morocco, 17.10.36.
204515	Ravenglass (Cumb.), 30.5.36, by M. Henderson.	Silloth (Cumb.), 20.7.36.
AS.9380	Ditto,—.6.36, by H. W. Robin- son.	Barrow-in-Furness, 29.7.36.
AS.9318	Ditto —.6.36.	Glenartney (Perth.), 25.7.36.
AP.9029	Ditto 15.6.33.	Mossamedes, Angola, —.11.36.
AS.5178	Ditto —.6.35.	Ditto,—.6.36.
AR.7563	Walney I. (Lancs.), 3.6.34, by H. W. Robinson.	Dunkirk (Nord), France, 5.7.36.
AS.9664	Ditto 10.6.36.	Mossamedes, Angola, —.11.36.
AS.4270	Salthouse (Norfolk), 25.6.35, by R. M. Garnett.	Ada, Gold Coast, 29.9.36.
AP.8083	Ditto 19.6.33.	Mossamedes, Angola, —.11.36.
AP.8227	Ditto 15.6.34.	Ditto,—.6.36.
AR.9436	Ditto 12.6.35.	Ditto,—11.36.
AS.4261	Ditto 25.6.35.	Ditto,—11.36.
207539	Ditto, 14.6.36, by E. Cohen.	Boulogne, France, 20.8.36.

No.	<i>Ringed.</i>	<i>Recovered.</i>
Sandwich Tern (<i>continued</i>).		
RINGED AS NESTLINGS.		
AS.5641	Ditto	12.6.35. Ouistreham (Calvados), France, —.9.36.
207734	Ditto	14.6.36. Noirmoutier (Vendée), France, 3.10.36.
AS.6719	Ditto	12.6.35. Port Gentil, French Equat. Africa, 2.7.36.
AS.6665	Ditto	12.6.35. Mossamedes, Angola, —.6.36.
AS.6737	Ditto	12.6.35. Ditto, —.11.36.
AR.1639	Northern Ireland, 12.7.35, by J. Cunningham.	Ditto, —.11.36.

RINGED AS BREEDING ADULT.

AR.8822	Tentsmuir (Fife), 29.6.36, by P. Hollom.	Bridge of Don (Aberdeen), 1.7.36.
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Common Tern (*Sterna h. hirundo*).

RINGED AS NESTLINGS.

OT.944	Firth of Forth, Scotland, 6.8.36 by Midlothian O.C.	Off Sule Skerry, Orkney 12.9.36.
GP.944	Ditto	3.8.36 65 m. off Spurn Head (Yorks.) 9.9.36.
OT.951	Ditto	6.8.36. Off Pontevedra (Galicia) Spain 1.10.36.
V.7976	Rockcliffe (Cumb.) 28.7.27 by R. H. Brown.	Seahouses (Northumb.) 30.7.36.
KV.464	Ravenglass (Cumb.), —.6.36, by H. W. Robinson.	Melrose (Roxburgh), 26.7.36.
KV.543	Walney I. (Lancs.), 21.6.36, by H. W. Robinson.	Keighley (Yorks.), 5.8.36.
KV.614	Ditto	28.6.36. 100 m. N.E. of Humber, 1.8.36.
LX.308	Ditto	30.6.35. Dakar, Senegal, 10.5.36.
OM.807	Blakeney (Norfolk), 17.7.36, by J. Ferrier.	Thorpeness (Suffolk), 7.8.36.
OH.408	Dungeness (Kent), 14.6.36, by R. G. Williams.	Sandwich (Kent), —.7.36.
U.9694	Abbotsbury (Dorset), 4.7.29, by Oxford O.S.	Sion-sur-l'Océan (Vendée), France, —.9.36.
R.5584	Ditto	9.7.30. L'Aiguillon (Vendée), France, 1936.

Arctic Tern (*Sterna macrura*).

RINGED AS NESTLINGS.

ON.20	Loth (Suth.), 10.7.36, by E. Cohen.	Occumster (Caithness), 2.8.36.
OT.20	Ditto	10.7.36. Dornoch Firth (Ross), 31.7.36.
ZP.134	Farne Is. (Northumb.), 2.7.36, by Mrs. Hodgkin.	Warkworth (Northumb.), —.7.36.
ZP.139	Ditto	2.7.36. Glentworth (Lincs.), 4.8.36

No.	Ringed.	Recovered.
Black-headed Gull (<i>Larus r. ridibundus</i>).		
RINGED AS FULL-GROWN.		
RW.6539	Cobbinshaw, (Midlothian), 9.7.35, by Serle and Bryson.	Hopetoun (West Lothian), 25.10.36.
RV.8001	Littleton (Middx.), 4.3.35, by P. Hollom.	Pimperne (Dorset), 14.6.36.
RV.8214	Ditto	6.8.35. Delfzijl (Groningen), Hol- land, 16.8.36.
RW.8619	Ditto	27.2.36. Joure (Friesland), Holland, 9.9.36.

Common Gull (*Larus c. canus*).

RINGED AS NESTLING.

RV.3372	Morar (Inverness), 29.6.36, by C. S. Clarke.	Ulva Ferry, I. of Mull, 1.10.36.
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RINGED AS FULL-GROWN.

RT.9414	Dornoch (Suth.), 9.7.34, by E. Cohen.	Tain (Ross), 10.10.36.
RV.7823	Littleton (Middx.), 4.2.35, by P. Hollom.	Tingvoll, Nordmör, Norway, 14.8.36.
RV.8051	Ditto	31.7.35. Klövsjö, Jämtland, Sweden, 2.7.36.

Herring-Gull (*Larus a. argentatus*).

RINGED AS NESTLINGS.

404270	Badbea (Caithness), 2.7.36, by E. Cohen.	Hull (Yorks.), 2.11.36.
AB.5244	I. of May Bird Obs., 5.7.36.	Berwick-on-Tweed, 23.11.36.
AB.7885	Ditto	13.7.36. Grimsby (Lincs.), 6.9.36.
AB.7513	N. Berwick (E. Lothian), 15.8.36, by Midlothian O.C.	Thornaby-on-Tees, (Yorks.) 17.10.36.
AB.7632	St. Abb's (Berwick), 9.7.36, by Midlothian O.C.	Blyth (Northumb.), 1.10.36.
AB.7533	Ditto	11.7.36. Cleethorpes (Lincs.), 26.9.36.
AB.7551	Ditto	12.7.36. King's Lynn (Norfolk), 19.9.36.
400405	Puffin I., Anglesey, 22.7.34, by E. Cohen.	Rhyl (Flint), 10.4.36.
401106	Skokholm (Pem.), 20.7.34, by C. Wontner-Smith.	Milford Haven (Pem.), —3.36.
AB.3435	St. Govan's Hd. (Pem.), 1.7.35, by W. A. Cadman.	Narberth (Pem.), —.6.36.
400330	Dungeness (Kent), 29.6.34, by P. Hollom.	Where ringed, 17.6.36.

Lesser Black-backed Gull (*Larus f. graellsii*).

RINGED AS NESTLINGS.

AA.4496	Foulshaw (Westmor.), 4.8.32, by H. W. Robinson.	Carnforth (Lancs.), —.4.36.
AB.5616	Ditto	24.7.36. Lisbon, Portugal, 11.10.36.
AB.5465	Walney I. (Lancs.), 16.6.36, by H. W. Robinson.	Grange-over-Sands (Lancs.), 6.9.36.
AB.2147	Ditto	9.6.35. Bray Dunes (Nord), France, 31.10.36.
AB.2449	Ditto	30.6.35. Plouñécour-Menez (Finistère), France, 21.8.36.
AB.5551	Ditto	16.6.36. Lorient (Morbihan), France, 4.10.36.

<i>No.</i>	<i>Ringed.</i>	<i>Recovered.</i>
Kittiwake (<i>Rissa t. tridactyla</i>).		
AR.2523	St. Abb's (Berwick), 20.6.36, young, by Midlothian O.C.	Pte de Trévignon (Finistère), France, 29.10.36.
RW.6648	Farne Is. (Northumb.), 21.6.36, young, by Bootham Sch.	Julianehaab, Greenland, 1.10.36.
Razorbill (<i>Alca torda</i>).		
AB.6731	Skokholm Bird Obs., 10.7.36, young.	Paramée (I-et-V.), France, 18.9.36.
Northern Guillemot (<i>Uria a. aalge</i>).		
RINGED AS NESTLINGS.		
AB.7248	Badbea (Caithness), 2.7.36, by E. Cohen.	Grimstad, S. Norway, 9.10.36,
RW.9160	I. of May Bird Obs., 27.6.36.	Kristiansand, S. Norway, 29.10.36.
RV.8465	Ditto 27.6.36.	Oslofjord, S. Norway, 30.10.36.
RV.8470	Ditto 27.6.36.	Hvaler Is., S. Norway, 27.10.36.
RINGED AS FULL-GROWN.		
400050	I. of May Bird Obs., 1.6.35.	St. Monance (Fife), 8.8.36.
Puffin (<i>Fratercula a. grabæ</i>).		
RINGED AS NESTLINGS.		
RW.8548	Farne Is. (Northumb.), 28.6.36, by Bootham Sch.	Haugesund, S. Norway, 10.11.36.
RW.7161	Ditto, 12.7.36, by C. Wontner- Smith.	Flekkefjord, S. Norway, 8.12.36.
RV.9441	Skokholm Bird Obs., 10.7.35.	Where ringed, 11.7.36.
RINGED AS FULL-GROWN.		
11 Birds	Orkney, —.6.35, by H. W. Robinson.	Where ringed, —.7.36.
RW.6468	Dunnet Hd. (Caithness), 2.7.35, by Miss Staunton.	Ditto, 27.4.36.
REMOVED TO A DISTANCE FROM SKOKHOLM BIRD OBSERVATORY AND RELEASED EXPERIMENTALLY.		
RW.7570	Nesting adult. Released Start Point, Devon, 18.6.36.	Skokholm, 23.6.36.
RW.7573	Ditto 18.6.36.	Ditto, 23.6.36.
Moor-Hen (<i>Gallinula ch. chloropus</i>).		
RV.8853	Shipley (Yorks), 1.6.35, young, by C. Wontner-Smith.	Where ringed, —.4.36.
Or.136	Orielton (Pem.), transported to and released Tenby [11 m. E.] 19.9.35.	Where ringed, 24.9.36.
Coot (<i>Fulica a. atra</i>).		
Or.1399	Orielton (Pem.), transported to and released Fishguard [39m. N.], 22.11.36.	Where ringed, 8.12.36.
Or.1544	Ditto to Kidwelly [45 m. E.], 29.11.36.	Ditto, 12.12.36.

NOTES

TYPES OF BRITISH BIRDS IN THE TRING COLLECTION.

IN June, 1932, in writing of the loss to British ornithologists sustained by the removal of Lord Rothschild's collection of birds from Tring to New York I ventured to make the following remarks (*British Birds*, Vol. XXVI, p. 20) :—

“ Among the types in the general collection there are fifteen of our native birds, and it would be indeed a gracious act if the American Museum of Natural History would present them to our own Natural History Museum . . . and should the American Museum see its way to adopt this suggestion, British ornithologists, both present and future, would have good reason to be grateful.”

In the January, 1937, issue of *The Ibis* (p. 182) Mr. N. B. Kinnear announces that the American Museum of Natural History has now presented these types of British birds to the Trustees of the British Museum. This is an extremely welcome gift and, as Mr. Kinnear has stated, expresses a generous spirit of scientific co-operation which will be sincerely appreciated by British ornithologists.

Dr. Leonard C. Sanford, who brought over these types, states that the Tring collection is now arranged in the new wing specially assigned to it in the American Museum and that a catalogue of it is in preparation. H. F. WITHERBY.

ON SOME PARASITES OBTAINED FROM BIRDS ON SKOKHOLM ISLAND.

As a result of having recently received a copy of the Report for 1936 on the Skokholm Bird Observatory, I feel prompted to write up the following notes on a few parasites collected from birds on that island in order to emphasise the fact that much useful work on the ectoparasites of birds can be carried out simultaneously with the trapping, etc., on the island. Before giving the actual notes on the parasites I should like to add the following remarks. It is certainly not the wish of the greater number of parasitologists that birds should be killed in order to obtain their ectoparasites and I feel that every possible opportunity should be made use of in the course of trapping birds to collect parasites from them. The parasites which one is likely to encounter are fleas, ticks, lice, mites and bird-flies. All the parasites from a single host specimen may be placed in a tube of alcohol together with the following data : Name of host, date, locality, etc. In the United States

enormous collections of parasites have been made by people when trapping birds for ringing, etc.

Mr. David Lack, while staying on the island in June of last year, collected some parasites off Gannets and a Manx Shearwater, and kindly handed them to me for study.

Two species of lice (Mallophaga) have been described from the Gannet (*Sula bassana*) and Mr. Lack obtained one of them, the largest, a species known as *Pectinopygus bassanae* (Fabricius). This comparatively large and deeply pigmented parasite was described from the Gannet as long ago as 1780. It has definite affinities to species found on Pelecanidae, Phalacrocoracidae and Fregatidae but not Phaethontidae. In my experience it is the commonest parasite of the Gannet.

From the Manx Shearwater (*Puffinus p. puffinus*) Mr. Lack obtained two species of lice, namely, *Halipeurus diversus* (Kellogg) and *Trabeculus aviator* (Evans). The former species is recorded for the first time off a British specimen of this host. It is an elongate, slender parasite belonging to a genus which occurs on numerous species of Procellariiformes and whose nearest relative is a single species occurring on *Hydrobates pelagicus* (Linn.) and closely allied forms. *Trabeculus aviator* (Evans) is a small louse and is, I believe, specific to the Manx Shearwater; it is one of two species found exclusively on Petrels.

Some specimens of engorged ticks belonging in all probability to the species *Ixodes putus* (Pickard-Cambridge) were found near to a Gannet colony by Mr. Lack. These parasites must do a tremendous amount of harm to the birds by sucking their blood. A careful examination of any of the sea birds' nests on Skokholm should reveal the presence of numerous specimens of ticks.

From a single specimen of a Meadow-Pipit (*Anthus pratensis*) Mr. H. Morrey Salmon collected in September, 1934, two specimens of the common bird-fly *Ornithomyia fringillina* Curtis. One of these flies (Hippoboscidae) proved to be of exceptional interest. A careful examination revealed the presence of a small mite together with a mass of eggs attached to the base of the wing of the fly. Only a short time before this specimen came into my hands the mite had been described for the first time by a continental worker. (For a detailed account of this mite on the fly's wing, see Thompson *Ann. Mag. Nat. Hist.*, 1936, Ser. 10, Vol. XVIII, pp. 319-320). It appears that these mites attach themselves to the wings of the bird-flies in order to lay their eggs and thus become

dispersed to other birds. It is not, however, certain whether the mites are true bird parasites.

These fly parasites or Hippoboscidae must be quite common but are seldom collected. We know very little of their host specificity and I have often been told by ornithologists that they have seen them frequently when ringing birds. They certainly need collecting to a great extent in order to find out something of their host distribution. They may be placed in spirit as in the case of other parasites. They are blood suckers.

May I conclude by saying that I shall be extremely pleased to get into touch with anyone who is willing to collect parasites. I shall be perfectly willing to supply the necessary tubes.

GORDON B. THOMPSON.

WINTER GATHERING OF PIED WAGTAILS IN LONDON SUBURB.

HAVING been told by telephone of a gathering, every evening, of small birds on the roofs of some houses in Balham and their subsequent roosting in holly trees close to a busy thoroughfare, I went there on February 11th, 1937, to observe this phenomenon.

The house to which I had been directed is situated on the Balham High Road, about half a mile south of Balham railway station. The street is a very busy one, well lighted and with numbers of trams and buses constantly passing. It stands back some fifteen yards from the road, the front garden containing a few shrubs and three hollies that had been trained to form large, thick heads, some fifteen or twenty feet high.

At 5.10 p.m. I first noticed Pied Wagtails (*Motacilla a. yarrellii*) arriving in twos and threes, and settling upon the roofs and chimneys around. Then a party of ten or twenty would come, and by 5.20 the roof of one house contained fifty or more birds which crowded along the gutter overlooking the front garden in which were situated the holly trees. More kept arriving, and then they commenced dropping down, in ones and twos into the holly trees. These are close to the boundary fence dividing the garden from the pavement along which pedestrians were passing in a constant stream. A bus stop was just opposite the trees into which the birds were crowding, and a powerful electric street lamp lighted them up as they perched on the outermost twigs preparatory to seeking snug roosting sites. I estimated the number of Wagtails to be at least one hundred and fifty.

DAVID SETH-SMITH.

REDWINGS SINGING IN NOVEMBER.

ON November 21st, 1936, I was at Ashridge, Bucks, and noted a flock of about forty Redwings (*Turdus musicus*) in some trees near the large beech wood. These birds were "recording" sufficiently loudly to rivet the attention of several people who were walking along the private road to Ashridge Park.

I have failed to find any mention of Redwings doing this at such an early date after arrival, and in view of this, and of Mr. E. M. Nicholson's remarks in his *Songs of Wild Birds*, p. 140, where he mentions the song as being heard from late February to departure and also quotes Mr. Alexander as saying it may be heard occasionally from October to February, I thought that the record might be of interest.

I have described the notes as "recording," but they were actually more like a true song than any I remember to have heard from this species on any previous occasion.

H. RAIT KERR.

BLACK REDSTART IN INNER LONDON.

DURING the spring and early summer of 1936 a number of observers had opportunities of watching the unusual sight of a Black Redstart (*Phoenicurus o. gibraltariensis*) in summer quarters in the middle of London. Apparently it first arrived at or very soon after the end of April, when I heard occasional snatches of its song from my house in Marsham Street, but for some days these were swamped by traffic sounds and by the noise of intense building activity in the neighbourhood, so that although the likeness of the song to a Black Redstart's had several times struck me I never imagined that a wild bird of this species could possibly be occupying a territory within a quarter of a mile of Westminster Abbey.

On May 6th, however, I located the singer perched on the topmost part of a tall office building, about a hundred feet above the ground and was astonished to find that it was a Black Redstart. Further investigation next day showed that it had several different singing stands, all on the corners of roofs of the very high new barrack-like buildings characteristic of this part of London, the extreme distance between the favoured posts being more than 300 yards. The bird would sing on one roof for up to half an hour, in brief snatches, occasionally shifting to another perch, and finally flying off with a rather weak, dipping but direct flight to a stand at the other end of his territory. Apparently the song became infrequent about 9.30 to 9.45 a.m., but it was not until May 19th that I was able to trace the singer to a feeding-ground. This was a cleared building site, grown up with tall

weeds between Romney Street and Horseferry Road, in the middle of his observed territory. He fed among House-Sparrows without disturbance, and the closer and better views obtainable here confirmed that he was a young male, in completely dusky slate plumage of varying shades, except for the characteristic reddish brown tail.

On the previous day a hen Black Redstart was captured unharmed in the botany galleries of the British Museum in Cromwell Road, two miles distant, and was taken to the Bird Room where it was identified by Mr. N. B. Kinnear, but to my disappointment this hen was not brought to Westminster but released on the spot. From May 19th the Westminster bird became extremely elusive, and although snatches of his song were occasionally heard in the early morning, it was not until June 8th that I had another view of him as he flew past my house singing on the wing. The weather had turned warmer and sunnier and a great burst of song occurred this day and the next. On June 9th Mr. Michael Milne-Watson saw him singing on the weather-vane of the Gas Light and Coke Company's office in Horseferry Road in the middle of the morning—after his usual singing hours. The same morning, five minutes after leaving him in full song above Marsham Street, I heard snatches of song from an office block opposite St. James's Park Station, 600 yards away, and the next morning one was in full song on Central Hall, Westminster, about the same distance from his known territory, and in a similar direction.

I was inclined to believe that this must be a second bird, but as no more was seen or heard from this date on of the Black Redstart near my house it is possible that the two last-mentioned occurrences are due to the same bird shifting territory by degrees, as unmated males often do.

Although I was already familiar with the species and its song on the Continent, and had the good fortune to be living in the middle of its territory, it was certainly several days before I recognized its presence, and nearly another fortnight before I was able to watch the bird otherwise than in flight or on high buildings against the light. I am convinced that it would be possible for this inconspicuous species to live in parts of central London for considerable periods without being discovered, and the fact that two out of three breeding-season records for the species in Inner London are for the Natural History Museum strongly suggests that the species is overlooked unless it happens to settle down for some time at a place under exceptionally close ornithological observation.

When silent its chances of discovery are very slight, and even the song is so swamped by traffic that a wait of up to five minutes may be needed to hear it distinctly in some momentary lull.

E. M. NICHOLSON.

MOVEMENTS OF HEDGE-SPARROWS IN WESTERN SCOTLAND.

As so little has, up to the present, been written about the movements of Hedge-Sparrows in Western Scotland the following notes may be of interest. As I have already shown (*antea*, p. 259) the Hedge-Sparrows of Renfrewshire, north Ayrshire and west Lanarkshire are referable to the race described from the Hebrides (*Prunella m. hebridium*). The great majority of the birds in these counties appear to be strictly resident throughout the year, and such movements as there are appear to be of a partial character. There is, however, a noticeable southward movement lasting from mid-September to the end of October and early November with a corresponding one in the opposite direction at the end of February and the beginning of March. At these seasons I have frequently found single birds in very lonely districts, where at other times they are practically unknown, while parties of four to twelve are to be met with on sewage farms and other places where the birds do not nest, and their stay in these places is of short duration.

PHILIP A. CLANCEY.

DUPLICATE NEST-BUILDING BY SWALLOW.

A CASE of duplicate nest-building by a Swallow (*Hirundo r. rustica*) occurred in a calf-shed in South Carmarthenshire during 1936; here on August 3rd two freshly lined nests, each with two eggs, were found about 8 inches apart and separated by a beam. At a second visit to the shed on August 18th the nests were found to be as before; on this occasion I hid and watched; the bird came in and sat on one nest for a minute and then moved over to the other. A further visit on August 21st (by which time the eggs should certainly have hatched) showed no change, and as the bird did not enter during a wait of twenty minutes, it seems likely that the eggs had been rendered infertile owing to the divided attention of the adult.

J. F. THOMAS.

REFLECTED COLOUR OF NIGHTJAR'S EYES.

I DO not know whether any observations have been made on the reflected colours of birds' eyes but if not the following may be worth recording.

Driving along a by-road in the New Forest in the dark I saw two tiny points of green light on the ground in the

middle of the road. Expecting to find these were due to the illumination by the car lights of the eyes of some small mammal I was surprised, on nearing them, to find they were the lighted up eyes of a Nightjar (*Caprimulgus europæus*).

GEO. MARPLES.

[Dr. S. H. Long had a similar experience in Norfolk in 1926 and related it to me shortly after.—N.F.T.]

MARSH-HARRIER WINTERING IN NORFOLK.

AN immature female Marsh-Harrier (*Circus aruginosus*) is still (February 13th, 1937) with us at Hickling. It came very near to the Lodge this morning, but has been seen for weeks past. This is the first time I have ever known one to winter here.

One can only assume that this is one of the Hickling or Horsey youngsters of last season.

JIM VINCENT.

COMMON EIDERS IN KENT.

As the Eider (*Somateria mollissima*) is rarely recorded from the south coast I must report finding a female dead at Littlestone on November 30th, 1936. The bird had evidently died of starvation, but I could not find any oil on it.

NORMAN H. JOY.

ON January 20th and again on February 2nd, 1937, I saw a female Common Eider (*Somateria m. mollissima*) on the sea off Hythe. On both days it swam in close to one of the breakwaters and appeared to be pecking off and eating the barnacles that encrust it.

A. V. STONE.

RARE BIRDS IN AND NEAR LONDON.

THE great easterly gale of January 28th and 29th, 1937, was doubtless responsible for blowing inland a number of birds normally at sea at this time of year. So many of these were seen on the 31st, and on the following day (February 1st) that we think a list of these rarities is worth recording.

On the Round Pond, Kensington Gardens, there was a Red-necked Grebe (*Podiceps grisegena*), a first record for Inner London.

At Barn Elms there was also a Red-necked Grebe and a Black-throated Diver (*Colymbus arcticus*) the latter being detected by Mr. Donald Gunn.

At Staines another Black-throated Diver was present, as well as a Red-breasted Merganser (*Mergus serrator*) detected by Mr. W. E. Glegg, and a Black-necked Grebe (*Podiceps nigricollis*).

On February 1st the Red-necked Grebe was still on the Round Pond and in addition a Slavonian Grebe (*Podiceps*

auritus) was seen on the Serpentine, just east of the Bridge. This is a second record for Inner London. A third Black-throated Diver was seen the same morning by Macpherson on the river some little distance below Barnes Railway Bridge.

A. HOLTE MACPHERSON.

G. CARMICHAEL LOW.

E. G. PEDLER.

GREAT AND SOOTY SHEARWATERS OFF THE HEBRIDES.

FURTHER to the notes already published (*antea*, pp. 174-5) the following occurrences of Great Shearwaters (*Puffinus gravis*) and Sooty Shearwaters (*P. griseus*) were noted on board the S.S. *Hebrides*.

On September 20th, 1936, on a morning of moderate SSE. wind, following a night of thick fog, nineteen Great Shearwaters and five Sooty Shearwaters passed close, all flying south-westerly in twos and threes. We were steaming between position 2 miles E. (magnetic) of Muldoanich Island (near Barra) and Rudha Na-h-Ortaig (South Uist).

October 21st, 1936 (a day of fresh westerly wind and visibility moderate to poor)—in position 3 miles S.E. $\frac{1}{2}$ E. (magnetic) of Muldoanich Island (near Barra) three Great Shearwaters followed us till we were abeam of that island.

On November 4th, 1936, in the Sea of the Hebrides, 12 to 16 miles north-west of Gunna Sound, three Great Shearwaters flew close alongside, passing us and vanishing ahead—all flying north-westerly.

D. MACFARLANE.

A. MACRAE.

AVOCET IN CAMBRIDGESHIRE IN WINTER.

ON January 17th, 1937, Mr. J. L. R. Baiss and I saw an Avocet (*Recurvirostra avosetta*) at the Cambridge Sewage Farm. We watched it for a considerable time feeding on one of the tanks, in several inches of water. It was seen again in the afternoon by two other members of the Cambridge Bird Club, Messrs. R. N. Ticehurst and L. H. Bowen, but had apparently gone the next morning, after heavy wind and rain. Subsequently, however, it reappeared and was seen frequently by various observers including Miss Turner and Mrs. Brindley until January 28th. The black and white of its plumage was remarkably clear cut and it appeared to be an adult.

This species is not frequently recorded in the British Isles in winter, and in addition is new to the Cambridge county list.

K. B. ROOKE.

BLACK-TAILED GODWITS IN CARMARTHENSHIRE IN WINTER.

MANY reports have recently appeared in *British Birds* of increasing numbers of Black-tailed Godwits (*Limosa l. limosa*); as these have for the most part occurred in autumn, it may be of interest to state that a large flock has been watched during the present winter on the Carmarthenshire coast. The birds were first noticed on December 20th, 1936, but probably they had been there for some time. On December 23rd an accurate count was possible and gave 48; further visits at intervals of about a week until January 16th, 1937, showed that there were roughly 40 each time.

J. F. THOMAS.

ACTION OF JACK SNIPE IN FEEDING.

ON December 6th, 1936, in company with two friends, I paid my weekly visit to the South Norwood Sewage Farm, Elmers End, Beckenham. From one of the flooded fields we flushed a Jack Snipe (*Lymnocyrtes minimus*) which as usual soon took cover in a muddy gully some twenty yards away. About ten minutes later we approached the gully and watched the Jack going through an amazing performance. Its whole body seemed to be swinging up and down as if held from above by an invisible spring.

Eventually we approached to some fifteen feet behind the bird and upon using glasses we could clearly see every movement it made. It was feeding. With every footstep forward its body was raised and lowered two or three times. The neck and head were held down with the bill on the forward slant. The up-and-down movement was in no way connected with the bird's feet. With every advance of about one foot (12 inches) the Jack stopped walking, and whilst the feet remained motionless the body movement continued for a time. Then when this movement had ceased the bird thrust its bill into the mud, first to right then directly in front of it and then to the left; every time making one clean thrust.

This procedure went on for about eight to ten minutes whilst we watched, but unfortunately was curtailed by our closer approach.

G. E. MANSER.

BLACK-BACKED AND HERRING-GULLS AND RAVENS FEEDING ON ANTS.

IN view of "F. C. R. J.'s" statement (*antea*, p. 261) that "ants have not been recorded as food of *Larus f. graellsii* or *L. argentatus*," it may be important to record that both these gulls feed liberally on ants in the air, on the ground and in the water, when these insects are making impressive marriage flights over Skokholm Island, Pembrokeshire, on calm days

in August and September—the fact is recorded in my notes each year since 1928 (to 1936). The ant which is most numerous on Skokholm is *Myrmica scabrinodis* Nyl. The fecundated females seem to be eaten most eagerly, doubtless on account of their greater size, the males being very insignificant. The former are picked up from the ground in the latter half of the day when the nuptials are finishing, and the ants are literally raining to the ground. A great many drop into the sea, especially if a slight air drifts the nuptial flights away from the island. For instance, on September 1st, 1928, the sea between Skokholm and Grassholm was heavily sprinkled with the floating bodies of *M. scabrinodis* carried from Skokholm by a light east wind and a west-going current, when both Gulls were seen to be swimming in search of and feeding on the ants in the water in the afternoon.

Though these Gulls seem to prefer picking the ants up on the ground, they will also take them in the air. On August 30th, 1936, for example, I watched a curious assemblage of birds hawking ants in flight. Three adults and several juveniles of *Larus marinus*, some twelve adult *L. f. graellsii* and many adult and juvenile *L. argentatus* (among the last were probably a few juvenile *L. f. graellsii*), together with two adult and three juvenile Ravens (*Corvus c. corax*), were taking ants at about 250 feet above Skokholm, large flights of *M. scabrinodis* and a few of *Acanthomyops niger* L. having been released from ant-colonies that day. This is the first record I have of Ravens taking ants on the wing; they were, however, working at the task with far less zeal than the Gulls.

It may also be worth recording that on August 21st and 22nd, 1936, crane-flies (*Tipulæ*) appeared in unusually large numbers over the south-west coast of Pembrokeshire, and on these dates many adult and juvenile *L. marinus* and *L. argentatus* were seen to be hawking in the air after these flies. On the 22nd, and afterwards, gull castings on Skokholm and elsewhere on the coast were found composed solely of huge numbers of the expressed and juiceless corpses (wings, legs and skin complete, though crushed) of crane-flies.

R. M. LOCKLEY.

LATE SAND-MARTIN IN HERTFORDSHIRE.—Mr. R. S. Harkness informs us that he saw a Sand-Martin (*Riparia riparia*) at the Tring Reservoirs on November 1st, 1936.

BEWICK'S SWANS IN MERIONETHSHIRE.—In connexion with the note on this subject (*antea*, p. 262) Mr. M. C. Wainwright informs us that on January 1st, 1937, he identified five

Bewick's Swans (*Cygnus bewickii*) amongst some Mute Swans on the Penrhyndeudraeth side of the Traeth Mawr.

PINK-FOOTED GOOSE IN CO. WEXFORD.—Mr. A. E. Williams informs us that a Pink-footed Goose (*Anser brachyrhynchus*) shot on North Slob, Wexford, was sent to him on January 4th, 1937.

SLAVONIAN GREBE INLAND IN KENT.—The Rev. J. R. Hale informs us that he watched a Slavonian Grebe (*Podiceps auritus*) on a lake at Boxley, near Maidstone, on February 7th, 1937, and that it stayed there for a week.

A number of Grebes and some Divers of different species appear to have visited inland waters in various parts of the country and we should be glad if readers would send brief particulars of such occurrences.

AVOCET RECORDED FOR ARGYLLSHIRE.—With reference to our comments in the last number (*antea*, p. 299) under this heading, Mrs. MacAlister who observed the bird writes to us giving entirely satisfactory evidence for its correct identification as an Avocet and an adult. It cannot be too strongly stressed that published records of rare birds seen should contain in themselves sufficient evidence of identification to enable a reader at the time or in the future to judge of the correctness of the identification.

REVIEWS.

"The Rookeries of Somerset." By B. W. Tucker, M.A., M.B.O.U. *Proc. Somersetshire Arch. and Nat. Hist. Soc.* Vol. LXXXI (1935), pp. 149-240.

AMONG the many remarkable bird census operations recently carried out in Great Britain the various censuses of rookeries have in the aggregate covered the largest number of birds and received the smallest measure of attention. The two facts are connected, for British Rook population is so large and well distributed that no one has been bold enough to attempt a national census, and the work, being done piecemeal by counties or regions and published in different journals, is not seen as a whole except by the specialist. While Mr. Tucker has not been able to escape from these inherent limitations of his subject we must be grateful to him for the thoroughness and width of view which has transformed what might have been a parochial account into a paper of interest to all students of animal numbers.

Starting with an account of organization and methods he explains how the immense task of surveying 35,643 nests scattered over more than a million acres was carried out by the Ornithological Section of the Somerset society with the aid of large numbers of Boy Scouts. The method proved workable, provided that a senior member was available in each case to see that the work was done intelligently and systematically. The basis adopted, as in the previous Oxford work on this

subject, was the grid of 2-inch squares on the 1-inch Ordnance Survey, which give a series of convenient and exactly identifiable units of area, whose recent abandonment in the Fifth Edition of the Survey is a serious blow to studies of this type.

Isolated nests, which have been shown in practice to be insignificant, were ignored. The usual trouble was met over the question, "What is a rookery?" and after discussing this at length Mr. Tucker adopts the arbitrary criterion of treating all groups of nests less than 3 furlongs apart as sub-groups of one rookery, and all groups farther apart as separate rookeries. (It might have been humane to note for the benefit of foreign readers that a furlong is a trifle over 200 metres.) On this basis Somerset contained in 1933-4 669 rookeries, whose situation, number of nests and type of site, together with the actual species of trees bearing the nests are listed in detail, and are moreover indicated on a useful series of half-inch maps covering almost the entire county.

In his analysis Mr. Tucker follows to some extent the lines of the two Oxford Bird Census papers, but with a greatly improved range of data he is able to make a considerable advance. By a useful technique he has been able to estimate the area occupied by the various geological formations, and to find the total number of Rooks' nests on each. Distribution is uneven, the Keuper Marls group and Lias showing nearly sixty per cent. of the county's breeding Rook population on only about forty per cent. of its area. The conclusion reached is that geology, soil, altitude and exposure have some influence on the density of Rook population, but this influence is mainly indirect, through their effects upon agriculture, growth of trees and so forth. The largest "rookless areas" are mainly on the high ground of the county, notably Exmoor and the Brendons, the Quantocks, Blackdowns and Mendips, but there is nothing comparable to the 200 square mile "Rookless" block of Nottinghamshire mapped by Roebuck (*British Birds*, Vol. XXVII., p. 10).

It can hardly be said that available data show a very strong correlation between high or low density of nesting Rooks and certain geological formations. Alluvium, in Somerset as on the Severn and in the Lincolnshire fens, is poor in rookeries, and the Devonian, Carboniferous Limestone and Oxford Clay also show low Rook densities in Somerset, although some of these formations put up respectable figures elsewhere. The suggestion that rookeries tend to be located along streams has also not been confirmed, except that where a stream or pond is available the actual site of the rookery is often very close to it. Rookeries are located near buildings and roads to a much greater extent than can be accounted for by chance. Although nearly half the recorded Somerset nests are in elms, and more than 93 per cent. are in elm, oak, beech, Scots pine and ash taken together, there is no reason to suppose that the birds show any marked preference for particular species of tree. On the contrary they seem to choose the commoner trees of suitable height, and this explains why the elm predominates as a site on the low ground where it flourishes, but gives way to beeches, oaks, and conifers at higher levels.

The discussion in Mr. Tucker's paper suggests that elementary census work on this species has contributed about as much as can be expected of it in present circumstances. It has shown, over an area now representing about 15 per cent. of Great Britain, the exact size and distribution of the breeding Rook population, and has indicated the approximate range of variations from area to area and from year to year. Published British surveys covering at least 100 square miles show maxima in the Wallingford district of the Upper Thames, in the Vale of Taunton and in Berwickshire of 44, 43 and about 45 nests per square

mile respectively, with minima of 7.7 for Nottinghamshire, and about 5-6 for parts of Wales. The average of the existing results appears to be in the neighbourhood of 16 nests per square mile. Some 13,000 square miles of Great Britain surveyed at various dates and with varying degrees of accuracy show in round figures 212,000 Rooks' nests, whereas Holland, with an almost identical area, showed in 1924 only 31,000 Rooks' nests.

Rook census work, from Muirhead's rough pioneer efforts in Berwickshire just fifty years ago to the present elaborate survey, has uncovered many interesting and valuable facts. It has shown that while in the Scottish Lowlands rookeries range not infrequently up to 2,000 or more nests, in England at the present day the limit is much lower. The largest rookery in Somerset has 487 nests, and very few appreciably larger than this are now known south of the Border. Successive counts have proved that while individual rookeries may increase or dwindle rapidly the nesting Rook population of an area remains as a rule remarkably stable from year to year. Mapping has brought out the fact that rookeries in large or even medium-sized woods are exceptional, and has shown the characteristic types and sites of rookery very clearly.

As Mr. Tucker's discussion shows, however, there are many points which cannot be decided by a census, but should yield to intensive observation, and it is through indicating the lines on which observers can profitably take up the investigation, as much as through the intrinsic value of his great survey that he has earned the gratitude of ornithologists. E.M.N.

LOCAL REPORTS.

Skokholm Bird Observatory Report for 1936.

This is the first report of the Bird Observatory Mr. R. M. Lockley has organized on Skokholm. It contains much of interest in a condensed form. About one hundred observers took part in 1936. Breeding birds were mapped, 2,500 birds were ringed, many of them being caught in the large " Heligoland " trap and much other work was done. A short account is given of homing experiments, chiefly with Shearwaters, and special notes under species headings supplement Mr. Lockley's account of the birds of Skokholm already published in our pages (Vol. XXIX, pp. 230-235). Northern Willow-Warblers were identified on May 25th and 27th, one nest of the Little Owl contained corpses of nearly two hundred Storm-Petrels and another twenty-five and these birds should be still more drastically dealt with than is recorded. Fulmars were frequently seen near the island from April to September, a Ruff was recorded for September 1st and two Sandwich Terns off the island on September 17th.

Mr. Lockley is anxious to obtain a succession of observers on the island, and he informs us that he still requires a good many more to complete his programme for the coming spring.

Report of the Oxford Ornithological Society, 1935. (Obtainable from B. W. Tucker, University Mus.) 3s. 3d.

THIS Report keeps up the " model " character it has achieved in recent years. Besides the notes under species, which form the bulk of the Report, there are dates of migrants, results of special investigations for the area undertaken for the " British Trust for Ornithology " (Great Crested Grebe and Woodcock) and special accounts of the

distribution of the Redstart, Great Spotted Woodpecker and Pochard, as well as reports on ringing. Among the systematic notes there are many of interest of which the following may be referred to:—A Bearded Tit was seen in June, 1933, near Bloxham, occurrences of Sheldduck, Garganey, Pintail, Scaup and Scoter among the ducks and Grey Plover, Turnstone, Sanderling, Temminck's Stint (May 26th, 1935, Reading Sewage Farm), Wood-Sandpiper, Spotted Redshank, Grey Phalarope and other scarce birds among the waders.

Hastings and East Sussex Naturalist, 1936. *Report on the Local Fauna, etc., for 1935*, by N. F. Ticehurst.

THIS contains an excellent account of the Birds for 1935. The notes are arranged in systematic order and among many interesting items we may note the following:—An adult male Golden Oriole seen and heard in Hastings on June 1st, an account of Sand-Martin former nesting colonies, only one apparently now remaining, details of heronries, nesting of Garganeys, a single Kentish Plover near the Midrips in July, nesting of a pair of Sandwich Terns on Dungeness but the eggs destroyed by Black-headed Gulls, and Scandinavian Lesser Black-backed Gulls in January and December.

Proceedings of the Bournemouth Natural Science Society, 1935-6. *Report on Birds*. By the Rev. F. C. R. Jourdain.

THIS contains a summary of observations on birds from October, 1935, to October, 1936, arranged under species headings. Two Choughs are said to have been seen on Parbeck Cliffs in August, 1935, and another in August, 1936, but this requires confirmation. There are also notes on occurrences of Firecrests, Waxwings and Black Redstarts, Spoonbill, Garganey, Dusky Redshank and Black-tailed Godwits as well as some winter records of Greenshanks.

Das Leben deutscher Greifvögel. By Dr. Heinz Brüll. Pp. 144. 47 text figs. and plates. 6 R.M. (G. Fisher, Jena), 1937.

DR. BRÜLL has written an interesting little work, which deals chiefly with three of the most prominent German Raptores: the Goshawk, the Buzzard and the Peregrine. There is a good deal on other species of Accipitres, and the author also includes some observations on the Owls, but it is not by any means a systematic monograph, nor yet a manual of practical falconry. It is quite evident, however, that it is through the medium of falconry that the writer has amassed much of the information in his book.

The earlier sections of the work contain analyses of the various types of hunting ground and breeding places characteristic of each species. Then the author shows how the structure of the bird is specially adapted in each case for the pursuit of its prey under these conditions. At times the facts seem to be somewhat forcibly fitted into the theory, rather than the theory framed to account for the facts. Thus the "toothed" upper mandible of the Falcons is classed as a "death-dealing" type of bill, and the toothless bill of the Harriers, is regarded merely as a "carving" implement, while the claws become the death-dealing weapons. Yet in the case of the Peregrine the prey is frequently dead before the beak is brought into play at all, sometimes the stoop alone or in conjunction with the ripping hind claw.

There is much useful information on the courtship flight, and the detailed information on the moult of the primaries, as observed in a Goshawk over a period of six years, is extremely interesting, and the

same may be said of the notes on the normal prey. Admittedly these are partly compiled from other sources, but the information is generally so reliable that we find it difficult to understand the statements on p. 29. In this table, after giving the normal breeding season, clutch, incubation period and prey, there is a column devoted to "Brut und Gelege." Here four species (Goshawk, Sparrow-hawk, Hobby (2-3 "Bruten"), and Peregrine ("selten noch eine Sommerbrut 5-7 Eier!")) are quoted as having more than a single brood! Even if this referred merely to second layings and not broods, why then are such species as the Buzzard omitted? We have never met with any reliable evidence of an Accipitrine bird rearing a second brood after the first has hatched off—in fact, the prolonged breeding period renders this practically impossible. On the other hand most of them will lay a second time, and occasionally three times, when the first laying has been taken or destroyed. We hope that this Table will be drastically revised in any future edition. Apart from this, the book is likely to be especially useful to those who keep raptorial birds in confinement and wish to know more about them and the connexion between their structure and mode of life—F. C. R. JOURDAIN.

LETTERS.

CUCKOO CALLING WITH BILL OPEN.

To the Editors of BRITISH BIRDS.

SIRS,—Some 25 years ago there was much discussion amongst my friends about Cuckoos (*Cuculus c. canorus*) calling with open or closed beak: and a lady said she had watched one through her window and that it opened its beak for the first syllable and closed it for the second.

At the time I had glasses of only 12x. I then got 18x and when I learnt to keep the glasses on the beak before the bird called, I found she was right. He opens it for the "cuck" and closes it for the "ooo." But he opens it very little. Now I have glasses of 20x it is easy to see so long as he "cucks" on the skyline. ELIOT HOWARD.

To the Editors of BRITISH BIRDS.

SIRS,—In so far as a single observation goes I can corroborate Fr. Haverschmidt's remarks (*antea*, p. 264) on a Cuckoo opening its bill when calling.

Last summer I watched a Cuckoo, at a distance of only a few yards, for upwards of five minutes during which time it was repeatedly calling. Using 8x binoculars I was able to note that, with the exception of the bill which was opened very slightly at each call, the bird's attitude (when actually calling) was almost identical with that shown in the late A. Thorburn's large edition of *British Birds*.

Although part of the "call-action," the slight opening and closing of the bill appeared to have little, if any, relation to the volume of sound produced. H. H. DAVIS.

LITTLE STOKE, NEAR BRISTOL.

January 20th, 1937.

HABITS OF STARLINGS ROOSTING IN LONDON.

To the Editors of BRITISH BIRDS.

SIRS,—I am anxious to acquire all the information available on the habits of Starlings (*Sturnus v. vulgaris*) roosting in central London. In the areas with which I have become personally familiar since my stay in England, the birds left the trees for buildings when the trees dropped their leaves. That was the first indication of movement I noticed. Subsequently there have been indications of fairly large movements on occasion by a sudden increase in the numbers of roosting birds on certain selected buildings in the west end, as well as one rather rapid desertion around the beginning of the year from the Piccadilly end of Shaftesbury Avenue. A gradual drop in numbers seems to have affected the birds of the Charing Cross and Trafalgar Square area from the middle of January onwards, till a marked influx occurred in the middle of February which provided colonists even for Canada House which is usually devoid of Starlings.

Any definite information that your correspondents can let me have would be greatly appreciated along these lines. I am also particularly desirous to find out, if it is possible, for how many years Starlings have roosted in London at all and if trees were patronised before buildings.

DEPARTMENT OF ANATOMY & EMBRYOLOGY,
UNIVERSITY COLLEGE,
LONDON, W.C.1.

WM. ROWAN.

THE SCOTTISH ORNITHOLOGISTS' CLUB.

To the Editors of BRITISH BIRDS.

SIRS,—Might I draw the attention of those of your readers who are interested in the bird-life of Scotland to the recently inaugurated Scottish Ornithologists' Club.

The object of this Club is to enable ornithologists who are resident in Scotland to meet together to discuss observations and problems relating to Scottish Ornithology.

It is proposed to hold meetings at least twice a year at centres to be arranged at which Papers will be read, films exhibited and discussions held.

The first meeting of the Club was held in Edinburgh on 14th January and was attended by over 65 people, many of whom had travelled a considerable distance specially to attend. Over 140 Members have now enrolled. The next meeting will be held in Glasgow on 2nd April.

Membership is open to anyone interested in Scottish Ornithology, and full particulars can be obtained from me.

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CONTENTS OF NUMBER II, VOL. XXX., April, 1, 1937.

	PAGE
On the Behaviour of Male Mallards with Broods. By Bertram Lloyd 334	334
The "British Birds" Marking Scheme. Progress for 1936. By H. F. Witherby 337	337
Two Contrasting Seasons at a Redwing Roost. By W. R. Philipson 343	343
Notes from Reservoirs and Sewage Farms :—	
Brooklands Sewage Farm, Surrey, 1936 (P. A. D. Hollom) 346	346
Altrincham Sewage Farm, Cheshire, 1936 (A. W. Boyd) 347	347
Staffordshire Reservoirs, 1936 (A. W. Boyd). 349	349
Notes :—	
British Trust for Ornithology. Lapwing Habitat Enquiry 351	351
Redwings singing in November (H. G. Alexander and A. J. Harthan) 351	351
Roll in singing at Night (Mrs. H. Rait Kerr) 352	352
Call notes of the Wood-Sandpiper (T. C. Gregory) 352	352
Little Gull in Oxfordshire (W. D. Campbell) 353	353
Iceland Gull in Hampshire and Spotted Redshank wintering (K. D. Smith) 353	353
Ivory-Gull in Cambridgeshire (A. G. Stansfeld) 354	354
Short Notes :—	
Early Snow-Bunting in Norfolk. Continental Song-Thrushes in Lanarkshire and Renfrewshire. Bewick's Swans in Essex. Grebes and Divers Inland 354	354
Review :—	
<i>Birds of Glamorgan.</i> By G. C. S. Ingram and H. M. Salmon 355	355
Letters :—	
Influence of Weather on Dispersal of Swifts and Swallows after nesting (H. G. Hurrell) 355	355
Reflected Colour of Nightjar's Eyes (G. Brown) 359	359

ON THE BEHAVIOUR OF MALE MALLARDS
WITH BROODS.

BY

BERTRAM LLOYD.

As is well known, the Mallard drake (*Anas p. platyrhyncha*) does not ordinarily swim in company with, or take a share in guarding and rearing, his progeny, these activities being left entirely to the female.

But at the Tring Reservoirs during 1936, a remarkable variation from the normal behaviour of the species in this respect was much in evidence. Briefly, this was the regular and constant appearance of some males with their respective females and their broods—though only a few were observed in such association.

This strange behaviour was first noticed by Charles Oldham, whose intimate knowledge of these Reservoirs is unrivalled, and whose gift for observation as a field naturalist is almost proverbial.

I can discover no mention of such activities on the part of male Mallards in any of the standard treatises which I have consulted; nor have enquiries among ornithologists and students of bird behaviour proved more successful. Yet it is obviously most improbable that the variation is limited to this one locality. It may well be that it has sometimes—perhaps frequently—been overlooked, owing to that paralysing effect on the observer's mind of preconceived contrary ideas, so familiar to the field-naturalist.

Charles Oldham has nothing on the subject in his paper on "The Ducks of the Tring Reservoirs" published in the *Transactions of the Herts. Nat. Hist. Society*, vol. XVII (1923).

J. G. Millais in his large but very superficial work *The Natural History of British Surface-feeding Ducks* (London, 1902) categorically states of the male Mallard during the latter part of the breeding season that "four weeks of this (the normal period of incubation) are almost more than he can stand. By degrees his visits become less and less frequent if water be near; he contents himself with swimming about within call, keeping an eye open for other drakes similarly engaged; and by the time the young birds are hatched he is sick of the whole thing; and away he goes, unless indeed the nest be destroyed, in which case he will return to his wife and stay with her until she is fairly settled again. Then, at latest, he takes himself off, and uniting with other liberated Benedicts, who commonly roam about in parties of from

three or four up to twenty, he holds himself aloof from the opposite sex until the following autumn."

Even the great revised edition of J. A. Naumann's *Die Voegel Mitteleuropas* is silent on this point. In Vol. X (edition 1905 etc.) we find:

"The father knows nothing of the cares and anxieties of the mother (with her brood). He takes no care for the family and sometimes he is even mad enough to slay his own offspring when their mother brings them out on to the water for the first time . . . This is apparently only because his sexual instinct is not yet satisfied, and hence he seeks to clear out of the way the seeming obstacle to its achievement." (My translation.)*

BEHAVIOUR.—On May 16th, 1936, Charles Oldham saw three Mallard pairs attendant on young broods on three separate reservoirs at Tring, two broods being newly hatched, the third about a third grown. Of the last he noted that they were "probably too small to be the birds he had seen on April 25th"—on which date he had glimpsed on the same reservoir a male and female Mallard (apparently a pair) "with a brood of tiny chicks trailing behind them."

He at once informed me of this remarkable deviation from normal behaviour; and on the following day we carefully patrolled the four sheets of water commonly known as the Tring Reservoirs for the purpose of noting further cases. Of these reservoirs three are contiguous while the fourth and largest (Wilstone) lies about half a mile distant from them. After careful inspection we observed five certain examples of drake Mallards with their broods, besides a sixth case of which we felt virtually sure. These were scattered over all four of the reservoirs. In four cases the male was swimming at times in the van of the brood, though at intervals he was seen on one or other flank a few yards away; and in five cases the male regularly turned in this or that direction with the flotilla of young. The broods were not all very young, one being about half-grown.

At Wilstone, where we watched a pair with seven young, the male was bowing and ducking before the female at intervals in characteristic "courtship" display. In another case the female and her brood landed and sat on the bank, while the male, in evident concern, swam about in the vicinity, from time to time uttering a soft call—"quak."

*Earlier in this article, Naumann, followed by his editors, lays great stress on the "Geilheit" (lasciviousness) of the male Mallard!

It is most probable that there were other instances of this family association at the time unobserved by us, for the number which we saw was notably small in proportion to the numbers of Mallards on these waters.

In all these cases at any rate the company-keeping behaviour of the Mallard drakes and their evident concern in the families, left no doubt that the association was a real and not merely a fortuitous one. It is obviously unlikely, however, that the phenomenon, though apparently so rare, is altogether restricted to the Tring Reservoirs.

The only description known to me of any possibly related behaviour in the species is a somewhat vague observation by J. H. Bowles (in U.S.A.) quoted by A. C. Bent in his *Life Histories of North American Water Fowl* (Anseres) Part I, p. 38 (Washington, 1923):—

“The male is the most attentive to the female during the nesting season of all our ducks, being seldom far from the nest at any time. I once saw a drake guiding a brood of young through a very brushy swamp. . . . The female was nowhere to be seen, which is so unusual under the circumstances that I believe she must have met with some accident.”

ARTIFICIAL FEEDING.—Whether the strange behaviour of the birds we noted has any connection with the unnatural conditions of the Mallards at Tring where many are now artificially reared and fed, is an open question. Thus, during 1936, as we were informed by the keeper, about 2,000 ducks were thus reared there; and for three (or perhaps four) seasons the ducks have been fed daily with a mixture of wheat and barley. It might well be supposed that the normal reaction of high-fed Mallard drakes, largely spared the necessity of working for their own living, would be in the opposite direction to that which we noticed in the cases above cited. Indeed, there are many recorded cases of both wild and semi-domesticated Mallard drakes attacking and killing their own broods. (See, e.g., *The Garden Green* by J. F. Leeming, which describes the annual slaughter of young by an adult male Mallard on a garden pond; and J. A. Naumann, above quoted.) The killing of female Mallards by the persistent persecution and attempted rape by more than one male is also well known. But of this the explanation is generally simple, part of it being that the drakes, usually well fed, or even over fed, are unable to find any outlet for their resultant abounding energies in guarding and attending to broods.

THE " BRITISH BIRDS " MARKING SCHEME.*

PROGRESS FOR 1936.

BY

H. F. WITHERBY.

NUMBER OF BIRDS RINGED.

				<i>Trapped.</i>	<i>Nestlings.</i>	<i>Total.</i>
In 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
<hr/>						
In 1909	..	2,171				
„ 1910	..	7,910				
„ 1911	..	10,416				
„ 1912	..	11,483				
„ 1913	..	14,843				
„ 1914	..	13,024				
„ 1915	..	7,767				
„ 1916	..	7,107				
„ 1917	..	6,926				
„ 1918	..	5,937				
„ 1919	..	3,578				
				In 1920	..	5,276
				„ 1921	..	8,997
				„ 1922	..	9,289
				„ 1923	..	12,866
				„ 1924	..	18,189
				„ 1925	..	18,233
				„ 1926	..	23,432
				„ 1927	..	21,625
				„ 1928	..	24,479
				„ 1929	..	25,243
				„ 1930	..	28,610
Grand Total	..	..	..	530,733		

THE total of birds ringed in 1936, the twenty-eighth year of our " Marking Scheme," is certainly very satisfactory and brings our grand total to over half a million. The number of trapped birds for the year is a record and represents over two-thirds of those ringed as nestlings. As the mortality among nestlings must be far greater than in birds able to use their wings, the increasing number of birds ringed by trapping

*For previous Reports see Vol. III., pp. 179-182, for 1909; Vol. IV., pp. 204-207, for 1910; Vol. V., pp. 158-162, for 1911; Vol. VI., pp. 177-183, for 1912; Vol. VII., pp. 190-195, for 1913; Vol. VIII., pp. 161-168, for 1914; Vol. IX., pp. 222-229, for 1915; Vol. X., pp. 150-156, for 1916; Vol. XI., pp. 271-276, for 1917; Vol. XIII., pp. 96-100, for 1918; Vol. XIII., pp. 237-240, for 1919; Vol. XIV., pp. 203-207, for 1920; Vol. XV., pp. 232-238, for 1921; Vol. XVI., pp. 277-281, for 1922; Vol. XVII., pp. 231-235, for 1923; Vol. XVIII., pp. 260-265, for 1924; Vol. XIX., pp. 275-280, for 1925; Vol. XX., pp. 230-241, for 1926; Vol. XXI., pp. 212-219, for 1927; Vol. XXII., pp. 253-258, for 1928; Vol. XXIII., pp. 258-263, for 1929; Vol. XXIV., pp. 234-244, for 1930; Vol. XXV., pp. 286-291, for 1931; Vol. XXVI., pp. 295-300, for 1932; Vol. XXVII., pp. 278-283, for 1933; Vol. XXVIII., pp. 302-308, for 1934; Vol. XXIX., pp. 339-344, for 1935.

should in time show an increase in the percentage of birds recovered and therefore a benefit to results, though it may be remarked that it will always be necessary to practise both methods.

Thirteen totals have reached over the thousand mark and amongst these all have reached that total before, except the Isle of May Observatory.

Dr. Moon has once again ringed over five thousand and his list as before is remarkable because it is made up almost entirely of nestlings of birds not breeding in colonies. Some of his totals are : Lapwing (1,332), Curlew (136), Redshank (61), Starling (597), Pied Wagtail (248), Song-Thrush (975), Blackbird (849).

Mr. Charteris has again achieved a very big combined total of nestlings and trapped and netted birds. Large numbers have been ringed by the last method at night in the winter—an exciting and strenuous pastime. His chief figures are : Chaffinch (1,166), Greenfinch (232), Redwing (55), large numbers of Blackbirds, Song-Thrushes and Starlings and Lapwing.

Mr. Cohen has ringed about eighteen hundred non-Passerines and twelve hundred Passerines. About half the total is made up by large numbers of three species : Swallow (301), Manx Shearwater (865) and Sandwich Tern (454).

Mr. Morshead has specialized for many years on trapping and this year has made the largest total in that category. Of these the biggest numbers are Starling (1,134), Greenfinch (479), Chaffinch (320) and Skylark (160).

The Oxford Ornithological Society has trapped large numbers of Passerine birds (Starling, 517), specialized on Kingfisher (67) and been afield to ring Lapwing (162) and Manx Shearwater (117).

Skokholm Bird Observatory's list is a combination of Passerine birds mostly caught in the migration trap and sea-birds ringed as nestlings or caught at their nests. Of the former there are some notable figures such as Willow-Warbler (188), Whitethroat (117), Meadow-Pipit (161) and Rock-Pipit (84) as well as some interesting birds which could be ringed only in this way such as White Wagtail (27) and Greenland Wheatear (25).

Mr. Mayall has devoted himself chiefly to nestling Passerines of which Nightingale (409), Swallow (181) and Linnet (249) figure largely. Mr. Robinson's list is also chiefly made up of nestlings, but of shore- and sea-birds, chiefly Sandwich (523) and Common (597) Terns and Lesser Black-backed Gulls (439). Mr. Boyd has trapped a great number of Starlings (842). Bootham School, who have again achieved a very large

total, have also trapped many Starlings (395) besides ringing numbers of nestlings of other birds. Mr. Wontner-Smith has a big total of Rooks (201) ringed as nestlings, while Rugby have ringed nestlings of Carrion-Crow (62), and Rook (109).

The Isle of May Bird Observatory has ringed some unusual species caught in their migration trap. Amongst these are single individuals of Barred Warbler and Continental Coal-Tit, two Bluethroats and several Continental forms, besides a number of Warblers.

There are many other lists of interest, but I must be content with picking out a few items. Mr. Hollom has again been successful in netting Gulls at night. In Lord Mansfield's list I note Mallard (184); in Mr. Harthan's, Chaffinch (406) trapped; in Mr. Garnett's amongst other migrants trapped, four Bluethroats and a Black Redstart; in Leighton Park School's, Fork tailed Petrel (21); in Dartington Hall School's, twelve Gull Buntings; in Mrs. Hodgkin's, Arctic Tern (125); in Mr. Thomas's, Swallow (200); in that of the British Trust for Ornithology, Woodcock (194); in Mr. Boardman's, Mallard (118) and in Mr. Carr's, forty-five Bramblings.

Glancing at the number ringed of each species one finds considerable increases in Rook, Starling, Linnet, Mallard, Manx Shearwater, Oyster-Catcher, Lapwing, Kittiwake and Razorbill and decreases in some birds such as Swallow, Gannet and Woodcock, to which special attention was paid in 1935. There is also an increase in the numbers trapped of birds like the Warblers which unfortunately have shown very poor returns, but with the institution of migration traps these birds may yet occasionally yield returns of great interest by being re-caught on a future migration.

The percentage of recoveries remains fairly steady per species, and in small birds is of course greatly influenced by the amount of re-trapping. Many of the recoveries published during the year have been of great interest and add considerably to the facts already collected regarding the movements of various species. Attention must also be drawn to the excellent piece of work done by Mr. A. W. Boyd and Dr. A. Landsborough Thomson in working out the results of ringing Swallows (*antea* pp. 278-287).

Once again we have to express our great gratitude to Miss E. P. Leach for all the work she has done for the scheme with unremitting care and attention. The great increase of rings used during the last few years has entailed a corresponding increase in the labour of record keeping and all its attendant detail, and we are still more indebted to Miss Leach for carrying out this work now it is of such magnitude.

	Nest-			Nest-		
	<i>Trapped.</i>	<i>ling.</i>	<i>Total.</i>	<i>Trapped.</i>	<i>ling.</i>	<i>Total.</i>
H. J. Moon ...	243	5,037	5,280	Perths N. H. Soc. —	149	149
G. Charteris ...	2,244	1,280	3,524	J. Barnes ...	1	145
E. Cohen ...	1,349	1,675	3,024	Wellington Coll. ...	21	117
P. Morshead ...	2,518	239	2,757	L. C. Kaye ...	17	117
Oxford Orn. Soc. ...	2,098	541	2,639	B. T. Brooker and		
Skokholm B. Obs ...	1,544	956	2,500	E. M. Cawkell ...	1	130
A. Mayall ...	222	1,726	1,948	D. J. Robertson ...	4	123
H. W. Robinson ...	127	1,782	1,909	A. H. Bishop ...	41	83
A. W. Boyd ...	1,304	399	1,703	C. S. Clarke ...	—	122
Bootham School ...	526	1,130	1,656	Winchester Coll. ...	23	96
C. Wontner-Smith ...	209	1,149	1,358	M. Boardman ...	118	—
I. o. May B. Obs. ...	561	492	1,053	H. Tully ...	87	28
Rugby School ...	67	983	1,050	J. P. Moseley ...	6	107
Midlothian Orn. C. ...	79	734	813	G. Brown ...	4	103
R. G. Williams ...	24	664	688	Miss Staunton ...	97	4
P. Hollom ...	396	271	667	E. L. Arnold ...	13	87
Earl of Mansfield ...	7	591	598	J. Staton ...	15	80
A. J. Harthan ...	520	54	574	W. S. Cowin ...	66	29
R. M. Garnett ...	313	224	537	Mrs. Morley ...	—	92
Zool. Society ...	321	190	511	Miss Sharp ...	9	78
G. P. P. Pollitt ...	362	95	457	J. F. D. Scott ...	79	7
R. Martinson ...	75	356	431	Repton School ...	22	61
Miss Mitchell ...	144	267	411	W. Pollok-Morris ...	30	49
Leighton Park S. ...	138	265	403	Mrs. Greenlees ...	—	79
Dartington Hall S. ...	280	95	375	P. Allen ...	17	59
St. Edmund's S. ...	2	370	372	O. J. Pullen ...	4	64
Miss Ferrier ...	—	372	372	H. Greatorex ...	22	44
London N. H. Soc. ...	78	276	354	K. B. Rooke ...	66	—
Mrs. Hodgkin ...	5	334	339	Barnard Castle S. ...	45	20
C. F. Tebbutt ...	157	160	317	N. H. Joy ...	—	64
Sanct. Club Camb. ...	303	5	308	C. W. S. Ellis ...	56	—
W. A. Cadman ...	11	289	300	A. R. Marshall ...	17	34
Sedbergh S. ...	50	238	288	M. Philips Price ...	6	42
C. W. Heycock ...	111	174	285	Miss Darlington ...	—	48
J. Bartholomew ...	23	258	281	P. Carr ...	48	—
J. F. Thomas ...	42	230	272	Lord David Stuart ...	—	46
E. G. Holt ...	259	12	271	R. E. Knowles ...	29	16
Cheltenham Coll. ...	55	202	257	H. V. Bamford ...	2	43
Blundell's S. ...	23	227	250	H. Martin ...	30	14
S. Marchant ...	49	200	249	R. C. Dixon ...	4	37
E. Peake ...	247	—	247	E. M. Nicholson ...	—	41
A. H. and W. J. Eggeling ...	166	68	234	E. Blezard ...	—	39
M. Williams ...	42	180	222	D. K. Bryson ...	1	38
W. E. Kenrick ...	201	20	221	F. A. Craine ...	6	32
R. H. Brown ...	—	209	209	C. H. Kaye ...	21	17
E. U. Savage ...	—	195	195	J. Law ...	38	—
Brit. Trust for Orn. ...	2	192	194	Miss Henderson ...	1	34
H. G. Alexander ...	181	5	186	W. M. Serle ...	3	32
C. Oakes and E. Battersby ...	2	183	185	M. W. Willson ...	—	34
F. J. Ramsay ...	143	37	180	W. M. Congreve ...	33	—
T. R. Tallis ...	—	159	159	H. S. Greg ...	—	33
Brit. Em. Nat. Ass. ...	37	121	158	Mrs. Lane ...	8	25
				University Coll. Exeter ...	—	32

	NUMBERS OF EACH SPECIES RINGED.				Grand Total.	RECOVERED	
	1909 to 1935	Trapped.	1936 Nest-lings.	Total.		of those ringed 1909-35.	Per-centage.
Raven ...	107	2	8	10	117	7	6.5
*Crow, Carrion ...	883	7	153	160	1043	52	5.8
Rook ...	3593	33	468	501	4094	130	3.6
Jackdaw ...	2259	85	308	393	2652	93	4.1
*Magpie ...	603	11	112	123	726	20	3.3
Jay ...	354	14	14	28	382	20	5.6
Starling ...	37592	4814	1433	6247	43839	1581	4.2
Greenfinch ...	19643	1469	691	2160	21803	1391	7.0
*Goldfinch ...	322	21	17	38	360	7	2.1
Redpoll, Lesser	520	5	19	24	544	3	0.5
Linnet ...	7659	173	559	732	8391	56	0.7
Bullfinch ...	1282	30	75	105	1387	41	3.1
Chaffinch ...	19684	2754	582	3336	23020	687	3.4
Brambling ...	458	67	—	67	525	22	4.8
Sparrow, Tree ...	1829	55	85	140	1969	45	2.4
Bunting, Yellow	3953	308	110	418	4371	209	5.2
Bunting, Reed ...	1495	54	51	105	1600	65	4.3
Lark, Sky ...	3169	166	41	207	3376	33	1.0
Pipit, Tree ...	1538	8	95	103	1641	4	0.2
Pipit, Meadow ...	3772	251	110	361	4133	68	1.8
Wagtail, Yellow	800	16	74	90	890	4	0.5
Wagtail, Grey ...	625	2	35	37	662	1	0.1
Wagtail, Pied ...	4712	84	384	468	5180	66	1.3
Tit, Great ...	3197	471	173	644	3841	486	15.5
Tit, Blue ...	4432	765	102	867	5299	814	18.3
Shrike, R.-backed	721	3	41	44	765	2	0.2
Flycatcher, S. ...	3037	35	59	94	3131	8	0.2
*Flycatcher, Pied	909	13	53	66	975	5	0.5
Chiffchaff ...	710	32	7	39	749	4	0.5
Warbler, Willow	8492	326	12	338	8830	37	0.4
Warbler, Wood	925	1	19	20	945	2	0.2
Warbler, Reed ...	827	3	30	33	860	4	0.4
Warbler, Sedge	989	34	15	49	1038	2	0.2
Warbler, Garden	1092	10	48	58	1150	1	0.09
Blackcap ...	778	7	53	60	838	1	0.1
Whitethroat ...	3339	169	17	186	3525	15	0.4
Thrush, Mistle ...	3552	26	282	308	3860	72	2.0
Thrush, Song ...	53108	489	3335	3824	56932	943	1.7
Redwing ...	236	78	—	78	314	—	—
Ouzel, Ring ...	415	4	18	22	437	3	0.7
Blackbird ...	42469	1239	3292	4531	47000	1697	3.9
Wheatear ...	1466	54	27	81	1547	29	1.9
Whinchat ...	1479	11	42	53	1532	10	0.6
Stonechat ...	665	14	19	33	698	5	0.7
Redstart ...	1696	37	59	96	1792	7	0.4
Nightingale ...	1602	—	416	416	2018	4	0.3
Redbreast ...	17008	631	688	1319	18327	1410	8.2
Sparrow, Hedge	11317	493	324	817	12134	891	7.8
Wren ...	3462	36	23	59	3521	13	0.3
Dipper ...	988	—	66	66	1054	8	0.8
Swallow... ..	34243	99	2092	2191	36434	309	0.9
Martin ...	9996	97	332	429	10425	62	0.6
Martin, Sand ...	4129	90	112	202	4331	10	0.2

*Of species so marked no record was kept of the number ringed from 1913 to 1920.

	NUMBERS OF EACH SPECIES RINGED.				RECOVERED		
	1909 to 1935	1936 Trapped.	1936 Nest- lings.	Total.	Grand Total.	of those ringed 1909-35.	Per- centage.
*Swift ...	788	10	20	30	818	50	6.3
Nightjar ...	189	—	9	9	198	2	1.0
Kingfisher ...	516	12	68	80	596	24	4.6
Wryneck ...	343	1	—	1	344	6	1.7
Cuckoo ...	572	—	46	46	618	17	2.9
*Owl, Little ...	424	6	31	37	461	41	9.6
Owl, Long-eared ...	191	—	2	2	193	7	3.6
Owl, Barn ...	448	3	32	35	483	34	7.5
Owl, Tawny ...	728	2	50	52	780	41	5.6
Peregrine Falcon ...	57	—	5	5	62	7	12.2
*Merlin ...	165	—	2	2	167	39	23.6
Kestrel ...	677	1	20	21	698	74	10.9
*Buzzard ...	200	1	30	31	231	10	5.0
Hawk, Sparrow ...	397	3	10	19	416	55	13.8
Heron, Common ...	1722	1	52	53	1775	183	10.6
Sheld-Duck ...	382	8	23	31	413	17	4.4
Mallard ...	5323	159	196	355	5678	685	12.8
Teal ...	1016	16	3	19	1035	131	12.8
Wigeon ...	228	3	1	4	232	24	10.5
Duck, Tufted ...	141	10	—	10	151	26	18.4
Eider ...	782	2	15	17	799	36	4.6
Cormorant ...	1471	1	164	165	1636	273	18.5
Shag ...	1498	—	51	51	1549	148	9.8
Gannet ...	4817	64	245	309	5126	163	3.3
Shearwater, Manx ...	4731	1466	689	2155	6886	135	2.8
Wood-Pigeon ...	2366	1	123	124	2490	91	3.8
Dove, Stock ...	456	12	42	54	510	23	5.0
Dove, Turtle ...	506	25	6	31	537	46	9.0
Stone-Curlew ...	173	—	14	14	187	8	4.6
Oyster-Catcher... ..	983	1	150	151	1134	38	3.8
Plover, Ringed... ..	1039	—	110	110	1149	14	1.3
Plover, Golden ...	231	1	34	35	266	3	1.2
Lapwing ...	27928	17	3174	3191	31119	621	2.2
Sandpiper, C. ...	727	5	54	59	786	3	0.4
Redshank ...	1702	4	170	174	1876	63	3.7
Curlew, Common ...	2250	—	268	268	2518	88	3.9
Snipe, Common ...	1234	11	83	94	1328	69	5.5
Woodcock ...	4268	2	316	318	4586	304	7.1
Tern, Sandwich ...	11639	7	1523	1530	13169	200	1.7
Tern, Common... ..	15245	18	1253	1271	16516	426	2.7
Tern, Arctic ...	1337	1	273	274	1611	4	0.2
Tern, Little ...	602	1	30	31	633	3	0.4
Gull, B.-headed ...	12902	269	73	342	13244	582	4.5
Gull, Common ...	1408	42	111	153	1561	40	2.8
Gull, Herring ...	5208	45	1086	1131	6339	96	1.8
Gull, L. Blk.-bkd. ...	9345	—	494	494	9839	359	3.8
Gull, G. Blk.-bkd. ...	383	4	12	16	399	12	3.1
Kittiwake ...	1086	7	257	264	1350	11	1.0
Razorbill ...	1833	65	281	346	2179	25	1.3
*Guillemot ...	1572	58	114	172	1744	29	1.8
Puffin ...	3456	172	96	268	3724	34	0.9
Rail, Land ...	366	2	19	21	387	4	1.0
Moor-Hen ...	1349	60	20	80	1438	31	2.3
Coot ...	129	5	—	5	134	11	8.5

TWO CONTRASTING SEASONS AT A REDWING ROOST.

BY

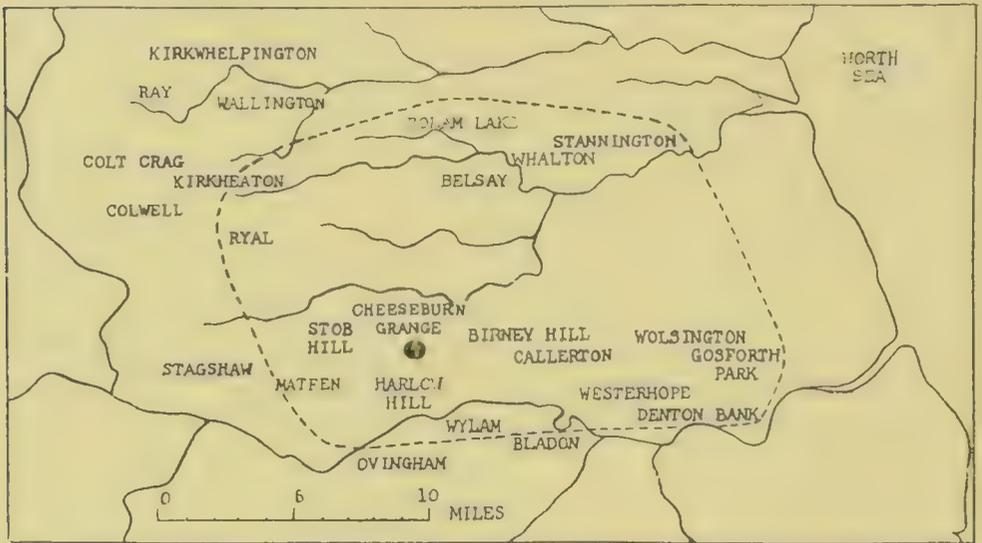
W. R. PHILIPSON.

IN the winter of 1933-4 Redwings (*Turdus musicus*) were very abundant in south Northumberland and the abnormal numbers made their habit of communal roosting much more noticeable than is usually the case. In the following year the numbers were so much less that it was very difficult to follow their flights and I am quite sure that their roost, and their flights to and from it, would have escaped my attention if I had not known them from the previous year. And yet they travelled just as far from the roost every day in each winter, although they passed in threes and fours in the second winter where they had been in scores before. The distance that Redwings will fly to and from their roosts does not seem to have been appreciated, and this may be due to their undemonstrative, almost secretive, flights in the morning and evening twilight, which only become noticeable when the numbers are greater than usual.

After I had first noticed the regular morning arrival of the flocks, I found it easy to trace the afternoon movement back, and located the roost in a young fir plantation near Cheeseburn Grange. I then spent some days watching the morning and afternoon movements but as I had little time at my disposal I could not make an exhaustive study. All my notes which relate to the numbers of birds and the direction and extent of their flights are summarized in the first half of the table. From this table a rough idea of the area supplied daily with birds from this roost can be obtained and it is shown on the map contained within a dotted line. The area is larger than might be expected and is quite comparable with that supplied by the Rook roost in the same district. No very precise data were collected regarding the actual boundaries, but indications of three other roosts were given by the homeward flights of birds to the north (at Ray and Wallington, January 1st, 1935) and the west (at Colwell, December 20th, 1934; near Stagshaw, January 5th, 1935) and by the arrival of birds from the south (south of Ovingham, December 31st, 1934; near Bladon, January 2nd, 1935). These notes take into account both seasons.

The second half of the table shows similar notes taken during the following winter (1934-5): they show that the territory is of the same extent, but the contrast in the number of birds resorting to it is very striking. The consistently fewer

Redwings seen both in the morning and the afternoon compared with the previous season cannot be due to chance but indicates a very great change in the number of Redwings over a large stretch of country. The change was not due to a decrease in the area over which birds resorted to this particular roost because the notes show that the boundaries were the same in both seasons. Nor was there any indication of any independent Redwing roosts within the boundaries of the Cheeseburn roost, and only very minor roosts could have been overlooked. There was certainly a great decrease in the actual number of birds present in the second season and this was not due, apparently, to any difference in the weather, for both seasons were very mild.



It is interesting that the change in numbers was not accompanied by any change in the area of the territory of the roost. At first I thought the large area of the roost might be due to the abnormal numbers resulting in a strengthening of the gregarious instinct. Some observations on the roosting of Blackbirds (*Turdus m. merula*) had led me to conclude that in areas where these birds are numerous fair-sized roosts are to be found and the birds will travel some distance to them in the evenings. On the other hand where Blackbirds are less plentiful they will roost singly or in small numbers in suitable cover where they spend the day. This parallel seems to be quite untenable in the present instance, and long flights to roost of several miles may be found to be general with Redwings.

The roosting of these Redwings is quite on a level with that of Rooks (*Corvus f. frugilegus*) and Starlings (*Sturnus v. vulgaris*) although the numbers are hardly comparable with those in the Rook roost and the Starling roost in the same

district. They travel almost as far and quite as regularly as these species but the gregarious instinct does not seem to be so highly developed in them during the movements to and from the roost or during the day. They do not circle about the roosting trees before they leave nor do they leave in concerted flocks, but surreptitiously, one at a time, or in small parties. They do not fly without a pause to their feeding grounds but alight frequently and move on again; this may be because they are not resident birds but only winter visitors and have no particular tie to any stretch of country. The individual birds of a flock too are more independent and will pause or move on regardless of the remainder.

1933-4.					1934-5.				
Date.	Locality.	Time.	Direction.	Numbers.	Date.	Locality.	Time.	Direction.	Numbers.
Dec. 20	Bolam	8.20	N.	27	Dec. 30	Bolam	8.10	N.	6
" 21	Belsay	8.0	NNE.	48	" 28	Whalton	7.50	NE.	3
" 22	Stannington	8.10	NE.	76	Jan. 4	Stannington	7.50	NE.	5
" 23	Gosforth	8.12	E.	±20	Dec. 29	Gosforth	8.10	E.	5
" 24	Denton	8.20	SE.	7 (misty)	Jan. 2	Westerhope	8.14	ESE.	3
" 26	Wylam	8.03	S.	18	Dec. 31	Ovingham	8.07	S.	7
" 28	Harlow Hill	7.50	S.	62	Jan. 3	Matfen	7.55	W.	5
" 29	Matfen	8.0	W.	43	" 5	Kirkheaton	8.0	NW.	4
" 30	Ryal	8.05	NW.	68					

Table to show the direction of flight and the variation in numbers in two seasons at Cheesburn Grange Redwing roost.

In the half light I had continually to be on the watch not to mistake Redwings for Starlings. The size of the birds, the flight of the individuals, and particularly the movements of the flocks, resemble those of the Starling very closely. The shape of the tail was a very useful character, but the most helpful was the constant low call that often drew my attention to birds which I should otherwise have missed.

The day may be spent in flocks or singly, feeding in the fields or in the hedgerows, that is on earthworms and insects or on berries. These flocks are usually greater than those seen in the morning flights from the roost for several of these will collect together while they feed. During the afternoon these flocks may become even larger by the amalgamation of other flocks and individuals, but sooner or later, usually about 3 o'clock, the birds will begin to slip off to roost in twos or threes or larger parties. There is no concerted rising; the whole process takes place without any demonstration, so that it is with surprise that you find that all the birds have gone. On the way to roost these parties will halt frequently usually joining other Redwings on the fields or in the trees and from there they leave in the same surreptitious manner. Upon arrival at the roost the parties will immediately settle in the trees so that there is no display to advertize their presence, and once in the trees, although there is a good deal of chattering, they do not usually leave unless disturbed.

NOTES FROM RESERVOIRS AND SEWAGE FARMS.

BROOKLANDS SEWAGE FARM, SURREY, 1936.

IN 1936 for the first time I visited Brooklands sewage farm regularly in the spring, going twenty times between the beginning of May and mid-June. As a consequence there was found to be a well-defined spring passage, and among the more interesting birds observed were Temminck's Stint, Bar-tailed Godwit, Grey Plover and Black Tern. Mr. Howard Bentham informs me that Temminck's Stint has never before been recorded in Surrey.

In autumn also I paid the farm a greater number of visits than in former years, averaging once every two or three days from mid-July to mid-September. A good variety of species was seen, but the commoner waders, such as Dunlin and Ringed Plover, were present in very small numbers, as noted on previous occasions at this farm (see *antea*, Vol. XXVIII, pp. 342-3).

YELLOW WAGTAIL (*Motacilla f. rayi*).—Still one on September 29th.

SHELD-DUCK (*Tadorna tadorna*).—On May 7th at 6.50 p.m. seven came down on to the water, with their deep, bleating spring call. Immediately on settling they began posturing in courtship or antagonistic attitudes and showed themselves to be three pairs and an odd bird. One pair on May 14th and again on May 29th.

TEAL (*Anas c. crecca*).—A pair on several dates in May, and three drakes on May 28th.

WIGEON (*Anas penelope*).—Three on September 7th, an early date; one on the 14th and six on the 16th.

PINTAIL (*Anas a. acuta*).—A pair feeding busily on May 7th, and a drake on the 14th. (It is worth noting that on May 28th I saw a drake at Littleton reservoir, Middlesex, five miles away). On August 13th there were two in eclipse which appeared tired and hungry; this is unusually early for autumn migration.

SHOVELER (*Spatula clypeata*).—One or two pairs present throughout May. On June 11th a flock of 9 drakes came in and settled on the farm, but only stayed a few minutes.

RINGED PLOVER (*Charadrius h. hiaticula*).—Spring passage lasted throughout May and the first half of June. In autumn birds were not seen until August 20th and from then up to September 2nd.

GREY PLOVER (*Squatarola s. squatarola*).—One on May 26th and 27th in almost complete summer plumage. On the 27th there was a second bird which stayed until the 30th.

RUFF (*Philomachus pugnax*).—Two on March 28th, and three on April 22nd.

DUNLIN (*Calidris alpina*).—On both spring and autumn migration numbers never exceeded three.

CURLEW-SANDPIPER (*Calidris testacea*).—Three on September 14th and 16th.

LITTLE STINT (*Calidris minuta*).—One on August 24th and 26th; one on September 14th and 16th and three on the 18th (*antea*, p. 195).

TEMMINCK'S STINT (*Calidris temminckii*).—One on May 29th. It was first seen when flushed from a bank along which I was walking and it flew off calling "tirritt tirritt," a very different sound to the "chick" call of the Little Stints seen in September. I got within 25 yards of it, unfortunately in a hollow so that I could not see its legs, and when it flew it showed a straight white stripe down each side of the tail. It had a short, dark, straight bill. The underparts were white, breast and back grey-brown without any definite markings, giving the appearance of a diminutive Common Sandpiper, but a little more brown in colour. It was smaller than a Pied Wagtail which was near it. Within an hour I was examining skins in Mr. H. F. Witherby's collection which confirmed my opinion that the bird was a Temminck's Stint.

GREEN SANDPIPER (*Tringa ochropus*).—As in previous years this bird was seen only in autumn, with a maximum of four on August 11th and 14th.

REDSHANK (*Tringa t. totanus*).—Between 20 and 30 on most May visits. 53 were counted on June 14th, probably the assembling of locally reared broods. Very few after the end of July.

GREENSHANK (*Tringa nebularia*).—One on May 14th. One from August 4th to 11th and two on the 13th and 14th.

BAR-TAILED GODWIT (*Limosa l. lapponica*).—A red bird on May 4th.

BLACK-TAILED GODWIT (*Limosa l. limosa*).—Four on August 10th, one of which was still in full summer plumage. They were still present on the 11th, but only one on the 13th.

CURLEW (*Numenius a. arquata*).—One heard flying over on August 8th.

SNIPE (*Capella g. gallinago*).—An early autumn passage reaching its peak about the middle of August is noticed annually. In 1936 the largest number was about 35 on August 24th.

BLACK TERN (*Chlidonias n. niger*).—Two arrived about 7 p.m. on May 27th.

BLACK-HEADED GULL (*Larus r. ridibundus*).—Numbers were lowest in April, had reached 92 on June 5th and the maximum of about 400 on July 13th.

COMMON GULL (*Larus c. canus*).—Two immatures on May 27th and one the following day. Again two immatures on August 18th and three on the 28th.

LESSER BLACK-BACKED GULL (*Larus fuscus*).—Four immatures on May 18th, two on June 7th, and an adult on September 7th.

P. A. D. HOLLON.

ALTRINCHAM SEWAGE FARM, CHESHIRE, 1936.

The following notes have been compiled from the observations of Messrs. E. L. Arnold, R. Storey, G. G. Uttley, S. B. Wood and myself. Waders were plentiful as usual: Curlew-Sandpipers were rather more numerous than in the last few years, though never so many as were seen some years ago: Spotted Redshanks may now be regarded as annual visitors in small numbers. A Garganey was a new visitor to the farm. Except where initials are given, several observers joined in the observations recorded.

WHITE WAGTAIL (*Motacilla a. alba*).—One April 22nd and 24th (S. B. W.). A pair on May 1st (E. L. A.).

SHELD-DUCK (*Tadorna tadorna*).—Two on September 8th (S. B. W.).

TEAL (*Anas c. crecca*).—Sixty on March 2nd (A. W. B.).

GARGANEY (*Anas querquedula*).—A drake on May 12th (S. B. W.).

RINGED PLOVER (*Charadrius hiaticula*).—In every month from April to November; 21 on May 13th the largest number seen.

GOLDEN PLOVER (*Charadrius apricarius*).—Visits the "mud-flats" in the farm only rarely, as on April 18th, September 3rd, October 8th and December 27th—up to twenty in number. It is clear that the feeding habits of this species must differ greatly from those of most wading birds, for a large flock may be seen on meadow land just outside the farm (300 on September 5th) and yet few come for food to the mud. Lapwings, however, frequent the farm in great numbers.

TURNSTONE (*Arenaria i. interpres*).—One on May 9th (S. B. W.); seven on August 26th (A. W. B.).

RUFF (*Philomachus pugnax*).—First seen on March 15th; on three days in April, one and two; one on July 19th; two, August 26th; throughout September varying in number from one to nine; one on October 4th.

KNOT (*Calidris c. canutus*).—One on August 21st (I. W.) and October 11th (G. G. U.).

DUNLIN (*Calidris alpina*).—Throughout the year from February to December. As usual most plentiful in July and August. Sixty on July 19th and fifty in mid-August. Between twenty and thirty on various days in December.

CURLEW SANDPIPER (*Calidris testacea*).—First seen on August 12th—two, one of which was in summer plumage; one on August 21st; from September 5th to 29th from one to nine or more; two on October 11th.

LITTLE STINT (*Calidris minuta*).—First seen (two) on September 24th; two September 26th and 27th; three September 29th; four October 4th; one October 8th; one on November 29th and December 1st.

COMMON SANDPIPER (*Tringa hypoleucos*).—As in other years most numerous in July—about ten on July 19th; it is evident that there is a regular movement in the second half of July. First seen April 9th; last September 27th.

GREEN SANDPIPER (*Tringa ochropus*).—Seen only one at a time: on March 15th, July 2nd; three times in August; four times in September; on October 23rd and November 8th.

REDSHANK (*Tringa t. totanus*).—Throughout the year usually in scores; greatest numbers late in August and in September when about 100 were present. On October 5th one was found dead which had been ringed on July 13th, 1936, by Mr. R. E. Knowles at Langley, near Macclesfield, Cheshire, in the hilly country sixteen miles to the south-east.

SPOTTED REDSHANK (*Tringa erythropus*).—One on January 7th and 11th, February 17th, April 16th, August 7th and from September 5th to September 27th; on September 9th three were present.

GREENSHANK (*Tringa nebularia*).—One on August 12th, and one on three days between September 16th and 26th.

BLACK-TAILED GODWIT (*Limosa l. limosa*). Seen only in April; first seen on April 2nd; on April 8th and April 16th to 19th.

CURLEW (*Numenius a. arquata*).—Like the Golden Plover the Curlew rarely comes down to the settling-tanks in the farm and usually flies over without joining the other waders. August 26th nine circled over the farm for some time and dropped headlong for a considerable distance but did not settle (A. W. B.).

SNIFE (*Capella g. gallinago*).—Most abundant in August and September.

BLACK TERN (*Chlidonias n. niger*).—One from September 3rd to September 9th.

COMMON TERN (*Sterna h. hirundo*).—On July 19th one (A. W. B.); on September 16th three which were of this species or *S. macrura* (S. B. W.). A. W. Boyd.

STAFFORDSHIRE RESERVOIRS, 1936.

The water level of Bellfields reservoir which fell so low in 1934 and 1935, reached its normal height early in 1936, but the number of duck was never so great as it was some years ago. The following notes refer to this reservoir, except when Gailey Pool is actually mentioned.

Mr. H. G. Alexander visited the reservoir on a number of occasions and has most kindly sent me his notes. My own visits during the year were fewer than usual.

HOBBY (*Falco s. subbuteo*).—A male was seen on August 18th by Mr. H. G. Alexander in company with Messrs. F. R. Barlow and J. D. Wood. It is recorded that a pair nested not far away some seventy years ago.

GREY LAG-GOOSE (*Anser anser*).—On May 2nd two were feeding on a grassy point jutting out into the reservoir and flew out on to the water as I drew near; they swam about together and were still there when I left the reservoir. This goose is little known in Staffs.

SHELD-DUCK (*Tadorna tadorna*).—On April 18th one at Gailey (H. G. A.).

MALLARD (*Anas p. platyrhynchos*).—Fewer than usual; an increase in September and October. TEAL (*A. c. crecca*).—Showed an increase in mid-August and again at the end of October. WIGEON (*A. penelope*).—Though in smaller numbers than usual (two to three hundred in March and November), stayed rather later than usual in spring—eighty to ninety on April 11th; about eighteen on April 18th and six on May 2nd. SHOVELER (*Spatula clypeata*).—Rather fewer than in most years; about thirty March 22nd and October 30th, the maximum number seen. Nest with nine eggs on May 2nd.

POCHARD (*Nyroca f. ferina*).—Almost always seen on both reservoirs but fewer than usual; 116 at Gailey on March 1st, the greatest number seen.

TUFTED DUCK (*Nyroca fuligula*).—Fewer than usual; bred as in other years.

GOLDENEYE (*Bucephala c. clangula*).—Far fewer than usual. None seen between April 18th (three at Gailey) and October 30th (six at Bellfields).

LONG-TAILED DUCK (*Clangula hyemalis*).—Two immature birds were seen on December 26th by Messrs. H. G. Alexander and W. E. Kenrick; there are only two or three well-authenticated records of this duck in Staffordshire and none since 1907.

GOOSANDER (*Mergus m. merganser*).—On February 3rd about fifteen and four at Gailey (H. G. A.); on March 1st, eleven to fourteen and one at Gailey (A. W. B.); on December 26th, one at Gailey (H. G. A.).

CORMORANT (*Phalacrocorax c. carbo*).—Single birds seen August 18th, September 14th, November 20th, December 26th at Gailey and Bellfields (A. W. B. and H. G. A.).

BLACK-NECKED GREBE (*Podiceps n. nigricollis*).—On July 2nd one (H. G. A.), and one on September 14th.

RINGED PLOVER (*Charadrius hiaticula*).—One on June 1st.

LAPWING (*Vanellus vanellus*).—As usual very large numbers in autumn. Thousands at the end of October and the end of December (H. G. A.).

DUNLIN (*Calidris alpina*).—Two on March 22nd (H. G. A.); far fewer than usual.

GREEN SANDPIPER (*Tringa ochropus*).—One on July 2nd (H. G. A.).

BAR-TAILED GODWIT (*Limosa l. lapponica*).—On May 2nd one flew down to the water's edge from the N.W. and settled on the weedy bank. The only other record for Staffordshire during this century was of two at West Bromwich in 1930 (*antea*, Vol. XXIV., p. 280).

JACK-SNIPE (*Lymnocyptes minimus*).—On October 30th seven and perhaps nine on November 20th (H. G. A.).

BLACK-HEADED GULL (*Larus r. ridibundus*).—About 100 on February 3rd and usually up to about fifty except in the months May to August. One on June 1st (H. S. A. and A. W. B.).

COMMON GULL (*Larus c. canus*).—One or two February 9th and one December 26th (H. G. A.).

HERRING-GULL (*Larus a. argentatus*).—H. G. A. saw about twenty on February 9th; two on March 1st.

LESSER BLACK-BACKED GULL (*Larus fuscus*).—On March 22nd and October 30th (H. G. A.).

COOT (*Fulica a. atra*).—Numbers vary to a remarkable degree. On August 18th H. G. A. found over 300 present; and on September 14th I reckoned that there were well over 1,000 at one end of the reservoir.

A. W. BOYD.

NOTES

BRITISH TRUST FOR ORNITHOLOGY LAPWING HABITAT INQUIRY.

THE habitat of the Lapwing (*Vanellus vanellus*) is the subject of the main new inquiry for 1937 organized by the British Trust for Ornithology.

This is not a census, but an endeavour to discover exactly what types of ground are preferred by Lapwings at different seasons in different parts of the British Isles. At first glance the schedule issued by the Trust appears complicated as a great many types of habitat are set out, but it will soon be realized that those which concern any observer in one area are comparatively few and the irrelevant ones can be struck out. Indeed the form provides an easy way for the facts ascertained to be entered. The observations cover four periods beginning on March 20th. For some, with the necessary skill and opportunity, it may be possible to make observations on a transect of some length, the results of which might be interesting when correlated with the facts gathered by the main inquiry, which is based on exact local information.

The careful definitions of possible habitats are an "education" and, apart from the valuable results which it is to be hoped this inquiry will give, those taking part in it will become practised in defining habitats with the exactness necessary before we can get an idea of the reason for many points connected with special habitats.

Forms for the inquiry can be obtained on application to Mr. W. B. Alexander at the University Museum, Oxford.

REDWINGS SINGING IN NOVEMBER.

I AM glad to see Mrs. Rait Kerr's note on this subject (*antea*, p. 320). In the "Chart of Bird Songs" published in *British Birds*, Vol. XXIX, p. 190 (Dec. 1935) I gave the Redwing's song as occasional from late October to early December, and rather more frequent after Christmas. I also explained that this referred, not to the choral warbling in the tree-tops, which one frequently hears, but to the short, rich bar of song which is more rarely heard. From Mrs. Rait Kerr's description, it seems clear that this was what she heard. Going through my records for the past few years I find that in 1929 I heard this louder song in November, in 1930 in November, in 1931 not at all in the autumn, in 1932 in

November and December, in 1933 not before the end of the year, in 1934 in November and December, in 1935 in December, in 1936 not at all in the autumn.

Doubtless the chief reason why I hear this song so much more frequently than some other observers is that a flock of Redwings spends nearly every winter on meadows that I pass three or four times almost daily. But I have not infrequently heard it in spring in other parts of the country too.

H. G. ALEXANDER.

REFERRING to the note on "Redwings singing in November," I have numerous records of their doing so in October and November.

The first Redwing flocks frequent derelict land overgrown with berried thorn trees, in the Evesham district, and warbling is of frequent occurrence whenever the early morning or late afternoon is sunny and calm. The dates below are those on which I noted that warbling was "particularly loud," and distinctly audible between 100-300 yards distant. 1929, Nov. 3rd.; 1930, Nov. 16th.; 1931, Nov. 8th.; 1932, Oct. 26th.; 1933, Oct. 22nd.; 1934, Oct. 28th.; 1935, Nov. 18th.; 1936, Nov. 20th.

On the dates mentioned for 1932, 1934, 1935, I noted also that "several pairs of birds were chasing each other as Mistle-Thrushes do in late August and September, just before the mid-summer flock breaks up." A. J. HARTMAN.

ROBIN SINGING AT NIGHT.

AT 3.30 a.m. on February 6th, 1937, I heard the song of a Robin (*Erithacus r. melophilus*) which continued at frequent intervals from that hour until 4.15 a.m. On the next day at 3 a.m. I again heard the song continuing up to 3.30 a.m. At that time I fell asleep but on February 6th the song did not continue beyond 4.15. The bird sang again at 8 a.m. and onwards in the garden here (St. John's Wood). In both instances the night was dark with starlight and no moon.

H. RAIT KERR.

CALL NOTES OF THE WOOD-SANDPIPER.

DURING the last few years I have had a fair number of Wood-Sandpipers (*Tringa glareola*) under observation in East Kent. Last year, 1936, drainage operations resulted in the exposure of several acres of mud flats, on certain fresh marshes, close to the coast; these muds proved attractive to the Wood-Sandpiper and I saw birds in quite exceptional numbers, throughout the months of June and July; curiously enough—

although conditions remained apparently equally attractive. I saw no Wood-Sandpipers at a later date than August 13th.

Generally speaking the Wood-Sandpiper is a far less wary bird than the Green Sandpiper, also its various call notes are less shrill and more tremulous, than those of the latter bird. Occasionally I have walked to within a few yards of small flocks of Wood-Sandpipers feeding on the muds.

When flushed the Wood-Sandpiper usually rises to a fair height, often silently, but sometimes with a call of "tish-it" or a slightly guttural "giff-giff." When flying in a desultory manner round the marshes the note is a melodious "tishy," if in more purposeful flight "tish-eeee," these calls may be repeated at intervals or emphasized by a quickly uttered triple call "tish-eee, tish-eee, tish-eee." On the ground—presumably the feeding call—the note is a comparatively slowly uttered "tish-wee" or "tish-wee-wee, wee." Although I have known small flocks to use these notes when skimming over the muds, or flying around companions on the feeding grounds.

The Wood-Sandpiper also has a migration call, a series of discordant high pitched notes, which I find impossible to put into syllables. The effect of this call is almost magical. All the Wood-Sandpipers in the area quickly get on the wing, and rising in quite an amazing manner disappear into the blue—at a speed which must be seen to be believed. T. C. GREGORY.

LITTLE GULL IN OXFORDSHIRE.

AN adult Little Gull (*Larus minutus*) in fresh condition was found dead in a sheep-trough by a shepherd at Taston, near Charlbury, Oxfordshire, on February 1st, 1937. Identification was confirmed by Mr. B. W. Tucker at the University Museum, Oxford.

W. D. CAMPBELL.

ICELAND GULL IN HAMPSHIRE AND SPOTTED REDSHANK WINTERING.

ON a marsh in southern Hampshire I watched an Iceland Gull (*Larus leucopterus*) for several hours on January 31st, 1937. The light was bad, and at a distance the bird looked pure white, but at close quarters light brown markings were apparent on the mantle. The wings, which in flight were long and very pointed, extended well beyond the tail when at rest. On several occasions I watched the Bristol specimen in 1933-34, and so was well acquainted with the bird, which is the fourth to be recorded for Hampshire.

On this same marsh a Spotted Redshank (*Tringa erythropus*) has spent the winter, where other observers besides myself,

including Messrs. K. B. Rooke and H. H. Davis, have often watched it. K. D. SMITH.

[I have recently received a record of an almost white Iceland Gull (possibly the same bird) seen on February 14th in S. Hampshire but about 15 miles to the east. F. C. R. J.]

IVORY-GULL IN CAMBRIDGESHIRE.

ON February 27th, 1937, I observed at the Cambridge Sewage Farm a bird that was undoubtedly an adult Ivory-Gull (*Pagophila eburnea*). It was quite tame and I was able to watch it through field glasses from about twenty yards distance. It was on a dry pan and was feeding busily when I saw it. The field characteristics from which I identified the bird were as follows: Plumage: pure white all over including mantle, and no black tips to primaries; Legs: black and short in proportion. Bill: blackish-greenish grey at the base and with a dull orange tip. Irides: very dark bron.

It was difficult to judge the exact size, as the bird was solitary, but it was much larger than the Black-headed Gulls which were there. The body was very long in comparison with its depth and the carriage was curiously distinct. Unfortunately the bird had gone by the next morning and so the identification was not checked by other observers.

A. G. STANSFELD.

EARLY SNOW-BUNTING IN NORFOLK.—Miss J. M. Ferrier informs us that she saw a Snow-Bunting (*Plectrophenax invalis*) on Scolt Head Island, on September 8th, 1936—an early date.

CONTINENTAL SONG-THRUSHES IN LANARKSHIRE AND RENFREWSHIRE.—Mr. P. A. Clancey informs us that he has identified as a specimen of the Continental Song-Thrush (*Turdus e. philomelus*) a bird obtained near Carmunnock, Lanarkshire, on January 30th, 1937. The bird was in company with several Thrushes of similar appearance. Mr. Clancey also states that he has identified two Thrushes of this race procured in east Renfrewshire on January 14th and 15th, 1937 (*cf. antea*, p. 293).

BEWICK'S SWANS IN ESSEX.—Messrs. R. L. Collett and E. C. Watt write that as there are few records of Bewick's Swan (*Cygnus bewickii*) in Essex they desire to note that they observed three adults on the Blackwater Estuary on February 21st, 1937, and again (when in company with Dr. J. S. Carter) on the 28th.

GREBES AND DIVERS INLAND.—We have received a number of notes on this subject, but as it appears advisable to obtain as complete a record as possible before publication we have decided to postpone this until the next number. We shall be glad if readers would send in all observations not later than April 12th. The essential details to be given are:—locality, species, number of each and dates of first and last appearance. It should be made clear whether dates refer to the first or last dates the birds were actually present or whether observations were not made on previous or subsequent dates. We shall be glad of further notes on this point from those who have already sent in records.

Any species other than Grebes and Divers rare on inland waters, such as Shag and Red-breasted Merganser, should also be notified.—H.F.W.

REVIEW.

Birds of Glamorgan. By G. C. S. Ingram and H. M. Salmon. (Reprinted from Glamorgan County History, Vol. 1).

THIS account of the birds of the county consists mainly of introductory sections referring to past and present conditions, classification of species, migration, permanent residents, summer residents, passage migrants, regular winter visitors, occasional winter visitors, occasional visitors, vagrants, bibliography and finally in very small type, a list of the birds, to each of which are attached a number of symbols to indicate its status. The authors cannot be held responsible for this very impractical arrangement since it is the plan of the main work of which theirs is only a part.

Had there been a short account of each species at the expense of half the introductory sections, the result would have been far more useful. Comparing this list with that published by the Cardiff Naturalists' Society in 1925, we notice only four additions, viz., the Fulmar, Sandwich Tern, Scandinavian Lesser Black-backed Gull and Pale-breasted Brent Goose, while the Greenland Wheatear, Montagu's Harrier and Barnacle-Goose previously included, but within square brackets as doubtful, now have the brackets removed.

The more interesting breeding species are very local and a good many are diminishing owing to the effects of industrialism and in some parts by reason of disturbance of haunts now easily approached by car, but the county nevertheless still possesses a very interesting avifauna.

It need hardly be said that the well-known authors of this account have done their work with great care and thoroughness.

LETTERS.

INFLUENCE OF WEATHER ON DISPERSAL OF SWIFTS AND SWALLOWS AFTER NESTING.

To the Editors of BRITISH BIRDS.

SIRS,—The ringing results showing dispersal in various directions of young Swallows (*Hirundo r. rustica*) after leaving the nest (*antea*, pp. 278-287) do not indicate the weather conditions prevailing. Having

made intensive field observations on the movements of Swifts (*Apus a. apus*) and Swallows after nesting, and having learnt to distinguish with some confidence between movements which are migratory in character and those which are made by birds residing locally, I think that weather conditions have an important bearing upon the direction of the post-breeding dispersal of these species.

In 1935 the weather at the end of July was fine and great numbers of Swifts were noted in Devon. On July 25th, 1935 at 6.30 p.m., I witnessed the arrival of several small parties of Swifts which came in from the sea and proceeded inland in a northward direction near Start Point just as they do in early May. Other northward movements were reported in South Devon in 1935 around the end of July though on July 19th I saw a large southward migration down the Exe.

In 1936 a sharp watch was kept by many observers in Devon in anticipation of a repetition of the northward trend but the weather was unsettled and a succession of depressions produced storms of the south-westerly type with the result that fewer Swifts were seen and the migrations noted were largely southerly in direction. The first July record of a northward direction being taken was on the 28th when a change had taken place from cyclonic to anti-cyclonic conditions. A few similar directions were recorded in August when the improved weather continued.

In the case of Swallows I saw a small party fly direct north on July 13th, 1935—a very fine day. This was at Plymouth (2 miles inland) and as at least two of them were seen to be young birds it is probable they were a family party. In 1936 the weather was wet and stormy and as in the case of Swifts no corresponding movement was seen until July 28th when three small parties of about half-a-dozen each passed northward at Plymouth with typical purposive migratory flight. July 28th was a glorious day following a very unsettled period.

Attention should be drawn to the fact that the above movements tend to be made more or less against the wind which in Devon is commonly from the northern half of the compass when fine weather prevails and from the southern half when the weather is bad. It may be that these post-breeding wanderings are more influenced by wind direction than the longer journeys when a definite objective has to be reached whatever winds may blow. However, it is not known definitely whether wind is a more important influence than temperature, sunshine, etc., so it would be unwise to rely too much upon wind direction alone for explanation of the observed facts. What can definitely be stated is that when northward post-nesting movements have been seen the weather has been fine.

It has been shown too that one year may differ widely from another in the time and extent of these movements and it remains to be seen if similar weather conditions produce the same variations in future.

H. G. HURRELL.

REFLECTED COLOUR OF NIGHTJAR'S EYES.

To the Editors of BRITISH BIRDS.

SIRS,—In a note under this heading (*antea*, p. 322) Mr. Geo. Marples states "I saw the tiny points of *green* light"—this is interesting, as according to my observation in Ceylon, where it was very common to see many Nightjars (*Caprimulgus asiaticus*) in sandy roads, when driving by car at night, the eyes appeared "*pink*," somewhat the colour reflected by rabbits' eyes at night.

GEORGE BROWN.

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CONTENTS OF NUMBER 12, VOL. XXX., MAY 1, 1937.

	PAGE
On the Distribution and Status of the British Willow-Tit. By H. F. Witherby and E. M. Nicholson	358
Birds of Inner London. By A. Holte Macpherson	365
Obituary: The Duchess of Bedford	369
 Notes:—	
The January-February Influx of Grebes and Divers ...	370
Invasion of Starlings on the Norfolk Coast (Miss Judith M. Ferrier)	374
Birds taking Rubber Rings (G. C. S. Ingram and H. M. Salmon)	374
Continental Golden-crested Wren in Renfrewshire (P. A. Clancey)	376
Behaviour of Male Robin in Trap (H. N. Southern)	376
Great Spotted Woodpecker Nesting in Telegraph Pole (J. S. Elliott)	377
Bewick's Swans and Bean-Goose in Oxfordshire (H. F. I. Elliott, A. Rampton and M. F. M. Meiklejohn)	377
Gadwall in Cheshire (A. W. Boyd)	377
American Green-winged Teal in Westmorland (H. W. Robinson)	378
Avocet in Essex in Winter (C. W. G. Paulson)	378
 Short Notes:—	
Early Nesting of Stone-Curlew. Great and Sooty Shearwaters off the Hebrides. The "Roding" of the Woodcock ...	378
 Letters:—	
Reflected Colour of Nightjar's Eyes (Humphrey Neame) ...	379
Some Field-Notes on the Chickadee (L. S. V. Venables) ...	379
 Review:—	
<i>Inventaire des Oiseaux de France</i>	380



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

BY

H. F. WITHERBY and E. M. NICHOLSON.

It seems very desirable that we should endeavour to gain a better idea of the distribution and status of the British Willow-Tit (*Parus atricapillus kleinschmidti*) than is now obtainable from published information. With this object in view we have put together the following account, which is based not only on published records, but also on observations supplied on request by friends, who have made a point of becoming acquainted with the Willow-Tit, and have noted its presence wherever they have found it.

It must, however, be borne in mind that previous to the discovery of the species in this country in 1900 and indeed for a good many years afterwards all accounts of black-capped Tits were treated as having reference to the Marsh-Tit so that old records are of no value and the bird is even now still too little known generally to make it possible to give anything like a complete or satisfying picture of its status. There remain many parts of the country where knowledge of its distribution rests on the slightest evidence, such as a single observation of a bird or two or a nest or even a skin in some collection, while for many parts there is no information at all. We have, however, had in view the value of showing the gaps in our knowledge in the hope that when these become known they will be filled. Accurate information about relative numbers of Marsh- and Willow-Tits in different areas and at different seasons is also very much needed.

The Willow-Tit appears strongly to prefer for nesting purposes small dead trees (such as birch, willow and alder) growing in swampy places, though it will also make use of dead boughs of larger trees. The bird's preference for such a specialized site may perhaps limit its distribution and numbers in the breeding season compared with the Marsh-Tit which is so much more catholic in its requirements.

Uncertain major points are the Willow-Tit's limits northward in Devon and westward to Cornwall, its status in Bedfordshire, Northamptonshire, Huntingdon and Rutland, and in Yorkshire. In Northumberland and the Tweed area it is still entirely uncertain how far north the Marsh-Tit extends and exactly what is the status of the Willow-Tit in that region. In the Moray area, although there are a number of old records the present status of the Willow-Tit seems uncertain.

Counties urgently needing examination are: Cornwall, Dorset, Hereford, Shropshire, Bedford, Norfolk, Suffolk, Huntingdon, Northampton, Lincoln, Durham, Westmorland, all Welsh counties, all Scottish counties south of the Firths of Forth and Clyde except Lanark, Ayr, Renfrew and West Lothian, and also Aberdeen, Moray, Inverness and Ross and Cromarty.

In preparing the following sketch of the Willow-Tit's distribution we have not given references to the sources of information as we have not dealt with this in detail, but we wish here to acknowledge our indebtedness to all published sources as well as to the following who have supplied us with observations from their note books:—

H. G. Alexander, W. B. Alexander, G. L. Charteris, F. Fincher, A. Hazelwood, F. C. R. Jourdain, H. W. Madoc, D. W. Musselwhite, L. Parmenter, B. W. Tucker, L. S. V. Venables, J. Walpole-Bond, R. Ware.

ENGLAND.

SOUTH-EASTERN. The Willow-Tit is locally fairly frequent, especially in and around the Weald of *Kent*, *Surrey* and *Sussex*, between the North and South Downs. In *Kent* there is a scarcity of records along and north and east of the North Downs (except in the Stour Valley above Canterbury) and records are wanting for Romney Marsh and the adjoining parts of the county. From Cranbrook westwards it appears to become appreciably more frequent, and in the Tunbridge Wells district on both sides of the Sussex border various observers have estimated the numbers at one-tenth to one-third of those of the Marsh-Tit. There are at least eleven specimens in the British Museum and Tring collections from Hastings and St. Leonards, including a nest with parents.

Westwards there are fairly numerous records through the *Sussex* weald and the wealden or greensand areas of south *Surrey* and east *Hampshire*, especially in the Farnham—Haslemere—Midhurst—Selborne district, where the Willow-Tit is believed to approach or even equal the Marsh-Tit in numbers in suitable habitats. Along the chalk North Downs records are fairly numerous at all seasons for the area immediately south of Croydon, and also for the Epsom—Dorking district, but between the Downs and the Thames the species has been noted as breeding only at one or two points. Along the South Downs there are fairly numerous late summer, autumn and winter records, but few for breeding, and there is some evidence of fairly extensive passage movements.

Along the coastal plain from Brighton to Southampton the species appears to be rare. It has been seen in Bournemouth and infrequently in the New Forest. From here up to the extreme north of *Hampshire* Willow-Tits have not hitherto been recorded, but they have been found in approximately equal numbers with Marsh-Tits in autumn on the chalk hills near Highclere and along the ridge westward into *Berkshire* and *Wiltshire*.

The species has been noted at widely separated points in *Berkshire* and it appears to be thinly distributed in the breeding season and at other periods.

SOUTH-WESTERN.—In this region the Willow-Tit appears to be very much scarcer, but its range has so far been very inadequately studied. Several of the *Wiltshire* records are from the Berks.—Hants. border, where there is reason to suspect autumn and winter immigration. There are a few other records from the south of the county—for instance in Great Ridge Wood where it breeds.

The only two breeding season records for *Somerset* are close to the borders of *Wiltshire* (Penselwood) and *Gloucestershire* (near Bristol). There is also one autumn record from the Quantocks. Observers who know the species well believe that it must be local and uncommon in *Somerset*.

In *Dorset* very little observation appears to have been done, and two pairs watched boring holes at Canford in 1915 and a pair feeding young near Studland in 1935 are the only certain records.

Devon occurrences fall into two compact groups, the first along the south coast from Seaton to the Exe, and the second around Dartmoor. It seems probable that the Marsh-Tit is by far the commoner, if not the only, black-capped Tit along the coastal strip south of Dartmoor. Information is entirely wanting from the north of the county. For *Cornwall*, where black-capped Tits of whichever species are infrequent, we know of only a single Willow-Tit observed in March at Bude.

EASTERN.—Throughout the counties between the Thames and the Humber the distribution and numbers of the Willow-Tit remain obscure owing to lack of observation.

In *Essex* there are a few breeding records from the central (Braintree—Dunmow—Chelmsford) area, where it is said to be thinly, but regularly, distributed. It has been observed in Epping Forest, but not found breeding.

In *Suffolk* there are even fewer records, although an authentic nest was found in the west of the county as long

ago as in 1891. The bird is described as local and not common anywhere, and is known to breed in the Waveney valley.

In *Norfolk* the limited available records fall into three groups—the Broads area in the south-east, the north-east coast near Holt, and the west of the county between Castle Rising, Thetford and Attleborough. There are breeding-season records for each of these areas, which would, no doubt, be extended by further observation.

In *Cambridgeshire* the only breeding records are from Madingley and Histon, but the species has been seen in the Backs of Cambridge itself. It is apparently scarce and local.

The sole *Huntingdon* record is one from Somersham in an old collection. There is one record of a nest in *Lincolnshire*, between Lincoln and Grantham. Several birds have occurred in winter near the mouth of the Humber and there is a December note for Crowland Wash.

SOUTH CENTRAL.—The type specimen of *P. atricapillus kleinschmidti* is a *Middlesex* bird from Finchley and other specimens have been obtained here and at Hampstead. There are at least three known breeding places in the north and west of the county, but the numbers of birds appear to be quite small.

In *Hertfordshire* no systematic observations are available but the species has been found nesting near Tring on the Buckinghamshire border, and has also been noted near Harpenden, St. Albans, Chipperfield and Hoddesdon.

For *Bedfordshire* there are no records, owing probably to lack of observers, and the solitary *Northamptonshire* occurrence is a specimen from near Peterborough.

Buckinghamshire and *Oxfordshire* have been much more adequately examined for Willow-Tits, and the species appears to be widely, but thinly, distributed through both counties especially in the east from Bletchley and Weston Turville, through Beaconsfield to Burnham Beeches, and over the southern Chilterns, and from the Thame—Otmoor—Shotover area north-west to the fringe of the Cotswolds, where there are numerous records in the Witney—Charlbury—Banbury district.

In *Gloucestershire* observation has been very slight. There is one record between Bristol and Aust, one in the central Cotswolds near Rendcomb, and one regular locality north of the Cotswolds. All these are breeding season records. There is also a July note of two pairs near Tewkesbury.

Records for *Warwickshire* suggest that the species is scarce and local, and most are from places near the Worcestershire

border. The few *Worcestershire* records also are close to the Warwickshire border with the exception of spring and summer occurrences at Suckley, north of the Malverns. *Herefordshire* information is even scarcer, two of the definite localities being close to Suckley, while the third is near Hereford.

NORTH CENTRAL.—Information from *Shropshire* is extremely inadequate, but the Willow-Tit has occurred in the north and probably also in Wyre Forest. In *Cheshire* there are breeding records from the north-east (Altrincham district) and Wirral, but there is reason to believe that the species is very sparingly distributed. There are more records for *Staffordshire*, from widely separated parts of the county, notably along the Derbyshire border near Burton-on-Trent and Ashbourne. *Derbyshire* records are all close to the Staffordshire boundary along the Dove and Trent, where the species is apparently fairly frequent. The only *Nottinghamshire* records are September birds near Welbeck and Southwell, but the county is practically unexplored for Willow-Tits. The same applies to *Rutland* (no records), and probably also to *Leicestershire*, except for a small area between Melton Mowbray and Syston, where there are some breeding records.

NORTHERN.—There are only two small areas of *Yorkshire* in which the distribution of the Willow-Tit has been ascertained, and in both of these it is nearly as frequent as the Marsh-Tit, if indeed it is not more so. The first of these is the Doncaster and Thorne district in the south of the county, and the second is the area immediately west and north of Scarborough, on the edge of the Yorkshire moors. The sole other record we know of, is of one taken among Marsh-Tits at Bolton Abbey in January, 1908.

Information from *Durham* is even scantier, consisting of a single breeding record near Gateshead in 1934 and a winter pair at another place.

For *Northumberland* there is only a fifty-year old record of a bird shot close to the border near Berwick-on-Tweed. (The Marsh-Tit undoubtedly ranges north at least as far as the Alnwick district; how much farther, if at all, is not known.)

The only *Lancashire* records are from the extreme south (Manchester and Warrington) and so far as is known the Marsh-Tit is the only form in Furness and the Lake district. A pair near Shap in March form the only *Westmorland* records we have elicited.

No Willow-Tit has been recorded in south *Cumberland*, although from Maryport to Carlisle the species is apparently

not uncommon, and is said recently to have increased and extended its range (the Marsh-Tit has nested recently near Carlisle, but is much scarcer in this area than the Willow-Tit).

WALES.

The status of the Willow-Tit in Wales requires much more thorough investigation. As yet there are no records for Monmouth, Glamorgan, Montgomery or Flint. For Anglesey there is no direct evidence, but it is said to occur. There are a few statements about breeding in the counties of Pembroke, Carmarthen, Cardigan, Brecon, Radnor, Merioneth and Denbigh, and a single bare reference for Carnarvon. The Marsh-Tit is fairly common in south Wales, especially in the eastern half, and apparently also in north Wales except in Anglesey.

SCOTLAND.

In Scotland there is no absolutely certain record of the Marsh-Tit. The Willow-Tit is apparently local and thinly distributed. It has rarely, if ever, been found breeding appreciably above 750 feet, and is confined to areas where there are suitable trees.

Available records suggest that it is commonest in *Lanarkshire* along the Clyde, and particularly its tributaries, from the Falls to near Glasgow. W. Stewart, who made a special study of the species in this area, estimated that on one of these tributaries alone there would be some twenty breeding pairs. It is possible that *Ayrshire* (where it is local but known to be widely distributed from W. Kilbride and Darvel in the north to Girvan and New Cumnock) may prove on fuller investigation also to have an appreciable breeding stock. It is rare in *Renfrewshire*, but breeding has been recorded there. There are only a few records (none recent) from *Dumbartonshire*, and only apparently accidental winter occurrences in *Argyllshire*. It does not occur in *Bute* or *Arran*.

In the south-western counties along the Solway, Willow-Tits undoubtedly occur, but records are very sparse, especially for *Wigtown* and *Kirkcubright*, while in *Dumfriesshire* Gladstone describes it as scarce and local, although it has repeatedly been recorded about Thornhill and also near Moffat and elsewhere.

Records from the south-eastern counties—*Roxburgh*, *Peebles*, *Selkirk*, *Berwick* and *East Lothian*—are vague and the status of the Marsh-Tit (if present) in this area is obscure. They suggest that the breeding stock may be fairly substantial, but more definite information is needed.

In the Forth area the Willow-Tit is a local resident (Rintoul and Baxter). It is apparently scarce in *Midlothian*, but in *West Lothian* is described as much more plentiful—there are “a good many reports of nesting.” At this point and in *Stirlingshire*, where it is also “found in a good many places,” the range links up with the Lanarkshire area already described. The breeding range extends into *Perthshire* (south of a line from Killin to Pitlochry) and south *Fife* (Aberdour—Burntisland).

The species is absent from the Shetlands, Orkneys, Outer Hebrides, Sutherland and Caithness, there is a single summer record from east *Ross* (1919), and a small breeding stock has been reported in *Moray* and *Inverness* (Speyside) although recent records are wanting for this area. There are a few *Aberdeenshire* occurrences, but no proof of breeding. It has, however, nested in north *Angus*. Records are wanting for the counties of Nairn, Banff, Kincardine, and Clackmannan. There is one record for *Kinross*.

BIRDS OF INNER LONDON.

BY
A. HOLTE MACPHERSON.

ADDITIONAL SPECIES.

DURING 1936 two species occurred which make additions to the list published in this magazine in 1929 (Vol. XXII, pp. 222-244) and subsequently extended.*

The Merlin (*Falco c. aesalon*) seen on August 24th, 1936, by Mrs. E. MacAlister in Kensington Gardens has already been recorded (*antea*, p. 174).

Miss Mary Rew, a very careful observer, informs me that on January 17th she saw a Little Gull (*Larus minutus*) in Regent's Park. It was an immature bird and was swimming among a number of Black-headed Gulls, so that Miss Rew had good opportunities for comparison.

[This bird is an addition to this list since it has not been recorded from Inner London during the present century. The last recorded occurrence was on February 15th, 1895, over the Thames at Charing Cross during the great frost when the river was blocked with ice (J. E. Harting, *Zoologist*, 1895, p. 110). It is an interesting fact that this species was introduced to the British list through a specimen obtained near Chelsea].

ADDITIONAL NOTES IN 1936.

A young Jackdaw (*Colæus m. spermologus*), being fed by its parent, was seen on June 16th in Kensington Gardens by Miss M. van Oostveen. This was the first young bird reported from this small colony for some years.

The visit of a party of Bramblings (*Fringilla montifringilla*) to Primrose Hill in March has been recorded by Mr. D. Seth-Smith (*B.B.*, Vol. XXIX, p. 357).

Mr. C. W. Baxter observed a Grey Wagtail (*Motacilla c. cinerea*) on several occasions by the Serpentine in October; on the 20th of this month one was seen in the Zoological Gardens (Mr. D. Seth-Smith); and another by Mr. E. M. Nicholson in the neighbourhood of Marsham Street, Westminster, at intervals from October 24th to November 2nd.

A Tree-Creeper (*Certhia f. britannica*) was noticed in Kensington Gardens by Miss M. van Oostveen on September 11th and 16th, and again on November 11th. On the first two occasions it was singing.

A pair of Marsh-Tits (*Parus p. dresseri*) was seen by Dr. G. Carmichael Low on February 10th in Kensington Gardens.

*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.

Sir Cyril Hurcomb observed a Goldcrest (*Regulus r. anglorum?*) on January 5th by the Flower Walk.

A Wood-Warbler (*Phylloscopus s. sibilatrix*) was singing in the Dell, Hyde Park, on May 5th (Mr. E. G. Pedler).

On January 17th, a party of from 40 to 50 Fieldfares (*Turdus pilaris*) was seen in Regent's Park (Mr. D. Seth-Smith).

Redwings (*Turdus m. musicus*) were often noticed in January and February. On February 17th Mr. W. G. K. Neale counted 100 in the Green Park.

Miss M. Rew saw several Wheatears (*Enanthe æ. ænanthe*) in Regent's Park on March 28th and during the first week in April. She saw two there on September 10th; and Mrs. E. MacAlister reported one on the 1st from Kensington Gardens.

Two Whinchats (*Saxicola r. rubetra*) were observed in Regent's Park by Miss M. Rew on April 14th, and another on May 7th.

A Redstart (*Phœnicurus ph. phœnicurus*) was seen by Miss M. Rew in Regent's Park on April 20th, and she heard one singing there on the 26th. Another was noticed by Mr. R. S. R. Fitter on April 21st in Hyde Park; and one by Mrs. E. MacAlister on September 10th in Kensington Gardens.

The male Black Redstart (*Phœnicurus o. gibraltariensis*) which frequented Westminster in May and June, and the female of this species which was caught in the Natural History Museum, South Kensington on May 18th, have already been recorded by Mr. E. M. Nicholson (*antea*, p. 320).

Early in the morning of April 25th I watched a Nightingale (*Luscinia m. megarhyncha*) in full song in Kensington Gardens. I had never come across one there before.

Miss M. Rew saw a Kingfisher (*Alcedo a. ispida*) in Regent's Park on August 1st, September 12th and 13th, and a pair there on September 11th.

Great Spotted Woodpeckers (*Dryobates m. anglicus*) were observed in Regent's Park and Kensington Gardens. I obtained no evidence of their nesting at their headquarters, the grounds of Holland House, or elsewhere.

A pair of Lesser Spotted Woodpeckers (*Dryobates m. comminutus*) visited Kensington Gardens towards the end of March and stayed for about a month. One was noticed by Mr. C. W. Baxter there on December 22nd. Miss M. Rew reported one on June 20th in Regent's Park.

The Cuckoo (*Cuculus c. canorus*) was seen and heard in Regent's Park by Miss M. Rew and Mr. D. Seth-Smith in May and June. Young birds were noticed there by the

former towards the end of July and in August; and in the latter month, by Mr. J. B. Watson in Hyde Park and myself in Kensington Gardens.

A Little Owl (*Athene n. vidalii*) perched on an aviary in the Zoological Gardens on February 11th (Mr. D. Seth-Smith); and on April 25th, I saw one in Kensington Palace Gardens.

A Barn Owl (*Tyto a. alba*), seen flying across the Strand on October 30th by the late Col. H. W. Madoc, has already been recorded (*antea*, p. 232).

Kestrels (*Falco t. tinnunculus*) were much in evidence, particularly in Kensington Gardens and Westminster. I have little doubt that early in May there was a nest on the sill of a slit high up on the western tower of the Imperial Institute. On ascending the tower, however, I found that the slit was filled with a fixed sheet of almost opaque glass. During the last few years there has more than once been evidence of Kestrels nesting on the Victoria Tower, Westminster. This year Lord Esme Gordon-Lennox, who lives in the Palace of Westminster, knew the site of the nest and found a young Kestrel on one of his window sills. ("Field," August 6th, 1936.)

A Sparrow-Hawk (*Accipiter n. nisus*) was seen in Regent's Park on January 16th, and another flew over the Zoological Gardens on November 28th (Mr. D. Seth-Smith). Major W. M. Beckwith had a good view of two Sparrow-Hawks on September 25th; they flew over the Green Park and settled on a tree near the Naval and Military Club.

Much public interest was aroused towards the end of March by the appearance at the Zoological Gardens of a wild Heron (*Ardea c. cinerea*) bringing nesting materials to the top of an aviary which contained a female. She was released early in April, and the pair apparently completed the nest on the aviary, but they disappeared before the end of the month.

Two Scaups (*Nyroca m. marila*) visited the Round Pond, Kensington Gardens. The first, a drake, remained there from March 13th to 27th; the other, a female, was seen on two days at the end of December.

On April 27th, Mr. E. M. Nicholson saw seven adult Cormorants (*Phalacrocorax c. carbo*) flying fairly high in V-formation over St. James's Park. They disappeared over the Green Park. These were no doubt wild birds. They did not appear to notice the Cormorants in the Park below them, of which Mr. Nicholson at the time counted five.

Great Crested Grebes (*Podiceps c. cristatus*) appeared on the Round Pond, or Serpentine in March, April, May and December.

A Black-necked Grebe (*Podiceps n. nigricollis*) in full breeding plumage was noticed on the Round Pond on April 21st by Dr. G. Carmichael Low and Mr. E. G. Pedler. Two days later it flew to the Serpentine and then moved to the Long Water, where it remained for some days. I last saw it on May 4th.

Little Grebes (*Podiceps r. ruficollis*) visited the lake in St. James's Park at various times in the early autumn.

Miss M. van Oostveen noticed a Turtle-Dove (*Streptopelia t. turtur*) on May 5th in Kensington Gardens. A small party of these birds appeared in St. James's Park on August 3rd and stayed for over a fortnight (Mr. C. S. Bayne), an occurrence without precedent in my experience of London.

Large flocks of Lapwings (*Vanellus vanellus*) flew over Regent's Park on January 17th and February 17th (Miss M. Rew).

Two Common Sandpipers (*Tringa hypoleucos*) were seen in Regent's Park on April 25th by Miss M. Rew, and Miss M. van Oostveen reported another by the Long Water on May 5th. During the autumn migration, four were seen on July 27th in St. James's Park (Mr. C. S. Bayne).

Curlew (*Numenius a. arquata*) flying over Regent's Park were heard by Miss M. Rew in the early hours of March 15th and June 29th. Others were heard over Westminster by Mr. E. M. Nicholson in the early hours of July 29th, September 1st and 10th. On the second occasion he also identified the notes of Dunlin (*Calidris a. alpina*) on passage. Two Curlew were also heard and seen flying over Campden Hill on August 7th by Miss M. van Oostveen.

Mr. D. Seth-Smith informs me that a Woodcock (*Scolopax r. rusticola*), apparently uninjured, was picked up on May 28th in Edgware Road. Another flew by Mr. Guy Snow, an experienced game shot, on November 16th in Hyde Park.

A Common Tern (*Sterna h. hirundo*) was seen by Miss M. van Oostveen on September 9th over the Round Pond.

Mr. L. Parmenter detected a Scandinavian Lesser Black-backed Gull, (*Larus f. fuscus*) on March 24th over the Thames at Millbank.

In December a Water-Rail (*Rallus a. aquaticus*) was found in a coal bunker at the Houses of Parliament. It was taken to the bird keeper in St. James's Park and, after a short captivity, was released.

OBITUARY.

THE DUCHESS OF BEDFORD.

(1865—1937)

It is with the greatest regret that we have to record the loss of the Duchess of Bedford during a solo flight in her aeroplane on March 22nd, 1937.

Between 1907 and 1914 her activities as a bird watcher were considerable, the results being published chiefly in *The Annals of Scottish Natural History*, but also in *The Ibis* and *British Birds*. She visited in her yacht "The Sapphire," the Orkneys, Shetlands, Iceland, the Outer Hebrides and many of the isolated rocky islets of the west coast, her headquarters being at Fair Isle and Barra. From 1909-11 she assisted Dr. Eagle Clarke in recording migration at Fair Isle. North Rona was visited in 1907, and twice in 1910, the Duchess being apparently the first ornithologist to land there since Harvie-Brown's visits in 1885 and 1887, when only a few scattered Fulmars were noted. At the time of the Duchess's visits in 1910, Fulmars had increased so rapidly that "not only the cliffs, but all the old ruins and even the sloping edges of rocks" were inhabited, and these breeding haunts were shared with Fork-tailed and Storm Petrels. Her active bird-work came to an end with the commandeering of her yacht and the exigencies of war work, but her interest in birds never waned. Up to the last the "Blue Book Club" was kept going, the last little record book for 1937 is beside me. Her sight was wonderful; the ease with which she could pick up birds far out on a shimmering sea always amazed me.

The Duchess was one of the first women admitted to the Linnean Society, and one of the first five elected as Honorary Lady Members of the B. O. U. in 1910. She only once attended the meeting following the Annual Dinner. This was in 1911, the second occasion on which I was allowed to show my own slides. Women were not then invited to the dinner itself, and we waited in the lobby for half an hour before being admitted to the inner circle. She had been persuaded by Mr. Mathews, the Chairman of the B. O. C., to attend the meeting on March 10th, but hospital duties prevented her at the last moment.

Like the Greek heroes of old, she had no fear of death. She loved the sea and the uncharted sky, and in the end they claimed their own—

"Nothing is here for tears . . . nothing but well and fair, and what may quiet us in a death so noble."

E.L.T.

NOTES

THE JANUARY-FEBRUARY INFLUX OF GREBES AND DIVERS.

IN our last issue, observations on the remarkable influx of Grebes and Divers at the end of January, 1937, were asked for, and a number of correspondents have sent in interesting notes in response to this appeal.

The birds chiefly concerned were the Red-necked, Black-necked and Slavonian Grebes (*Podiceps griseigena*, *P. nigricollis* and *P. auritus*) and the Red-throated and Black-throated Divers (*Colymbus stellatus* and *C. arcticus*). Of these the Red-necked Grebe was the most remarkable because, although as a rule the rarest of the three on inland waters, it appeared on this occasion in greater numbers than the other species. These numbers were not, however, very large, and a feature of the influx was its wide-spread character and the fact that most waters (even small ponds in some parts) had one or two Grebes. Here and there as many as three or four appeared, but only in Norfolk near the sea were any considerable numbers observed.

Although there are one or two records of appearances on January 30th, the main date of arrival was undoubtedly on Sunday, the 31st. A point worthy of note is the length of stay many of these birds made. The numbers dwindled, but we hear of a good many, especially Black-necked and Slavonian Grebes staying on through March, and some up to the moment of writing in the middle of April.

A certain number of other species somewhat unusually found inland have been reported and these we have listed separately, but in a good many cases they were probably not part of the movement of January 31st, with which we are immediately concerned.

The cause of this movement inland, and apparently from east to west, of the Grebes and Divers was no doubt connected with weather, but what exactly caused the birds to go to inland waters seems obscure. The wind in the North Sea and the Baltic was easterly for some days before the 31st; on the 28th and 29th it was strong on the east coast and up to force 8 (equalling 40-45 m.p.h.) in parts and up to force 10 (equalling 55-63 m.p.h.) in Denmark, but by the morning of the 30th it had dropped on most of the east coast, though still keeping fairly strong in the region of Denmark. Only

a few degrees of frost were registered during this period on our east coast, but the wind was a bitter NE. type and in the region of Denmark the temperature for several days before the 31st had been down to 20° Fahr. and in the Baltic, where the wind was only light, down to 10° and on the 30th to -7° Fahr. It seems possible that a freezing Baltic may have originated the movement.

It is difficult, however, to understand what actually caused the birds to take to waters both far inland and close to the sea *after* the gale had subsided and when the sea was calm.

It may be mentioned that in at least two places (Tring and Norfolk) all five British Grebes were observed on the same water at the same time.

To show more or less at a glance the extent of the influx and the numbers of birds involved, as well as the dates of their appearance, the details concerning the Grebes and Divers have been given very briefly and arranged in tabular form. In this table dates when birds were first seen are given, and the extent of their stay (when observed) is indicated by a later date connected with a hyphen. A bracket round a date implies that this was the latest date reported, but not necessarily the last date on which the bird was present, such date if known being given without a bracket. Single observations at intervals and changes in numbers are given in separate lines.

We are indebted to *The Scottish Naturalist* for the Scotch records and to the following correspondents for other observations.

H. G. Alexander, W. B. Alexander, R. W. Barclay, J. K. Bell, E. St. George Betts, H. M. Blair, A. W. Boyd, Mrs. Brindley, Miss S. M. Butlin, R. M. Carey, J. Revell Crawford, H. H. Davis, H. F. I. Elliott, R. M. Garnett, R. Harkness, H. A. Hoffman, O. Höhn, P. A. D. Hollom, G. C. S. Ingram, A. R. Jenkins, W. E. Kenrick, J. E. B. Legge, G. Carmichael Low, A. Holte Macpherson, M. F. M. Meiklejohn, E. L. Nicholson, C. Oldham, E. G. Pedler, W. R. Philipson, R. Potter, A. Rampton, H. Morrey-Salmon, R. B. Sibson, Miss A. V. Stone, M. A. Swann, G. W. Temperley, R. N. Ticehurst, C. A. White, R. Whitlock

Locality	GREBES			DIVERS	
	Red-necked	Black-necked	Slavonian	Red-throated	Black-throated
WESTLOTHIAN					
Linlithgow Loch	1				
MIDLOTHIAN					
Duddingston Loch		2 Jan. 31- Feb. (4)	1 Jan. 31- Feb. (4)		
Lochend Loch	3 Feb. 4		1 Feb. 4		
NORTH MERKLAND					
3 lakes Clapheaton area	1 Feb. 7		2 Feb. 7		

Locality	GREBES			DIVERS	
	Red-necked	Black-necked	Slavonian	Red-throated	Black-throated
DURHAM					
6 ponds in 8 mile radius of Sunderland	7Feb.2				2Feb.2-(9) 1untilFeb.23
Near Hartlepool	5Feb.10-				
Hurworth	Mar.(3)				
Teesmouth (brackish pool)	2Feb.11				
YORKSHIRE					
Near Hawes	1 mid Feb. (shot)				
NORFOLK					
Salthouse	1Jan.29-30 10Jan.31 14-15Feb.1-11 19Feb.14 14Feb.17 3Feb.23 5-6Feb.27- Mar.9 1Mar.12 2Mar.17-20	1Feb.9-11	2-3Jan.31- Feb.11 1Feb.14-(17)	2Feb.1 1Feb.2-(14)	
Holkham	10Feb.25 13Mar.1 4Mar.15 1Mar.(27)	1Feb.25 1Mar.1	2Feb.25 2Mar.21		1Feb.25 1Mar.15
Ormsby Broad	2Mar.18		2Mar.18		
Filby Broad	1Mar.18				
Near Ledham	1Mar.18				
CAMBRIDGE					
Welney (Washes)			2Feb.16		
Cambridge			1Feb.3		
ESSEX					
Walthamstow	1Jan.30 1Jan.31- Feb.(20)	2Mar.6			1Feb.6-(20)
KENT					
Dungeness	1Jan.31				
Near Ashford			1Feb.2		
Near Maidstone			1Feb.7		
SUSSEX					
Thorney Isle					1Feb.13
SURREY					
Molesey					2Feb.2-(21)
Barn Elms	1Jan.31- Feb.10				1Jan.31 moved to Thames and seen up to Apr. (13).
Mitcham			3Feb.15-(20)		
MIDDLESEX					
R. Thames (Chiswick)					1Feb.1- Apr.(18)
Staines		1Jan.31- Apr.(11)			1Jan.31- Feb.(14)
Littleton				1Feb.1(dead)	
Sunbury			1Feb.21		
Hampton					1Mar.12
Serpentine			1Feb.1-6		
Round Pond	1Jan.31- Feb.10				
Ruislip		1Feb.6-20			

Locality	GREBES			DIVERS	
	Red-necked	Black-necked	Slavonian	Red-throated	Black-throated
HERTS AND BUCKS					
Tring Reservoir Group	1 Jan. 31- Mar. (21) left before Mar. 24	2 Feb. 2- one left about Apr. 3 one present Apr. 11	3 Jan. 31 1 Mar. 13 one present Apr. 13	1 Feb. 10-(21) 1 Feb. 28	3 Jan. 31 1 Feb. 21 1 Feb. 12-28
Weston Turville			1 Feb. 6- Mar. (6)		
Bletchley			1 Feb. 2-14		
NORTHANTS					
Stamford		3 Feb. 6 4 Feb. 20 1 Mar. 13	1 Feb. 21		4 Feb. 21
Naseby			1 Feb. 21		
WARWICKSHIRE					
Bartley		1 Jan. 31 1 Mar. 14	1 Feb. 6-7 2 Feb. 13 1 Feb. 14-(25)		
WORCESTERSHIRE					
Upper Bittell	1 Jan. 31 2 Feb. 1- Mar. (24) 1 Apr. (3)	1 Feb. 6- Apr. (3)	1 Jan. 29- Feb. 14		
Lower Bittell Droitwich		1 Feb. 1-15 ? 1 Feb. 11			
STAFFORDSHIRE					
Bellfields	1 Feb. 18		4 Feb. 18 1 or 2 Mar. (29)		
Gailey Near Uttoxeter				2 Feb. 13-(20) 2 Feb. 5 (1 ad. shot)	
CHESHIRE					
Near Sandbach	1 Jan. 31- Feb. 1				
Marbury Mere	1 Feb. 6- Mar. (22)		1 Feb. 6- Mar. (21)		
SOMERSET					
Blagdon		1 Feb. 21 2 Mar. 20		1 Mar. 20- (Apr. 4)	
Barrow Gurney	1 Feb. 21	1 Feb. 21			
WILTSHIRE					
Clarendon Lake			1 Mar. 1-(24)		
GLOUCESTER					
Frampton	1 Mar. 31				
GLAMORGAN					
Kenfig		1 Jan. 31		1 Jan. 31	
Llanishen	1 Jan. 31- Feb. 14				

Some of the other birds observed are listed below, but as already stated, probably all these were not connected with the main influx of January 31st. Dates when first seen are given. Other birds which appeared considerably before January 30th have been reported but these are not included.

GREAT NORTHERN DIVER (*Colymbus immer*).—Two near Sunderland (Durham) February 2nd and 3rd, and then disappeared. One Blenheim (Oxford) February 2nd. One Banbury Reservoir, Walthamstow (Essex) February 6th.

SHAG (*Phalacrocorax aristoteleus*).—One Serpentine London, February 17th. Two Daventry and one Stamford (Northants.) February 21st. Two Tring (Herts.) February 21st, three on March 6th. Three River

Thames (Mortlake) March 24th. One Hampton (Middlesex) February 21st. One Tonbridge (Kent) early February.

RED-BREASTED MERGANSER (*Mergus serrator*).—One Upper Bittell (Worcester) January 30th. One Sunbury (Middlesex) March 4th. One Staines (Middlesex) January 31st. Five Dorking (Surrey) January 30th. Three Blagdon (Somerset) February 21st. One Llanishen (Glamorgan) February 14th.

SMEW (*M. albellus*).—Four single birds in periods (February 5th, 10th, 11th and 26th) Durham and one March 26th Northumberland. One near Bicester (Oxford) February 24th. Two Woodhey (Berks.) February 7th; two others February 14th and March 14th. One near Reading (Berks.) March 7th. One Cofton (Worcester) February 6th. One Upper Bittell (Worcester) February 6th. One Llanishen (Glamorgan) February 14th.

KITTIWAKE (*Rissa tridactyla*).—Two Bournville (Warwick) February 28th. One Tring (Herts.) February 11th. One Staines (Middlesex) February 7th. One (dead sometime) Windsor Park (Berks.) March 23rd, one Stanford (Northants.) February 13th. H. F. W.

INVASION OF STARLINGS ON THE NORFOLK COAST.

THOUSANDS of Starlings (*Sturnus vulgaris*) arrived on the east coast of Norfolk from Great Yarmouth to Sheringham, on April 3rd and 4th, 1937.

Both at Yarmouth and Sheringham they made such a noise that they awoke many people; they settled on houses and trees, and even dropped down in the street and were so tired that several allowed themselves to be picked up, while many were found dead. The flocks passed on, going west, and many thousands also alighted at Norwich. It was foggy on the night of April 3rd. JUDITH M. FERRIER.

BIRDS TAKING RUBBER RINGS.

OUR attention was first drawn to this some twelve years ago by Mr. Morgan, the foreman at Llanishen Reservoir, who remarked to us upon the number of rubber articles he had found there in pellets ejected by the gulls. We have seen very little evidence of this ourselves, two instances only, during the regular weekly visits we have made since.

Lately, however, other cases in connexion with two different species, Starling (*Sturnus v. vulgaris*) and Arctic Tern (*Sterna macrura*), have come to our personal notice.

We were present on September 19th, 1935, when Mr. J. G. Williams was skinning an Arctic Tern he had received from Peterstone Wentlloog (Mon.), where it had been shot on the previous day. On opening the gizzard a small red rubber ring about an inch in diameter was found together with the

remains of crane-flies. Two days later another Arctic Tern was found dead at the same place. In its gizzard Mr. Williams found two brown rubber rings the same size as the other one. There is a sewer-outfall near the place where these birds were obtained, and rubber rings are often seen floating near the edge of the tide. It seems not unreasonable to suggest that the Terns mistook the rings for food, and in these two cases there is no doubt that they were actually swallowed.

Recently Mr. T. W. Proger, of St. Fagans, Glam., asked us to accompany him in investigating the taking of rubber articles by Starlings, which he had noticed at a roost there. About a mile from St. Fagans there is a Starling roost frequented by very large numbers for some years, in a spruce plantation. The ground below was covered with the accumulated droppings of years, to a depth of about two inches. Protruding from this, having been washed bare by the winter's rain, and so become visible, we found innumerable elastic rubber bands. These were of all sizes from small capsule bands up to stationery bands three inches long and a quarter of an inch wide, red, brown, white, yellow, grey and blue in colour; no green bands were noticed. Since Starlings do not fly in to roost carrying food in their beaks, it seems probable that these bands must have been swallowed and probably ejected from the crop together with other indigestible parts of the food, during roosting time at night. There was no evidence that the bands had passed through the birds.

The only previous note we can trace regarding this habit is by Miss Hibbert-Ware with reference to Rooks (*Corvus f. frugilegus*) (*Brit. Birds*, Vol. XXIV., p. 27). We gather from Miss Hibbert-Ware's remarks that she did not consider the various articles she mentions had been swallowed by the Rooks and ejected later, for she states they were not found in connection with food-pellets and there was no evidence of their having been swallowed. That being so, the only alternative appears to be that the Rooks carried them home in their beaks and then dropped them aimlessly. While this may be possible, in the light of our recent experience it seems probable that the Rooks may also have swallowed them. Rooks may be seen scavenging upon house-refuse dumps and on the fields where such refuse has been spread, together with Starlings, and it is more than likely that rubber bands, etc., are picked up and pouched in mistake for food.

GEOFFREY C. S. INGRAM,
H. MORREY SALMON.

CONTINENTAL GOLDEN-CRESTED WREN IN
RENFREWSHIRE.

As the Rev. J. M. McWilliam gives no record of the Continental Golden-crested Wren (*Regulus r. regulus*) in his book *The Birds of the Firth of Clyde*, it may be presumed that an adult male of this form obtained near High Darnley, East Renfrewshire on February 6th, 1937, is the first recorded example for the Clyde area. The bird was a single one, and was feeding amongst a large bundle of faggots when taken. It is conspicuously grey on the mantle. Mr. H. F. Witherby kindly confirms my identification. PHILIP A. CLANCEY.

BEHAVIOUR OF MALE ROBIN IN TRAP

WHILE colour-ringing other species this winter, I have had a number of Robins (*Erithacus rubecula*) coming to the trap, whose behaviour I have not followed out closely, but the following incident may be of interest.

During a two days cold spell of weather (January 29 and 30, 1937) the territories of the Robins, many of which were already mated, in the immediate neighbourhood of my house seemed to undergo a certain amount of relaxation in their limits. I did in fact catch six birds in the same place. One unmated male however behaved with just as much territorial pugnacity as ever, and as I put the trap in his territory he had a busy job driving away all the others incited by hunger to trespass. In fact he was so busy that it was quite a time before he was caught himself.

The trap I use is only a small one, about 3 ft. by 2 ft. by 2 ft., and most birds when caught betray agitation in some degree. I was surprised however to find that this particular Robin was feeding quite unconcernedly, when I approached. Further when he was caught, he squealed with that abandonment and breakdown of inhibitions that is characteristic of some birds, such as the Song-Thrush, when no further train of instinctive behaviour will meet the case. Oddly though I have never before found the Robin doing this.

Finally the most interesting thing was that while he was held in the hand just prior to being ringed, he went into a complete posturing attitude, as far as his constricted position would allow him. That is to say that the beak was elevated vertically and the red of the breast displayed to the best advantage possible. This is just the attitude assumed when a brush occurs between birds in adjacent territories.

This shows not only how individual birds vary in their behaviour, but how extraordinarily stereotyped is the

response of a bird that is vigorously claiming territory to almost any stimulus. It seems at such a time to be in a curious physiological and psychological rut of behaviour, the establishment of which in the bird's make-up shows what an extremely important period this is in the life history.

H. N. SOUTHERN.

GREAT SPOTTED WOODPECKER NESTING IN A TELEGRAPH POLE.

UNTIL recently along the railway line through the Wyre Forest there were two telegraph poles near together that had been considerably excavated by the Great Spotted Woodpecker (*Dryobates m. anglicus*) and when walking along this part of the line in the evening I have at times flushed this species from its sleeping quarters therein. It has since come to my knowledge that five years ago young were reared in this excavation and that a clutch of eggs, which I have verified, were taken from it in the following year.

J. S. ELLIOTT.

BEWICK'S SWANS AND BEAN-GOOSE IN OXFORDSHIRE.

ON February 15th, 1937, one of us found two adult and four immature Bewick's Swans (*Cygnus bewickii*) at Northmoor, Oxon, on the flood waters of the Thames; and on the 17th two of us observed three adult and two immature birds at Somerton on the Cherwell.

On the same piece of water at Somerton were seen not only five White-fronted Geese (*Anser albifrons*) but also a Bean-Goose (*A. fabalis*) of the orange-billed variety.

These are the fourth or fifth occasions on which Bewick's Swans have occurred in Oxfordshire: the Swans at Somerton remained at least until March 23rd.

H. F. I. ELLIOTT,

A. RAMPTON,

M. F. M. MEIKLEJOHN.

GADWALL IN CHESHIRE.

ON December 6th, 1936, Mr. R. B. Sibson and I saw a Gadwall (*Anas strepera*) swimming in a large flock of Teal on Rostherne Mere, Cheshire. The Gadwall is a remarkably rare duck on the Cheshire meres, and has not, to my knowledge, been seen on that mere previously.

There is only one other record for an inland Cheshire water—two that I saw in March, 1934 (*antea*, Vol. XXVII, p. 356).

A. W. BOYD.

AMERICAN GREEN-WINGED TEAL IN
WESTMORLAND.

As there are only three records of the American Green-winged Teal (*Anas crecca carolinensis*) for Great Britain, it may be of interest to record that a fourth was shot near Levens, south Westmorland, on December 26th, 1936. It was an adult drake with the characteristic broad white crescents on the sides of the breast in front of the shoulders, well developed.

It was only wing-tipped, and is still alive on a private pond in Kendal, where I saw it at the end of March. It was as wild and shy as when captured three months before, so would seem not to have been an escaped bird. H. W. ROBINSON.

AVOCET IN ESSEX IN WINTER.

ON February 6th, 1937, I saw an Avocet (*Recurvirostra avosetta*) in the Foulness district. When first observed the bird was flying away from me down Shelford Creek towards the River Roach. Subsequently excellent views were obtained of it resting on a mud flat at a distance of fifty yards.

C. W. GEOFFREY PAULSON.

EARLY NESTING OF STONE-CURLEW.—With reference to previous notes on this subject (*antea*, pp. 133 and 194) Capt. G. E. Took informs us of a brood of young a few days old on May 3rd, 1936, in Hampshire.

GREAT AND SOOTY SHEARWATERS OFF THE HEBRIDES.—With reference to the notes on this subject (*antea*, pp. 174-5, 324), Dr. James W. Campbell informs us that on October 16th, 1936, while crossing the Little Minch in the T.S.M.V. "Loch Mor," he saw a Great Shearwater (*Puffinus gravis*) and a Sooty Shearwater (*P. griseus*) pass close to the ship when a few miles north-west of Rudha Hunish (Skye). The birds were both flying north-westerly and an excellent view of them was obtained through binoculars. Visibility was good.

THE "RODING" OF THE WOODCOCK.—Messrs. T. Warwick and V. D. Van Someren have made a study of the "roding" flight of a pair of Woodcock (*Scolopax r. rusticola*) in a plantation near Currie in Midlothian and have published an interesting account of this (*Scot. Nat.*, 1936, pp. 165-172). Woodcock were observed to make this characteristic flight from the last week of April up to the first week of July when observations ceased. The flight lines were carefully followed and it would appear that four distinct lines, varying from one to three miles, were followed by the same pair. Usually only

one bird flew, but occasionally both were seen and the flight was continuous for about an hour each evening. The low guttural note made during the roding flight is thought by the authors to be made by the wings as they noted that the sharp "chissick" was made with the bill open and the guttural note when it was closed, while at the same time there was a double "hesitation" in the flight. Certainly this low "churr churr" note has not sounded mechanical to us. The authors consider roding to be largely aggressive and not part of courtship. The observations are interesting and the account itself should be consulted.

LETTERS.

REFLECTED COLOUR OF NIGHTJAR'S EYES.

To the Editors of BRITISH BIRDS.

SIRS,—In reference to a letter from Mr. George Brown on this subject (*antea*, p. 356) I would suggest that the discrepancy in observations as to the colour of light seen reflected from inside the eyes of Nightjars is due to a difference in the direction in which the Nightjar's eyes are gazing in different observations.

There is within the eyes of a large number of birds and animals a bluish-green structure at the back of the eye, known as the *tapetum*. This is able to increase the sensitiveness of the retina for vision in very dim light. It does not usually line the whole of the retina, but mainly at the back part of the eye. If, therefore, the observer sees the Nightjar's eyes when they are not looking directly towards him, it is likely that a pink or reddish colour would be observed; whereas the green light would be seen when the eyes are looking more or less directly at the observer.

HUMPHREY NEAME.

SOME FIELD NOTES ON THE CHICKADEE.

To the Editors of BRITISH BIRDS.

SIRS,—During the last few years I have been particularly interested in the British Marsh-Tit (*Parus palustris dresseri*) and Willow-Tit (*Parus atricapillus kleinschmidti*). During a recent visit to North America, therefore, I paid great attention to the Chickadee (*Parus atricapillus atricapillus*), of which I saw considerable numbers. More especially I tried to note down the song and all the call-notes with a view to comparing them with those of the British birds. These notes may be enumerated as follows:

(MASSACHUSETTS, January and March).

"Chick-a-dee-dee-dee." Considerable individual variation but generally somewhat softer than the well-known call of *P. p. dresseri*.

"Chick-a-(chick-a)-dee." Hurried and tuneless. Unlike either British bird.

"Chay chay." Slurred. As a general rule the *chay* of *P. a. kleinschmidti* is slower than that of *P. p. dresseri*. This frequent Chickadee call is of the same tempo as that of the latter bird. The note and tone seemed to me to be intermediate between the two. (Indeed, there is an occasional overlap between the two British birds.)

"Chay-chay-chay." Rapid. Very like *P. p. dresseri*.

"*Tew tew.*" Soft whistle. Much like one of the characteristic notes of *P. a. borealis* in Swedish Lapland, but one that I have never heard given by *P. a. kleinschmidti*.

"*Pit-it-chree.*" Much like the explosive "*Pit-it-choo*" of *P. p. dresseri*.

"*Chick-a-chick.*" } Hurried, tuneless rattles.

"*Ticky-ticky-ticky.*" } Sometimes followed by the slurred *chay*.

Song. The Chickadee's song is one of the characteristic sounds of the New England deciduous woods. It is a beautiful high, clear two- or three-note whistle, quite unlike any British Titmouse. The southern form (*carolinensis*), which I heard in Georgia and Florida during February, has a diagnostic variation of this song—more tremulous and divided into four notes.

Judging the bird by its call-notes alone it is certainly more reminiscent of *P. p. dresseri* than of *P. a. kleinschmidti*, and its actions too, tend in that direction. It travels in parties; it is most usual in oak woods (damp or dry) at all seasons; it frequents bird tables and there eats seeds; and it calls almost the whole time, rapidly changing from one call-note to another. In all these it strongly reminded me of *P. p. dresseri*, and not of *P. a. kleinschmidti*.

In appearance the Chickadee exaggerates *P. a. kleinschmidti* with its conspicuous white wing-patch and rich buff flanks. On my return to England I examined the skins in the British Museum with Mr. W. L. Sclater. We agreed that the colour of the crown of *P. a. atricapillus* came between that of *P. a. kleinschmidti* and *P. p. dresseri* but was definitely nearer the latter. The gloss, though not striking, was quite distinct from the matt of the former. This is the impression that one gains in the field on a sunny day.

L. S. V. VENABLES.

REVIEW.

Inventaire des Oiseaux de France, par Noël Mayaud avec la collaboration d'Henri Heim de Balsac et Henri Jouard.

THIS list of the birds of France, is welcome and will be found useful not only to French ornithologists, but to us and other foreigners visiting the country. It is divided into two parts, one the complete list of birds accepted to the fauna, and two, a critical list of "captures contestables ou contestées." The main list is arranged in accordance with Welmore's classification. The genus and its type with reference, are set out. A species name is given and these are numbered consecutively, while sub-species are lettered alphabetically. References are given to the original descriptions, to Degland and Gerbe and to the French authors, who first added the bird to the list. A brief account of distribution and migrations follows, and this, the most useful part of the work, is decidedly disappointing, as it is greatly lacking in detail. The number of species enumerated is approximately the same as on our list, but there must certainly be more species breeding in France than in this country. The number of sub-species admitted to the list is very large, and a good many appear to us to be unworthy of recognition, but even named sub-species do not satisfy the authors, who go to the length of using geometrical signs to indicate birds considered to be intermediate between two close sub-species.

The List, however, will form a useful basis for further work, and it would certainly appear that there is still much to be done before any exact knowledge of the distribution of birds in France can be obtained.

INDEX.

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 10 of Volume XXVI, pages 2 and 3 of Volume XXVII, and pages 90-96 and 186 of Volume XXVIII of *British Birds*.

- aalge*, *Uria a.*, see Guillemot, Northern.
- abietinus*, *Phylloscopus c.*, see Chiffchaff, Scandinavian.
- acuta*, *Anas*, see Pintail.
- aruginosus*, *Circus*, see Harrier, Marsh.
- asalon*, *Falco c.*, see Merlin.
- AINSLIE, JOHN A., and ATKINSON, ROBERT, On the Breeding-Habits of Leach's Fork-tailed Petrel, 234.
- , —, —, On the Breeding Habits of Leach's Fork-tailed Petrel. A Supplementary Note on American Observations, 276.
- alba*, *Egretta*, see Heron, Great White.
- , *Tyto a.*, see Owl, Barn-
- albicilla*, *Haliæetus*, see Eagle, White-tailed.
- albicollis*, *Muscicapa*, see Flycatcher, Collared.
- albifrons*, *Sterna a.*, see Tern, Little.
- albionis*, *Uria a.*, see Guillemot, Southern.
- ALEXANDER, H. G., Notes on Little Gull in Warwickshire, 51; Redwings singing in November, 351.
- , W. B., Note on Spoonbill in Islay, 87.
- alpina*, *Calidris*, see Dunlin.
- Altrincham Sewage Farm, Cheshire, Notes from, 347
- anglicus*, *Dryobates m.*, see Woodpecker, Great-Spotted.
- anser*, *Anser*, see Goose, Grey Lag.
- apricarius*, *Charadrius a.*, see Plover, Golden.
- apus*, *Apus a.*, see Swift.
- aquaticus*, *Rallus*, see Rail, Water-
- arborea*, *Lullula*, see Lark, Wood-
- arcticus*, *Colymbus*, see Diver, Black-throated.
- argentatus*, *Larus a.*, see Gull, Herring-
- aristotelis*, *Phalacrocorax a.*, see Shag.
- ARNOLD, E. C., Note on Bluethroat in Sussex, 228.
- arquata*, *Numenius a.*, see Curlew, Common.
- arvensis*, *Alauda*, see Lark, Sky-
- ater*, *Parus a.*, see Titmouse, Continental Coal.
- ATKINSON, ROBERT, see AINSLIE, JOHN A.
- atra*, *Fulica*, see Coot.
- atricapillus*, *Astur g.*, see Goshawk, American.
- , *Parus a.*, see Chickadee.
- auritus*, *Podiceps*, see Grebe, Slavonian.
- Avocet, ringed in Rhone Delta, found in Essex, 50, 95; Flock of, in Hampshire, 196; Recorded for Argyllshire, 299, 327; in Cambridgeshire in Winter, 324; in Essex in winter, 378.
- avosetta*, *Recurvirostra*, see Avocet.
- BARCLAY, MISS M., Note on White-tailed Eagle in Norfolk, 228.
- BARON, S., Letter on White-winged Black Tern seen in Co. Cork, 176.
- bassana*, *Sula*, see Gannet.
- BATES, G. L., see FREEMAN, C. P.
- BEDFORD, THE DUCHESS OF, Obituarial Notice of, 369.
- bernicla*, *Branta*, see Goose, Brent.
- bewickii*, *Cygnus*, see Swan, Bewick's.
- BIBLE, E. H. T., Note on Green-shanks wintering in Merionethshire, 296.

- BIRD, G., Note on Quail in Suffolk, 52.
- Bird-Migration, Recent Progress in the Study of, 92.
- Bittern, in Co. Fermanagh, 32.
- Blackbird, Large Clutch of Eggs, 44; Size of Clutches in East Renfrew and West Lanark, 45; Recovery of marked, 78, 257.
- Blackcock, *see* Grouse, Black.
- Bluethroat, at Isle of May, 167; at Fair Isle, 168; in Essex, 191; in Kent, 227; in Sussex, 227.
- , White-spotted, at Isle of May, 167; 298; at Fair Isle, 168.
- BOYD, A. W., Report on the Swallow Inquiry, 1935, 98; Notes from Altrincham Sewage Farm, Cheshire, 1936, and from Staffordshire Reservoirs, 1936, 347 Letter on Swallows and Blood-stained milk, 200; Note on Gadwall in Cheshire, 377.
- , ——, and THOMSON, DR. A. LANDSBOROUGH, Recoveries of Marked Swallows within the British Isles, 278.
- brachyrhynchus*, *Anser*, *see* Goose, Pink-footed.
- britannica*, *Certhia f.*, *see* Creeper, Tree-.
- , *Tringa totanus*, *see* Redshank, British.
- britannicus*, *Lyrurus t.*, *see* Grouse, Black.
- "British Birds" Marking Scheme Progress for 1936, 337.
- British Trust for Ornithology, Publications of: Report on the Swallow Inquiry 1935, 98; Report on Great Crested Grebe, Sample Count, 1935, 138; The Index of Heron Population, 1936, 202; Recoveries of Marked Swallows within the British Isles, 278; Lapwing Habitat Inquiry, 351.
- Brooklands Sewage Farm, Surrey, Notes from, 346.
- BROWN, GEORGE, Note on "Injury-feigning" by a Stone-Curlew, 90; Letter on Reflected Colour of Nightjar's eyes, 356.
- BROWN, R. H., Notes on the Food of Young Lapwings, 134; on Waders in Cumberland, 134; on Status of Siskin and Twite in Lakeland, 170; Tawny Owl taking Prey during the day, 173.
- BRYANT, C. H., Note on Return Migration of Jays, 80.
- Bullfinch, Recovery of Marked, 76.
- Bunting, Cirl, On Isle of May, 298.
- , Lapland, in Pembrokeshire, 190.
- , Little, at Fair Isle, 168.
- , Ortolan, at Isle of May, 167, 298; at Fair Isle, 168; in Pembrokeshire, 190; at the Bass Rock, 298.
- , Reed-, Recovery of Marked, 77, 256.
- , Snow-, Early in Kent, 261; Early in Norfolk, 354.
- , Yellow, Recovery of Marked, 76.
- BURNE, H. J. K., Note on Early Breeding of Stone-Curlew, 133.
- buteo*, *Buteo b.*, *see* Buzzard, Common.
- Buzzard, Common, in Kent, 135; Recovery of Marked, 258.
- CADMAN, W. A., Notes on Fulmar Petrels Breeding in Pembrokeshire, 133; on Manx Shearwater Breeding on Pembrokeshire Mainland, 175.
- cæruleus*, *Parus c.*, *see* Titmouse, Continental Blue.
- caligata*, *Hippolais*, *see* Warbler, Booted.
- CAMPBELL, DR. JAMES W., On the Food of some British Birds, 209; Notes on Another Unrecorded Essex Heronry, 29; a further Addition to Essex Heronries, 47; Tawny Owl taking Prey during the Day, 86; on Spotted Flycatcher, Great Tit and Gulls taking Moths, 172; on Birds and Molluscs, 173.
- , W. D., Note on Little Gull in Oxfordshire, 353.
- cannabina*, *Carduelis c.*, *see* Linnet.

- canorus*, *Cuculus c.*, see Cuckoo.
canus, *Larus c.*, see Gull, Common.
canutus, *Calidris c.*, see Knot.
carbo *Phalacrocorax c.*, see Cormorant.
carolinensis, *Anas crecca*, see Teal, American Green-winged.
caryocatactes, *Nucifraga*, see Nutcracker.
 Chaffinch, Recovery of Marked, 76, 255; Proportion of Sexes in roosting, 117.
 CHARCOT, DR., and the Birds of Rockall, 251.
 CHARTERIS, HON. GUY, Proportion of Sexes in Roosting Chaffinches, 117.
 Chickadee, Some field notes on the, 379.
 Chiffchaff, in Perthshire, 82, 83.
 — and Grasshopper-Warbler Association, 131.
 —, Scandinavian, On Isle of May, 298.
chloris, *Chloris ch.*, see Greenfinch.
chloropus, *Gallinula ch.*, see Moorhen.
cinclus, *Cinclus c.*, see Dipper, Black-bellied.
cinerea, *Ardea c.*, see Heron, Common.
cirlus, *Emberiza*, see Bunting, Cirl.
citrinella, *Emberiza*, see Bunting, Yellow.
 CLANCEY, PHILIP A., Notes on Pied Flycatcher in Renfrewshire, 44; Size of Clutches of Blackbird in East Renfrew and West Lanark, 45; Pied Wagtails using Roost in June, 82; Kingfishers' Moulting-Periods, 191; Continental Golden-crested Wren in Lanarkshire, 226; The Range of the Hebridean Hedge-Sparrow and Stonechat, 259; Continental Song-Thrushes in Renfrewshire and Ayrshire, 293; Movements of Hedge-Sparrows in Western Scotland, 322; Continental Golden-crested Wren in Renfrewshire, 376.
clypeata, *Spatula*, see Shoveler.
coburni, *Turdus m.*, see Redwing, Iceland.
caelebs, *Fringilla c.*, see Chaffinch.
 COHEN, EDWIN, Note on Flock of Gadwall in Sutherlandshire, 132.
colchicus, *Phasianus*, see Pheasant.
collurio, *Lanius c.*, see Shrike, Red-backed.
collybita, *Phylloscopus c.*, see Chiffchaff.
 COLYER, WILLIAM L., Note on unusual Method of Drumming by Great Spotted Woodpecker, 46.
 Coot, Large Clutches of eggs, 94; Recovery of Marked, 316.
corax, *Corvus c.*, see Raven.
 Cormorant, Recovery of Marked, 126, 309.
corone, *Corvus c.*, see Crow, Carrion-.
coturnix, *Coturnix*, see Quail.
 COWIN, W. S., Note on Birth of a Curlew, 91.
crecca, *Anas c.*, see Teal.
 Creeper, Tree-, Roosting habits, 2.
cristatus, *Podiceps c.*, see Grebe, Great Crested.
 Crossbill, Breeding in Devon, 31; Method of feeding on Larch Cones, 27; Method of Feeding, 43; Young in Devon, 93.
 Crow, Carrion-, Recovery of Marked, 74; Laying twice in same nest, 80; in Outer Hebrides, 297.
 Cuckoo, Calling with bill open, 263, 264, 331.
 Curlew, Birth of, 91; Recovery of marked, 312.
 Curlew, Stone-, Injury-feigning, 90, 134; Recovery of marked, 128, 311; Early breeding of, 133, 194, 378.
curruca, *Sylvia*, see Whitethroat, Lesser.
curvirostra, *Loxia c.*, see Crossbill.
cygnus, *Cygnus*, see Swan, Whooper.
dartfordiensis, *Sylvia u.*, see Warbler, Dartford.
 DAVIS, H. H., Letter on Cuckoo calling with bill open, 331.
 Departure of Summer Residents observed at Dungeness, Kent, 288.
 DEWAR, DR. J. M., Ménage à trois in the Mute Swan, 178.

- Dipper, Black-bellied, at Fair Isle, 231.
- Diver, Black-throated, in London, 323; in Middlesex, 323; influx of, 370.
- , Great Northern, in Surrey, 295; inland, 373.
- , Red-throated, influx of, 370.
- DOBIE, DR. W. HENRY, Note on Crossbills' Method of Feeding, 43.
- Dove, Stock-, Breeding-Habits of a pair of, 302; Recovery of marked, 311.
- , Turtle-, Recovery of marked, 311.
- Duck, Long-tailed, Eating Molluscs, 173; in Staffordshire, 349;
- , Scaup, in Inner London, 30; Eating Molluscs, 173.
- , Sheld-, Early nesting in Kent, 87; Recovery of marked, 307; in Surrey, 346.
- , Tufted, Recovery of marked, 126, 309.
- Dunlin, in Inner London, 30.
- Eagle, White-tailed, in Northamptonshire, 28; reported on Dartmoor and in Breconshire, 28; at Fair Isle, 231.
- eburnea*, *Pagophila*, see Gull, Ivory-.
- Eider, Common, Recovery of marked, 126, 309; in Sussex, 295; in Kent, 323.
- , King-, at Fair Isle, 231.
- ELLIOTT, H. F. I., RAMPTON, A. and MEIKLEJOHN, M. F. M., Note on Bewick's Swans and Bean-Goose in Oxfordshire, 377.
- ELLIOTT, J. S., Notes on Thrush destroying Eggs of the Wild Duck, 44; Tawny Owl taking Prey during the Day, 47; Nesting and Rearing of Young by an unmated Pied Wagtail, 291; Great Spotted Woodpecker nesting in a telegraph pole, 377.
- ELLIS, JOHN C. S., Letter on Ménage à trois in the Mute Swan, 232.
- epops*, *Upupa*, see Hoopoe.
- ericetorum*, *Turdus e.*, see Thrush, British Song-.
- erythropus*, *Tringa*, see Redshank, Spotted.
- europæus*, *Caprimulgus*, see Nightjar.
- excubitor*, *Lanius*, see Shrike, Great Grey.
- fabalis*, *Anser*, see Goose, Bean-Fair Isle, Rare Birds at, 231.
- Falcon, Peregrine, Taking Lapwing on ground, 294.
- FERRIER, MISS J. M., Note on Invasion of Starlings on the Norfolk Coast, 374.
- FINCHER, F., Note on Incubation Period of Grasshopper-Warbler, 83.
- flava*, *Eremophila a.*, see Lark, Shore-.
- , *Motacilla f.*, see Wagtail, Blue-headed.
- flavivrostris*, *Carduelis f.*, see Twite.
- Flycatcher, Pied, in Renfrewshire, 44; in Co. Cork, 191; in Sussex, 292.
- , Spotted, Recovery of marked, 77; Taking Moths, 172.
- FORGES, GRAHAME DES, Note on Spotted Redshank in Sussex in winter, 296.
- , —, see PAULSON, C. W. GEOFFREY.
- FREEMAN, C. P., and BATES, G. L., Notes on Breeding-Habits of a pair of Stock-Doves, 302.
- frugilegus*, *Corvus f.*, see Rook.
- fuligula*, *Nyroca*, see Duck, Tufted.
- Fulmar, see Petrel, Fulmar.
- fuscus*, *Larus f.*, see Gull, Scandinavian Lesser Black-backed.
- Gadwall, Flock of, in Sutherlandshire, 132; in Cheshire, 377.
- gallinago*, *Capella g.*, see Snipe, Common.
- Gannet, Recovery of marked, 127, 309; on Rockall, 253.
- Garganey, in summer in Cheshire, 53; at Fair Isle, 231; in Cheshire, 348.
- GARNETT, RONALD M., Unusual "Hold-Up" of Spring Migrants on the Norfolk Coast, 58.

- gibraltariensis*, *Phœnicurus o.*, see Redstart, Black.
- GILBERT H. A., see MACKWORTH-PRAED, C. W.
- glacialis*, *Fulmarus g.*, see Petrel, Fulmar.
- GLADSTONE, H. S., Note on Goosander nesting in Dumfriesshire, 87; Letter on Swallows and Blood-stained Cow's Milk, 199. Dr. Charcot and the Birds of Rockall, 251.
- glandarius*, *Garrulus g.*, see Jay, Continental.
- glareola*, *Tringa*, see Sandpiper, Wood-.
- GLEGG, WILLIAM E., The Spring Habits of the Red-legged Partridge, 38. Birds in Middlesex, 249; Notes on Goosanders spending summer in Surrey, 192; Red-necked Grebe, Purple Sandpiper and Kittiwakes in Middlesex, 259.
- Godwit, Bar-tailed, in Surrey, 347.
—, Black-tailed, in Carmarthenshire in winter, 325; in Surrey, 347; in Cheshire, 348.
- Goldfinch, at Fair Isle, 231.
- Goosander, Nesting in Dumfriesshire, 87; Characteristics of Nestlings, 89; Spending summer in Surrey, 193; in Wiltshire, 262.
- Goose, Barnacle-, Food of, 213.
—, Bean-, in Oxfordshire, 377.
—, Brent, in Co. Down, in Summer, 197.
—, Grey Lag-, in Staffordshire, 349.
—, Pale-breasted Brent, Food of, 213.
—, Pink-footed, in Co. Wexford, 327.
- Goshawk, American, in the Scilly Isles, 197.
- grabæ*, *Fratercula a.*, see Puffin.
- graellsii*, *Larus f.*, see Gull, British Lesser Black-backed.
- gravis*, *Puffinus*, see Shearwater, Great.
- Grebe, Black-necked, in Inner London, 30; in Shropshire, 299; influx of, 370.
- Grebe, Great Crested, Further Notes on Territory, 60; Report on, Sample Count, 1935, 138.
—, Little, Territorial behaviour, 68; Sexual display of, 266.
—, Red-necked, in Middlesex, 259; in London, 323; influx of, 370.
—, Slavonian, in Shropshire, 299; in London, 323; in Kent, 327; influx of, 370.
- Grebes and Divers Inland, 355, 370.
- Greenfinch, Recovery of marked, 76, 255.
- Greenshank, in Spring in Cumberland, 135; in Cumberland in January, 176; Wintering in Merionethshire, 296; in Outer Hebrides, 297; in Cheshire, 348.
- GREGORY, T. C., Notes on Call Notes of the Spotted Redshank, 91; Call Notes of the Wood-Sandpiper, 352.
- griseigena*, *Podiceps g.*, see Grebe, Red-necked.
- griseus*, *Puffinus*, see Shearwater, Sooty.
- Grouse, Black, Fighting of, 34.
- Guillemot, Northern, Recovery of marked, 316.
—, Southern, Recovery of marked, 130.
- Gull, Black-headed, Recovery of marked, 129, 315; Taking Ants off surface of Lake, 261.
—, Common, Taking Moths, 172; Recovery of marked, 315.
—, Great Black-backed, Feeding on Ants, 325.
—, Herring-, Feeding on Larvæ of Moths, 92; Recovery of marked, 130, 315; Taking Moths, 172; Increase of, at Steep Holm, 222; Taking Ants off surface of Lake, 261; Feeding on Ants, 325.
—, Iceland, in Hampshire, 353; an almost white, in S. Hampshire, 354.
—, Ivory-, at Fair Isle, 231; in Cambridgeshire, 354.
—, Lesser Black-backed, British, Colour of, affected by angle of light, 96; Recovery of marked, 130, 315; Increase of, at Steep Holm, 222; Taking Ants off surface of Lake, 261.

- Gull, Lesser Black-backed, Scandinavian, at Fair Isle, 231.
 —, Little, in Hertfordshire, 51; in Warwickshire, 51; in Cambridgeshire, 196; at Fair Isle, 231; in Sussex, 262; in Oxfordshire, 353; in Inner London, 365.
- haliæetus*, *Pandion*, see Osprey.
- HARDY, ERIC, Note on Oystercatcher and Rock-Pipit nesting inland in Cheshire, 49.
- HARRISON, DR. JAMES M., Note on Audubon's Little Shearwater in Sussex—a new British Bird, 48.
- HARTMAN, A. J., Note on Redwing singing in November, 352.
- HARTLEY, P. H. TRAHAIR, The Sexual Display of the Little Grebe, 266.
- HAVERSCHMIDT, FR., Letter on Cuckoo calling with bill open, 263.
- Hawk, Sparrow-, Further Notes on, 22; Recovery of marked, 79; Notes on the flight of the, 183; in Outer Hebrides, 297.
- hebridensis*, *Turdus e.*, see Thrush, Hebridean Song-.
- Hebrides, Outer, Unusual birds in, 297.
- hebridium*, *Prunella m.*, see Sparrow, Hebridean Hedge-.
- Heron, Recovery of marked, 79, 307; Index of Population, 1936, 202.
 —, Buff-backed, Colour of soft parts, 70.
 —, "Great White," in Wiltshire, 52, 53; Coloration of soft parts of, 136.
 —, Purple, off the coast of Ireland, 32.
- Heronries, Further addition to Essex, 47.
- Heronry, new, in Montgomeryshire, 135.
- Herodiones, Coloration of soft parts during the breeding season, 136.
- HEYCOCK, C., see KAYE, C. H.
- hiaticula*, *Charadrius h.*, see Plover, Ringed.
- hibernans*, *Saxicola t.*, see Stonechat.
- hirtensis*, *Troglodytes t.*, see Wren, St. Kilda.
- hirundo*, *Sterna h.*, see Tern, Common.
- Hobby and Grey Squirrel, 132.
- Hobby, Late in Wiltshire, 261.
 "Hold-up," unusual, of Spring Migrants on Norfolk coast, 58; on East Coast of Scotland, 167; on Lincolnshire coast, 171.
- HÖHN, O. E., Note on Food of Kestrel and possible Seed-dispersal, 192.
- HOLLOM, P. A. D., Report on Great Crested Grebe, Sample Count, 1935, 138; Notes from Brooklands Sewage Farm, Surrey, 1936, 346; Note on Chiffchaff in Perthshire, 83; Note on Return Migration of Jays, 170.
- HOLMES, P. F., Note on Gulls taking Ants off surface of Lake, 261.
- HOMES, RICHARD C., Notes on Spotted Redshanks in Cambridgeshire, 195; Shore-Larks in North Kent, 291.
- Homing Experiments with Wild Birds, 31.
- Hoopoe, in Hertfordshire, 173; in Hampshire, 173.
- hortulana*, *Emberiza*, see Bunting, Oortolan.
- HOWARD, ELIOT, Letter on Cuckoo calling with bill open, 331.
- hrota*, *Branta b.*, see Goose, Light-breasted Brent.
- HUMPHREYS, G. R., Note on Pied Flycatcher in Co. Cork, 191.
- HURRELL, H. G., Letter on Influence of weather on Dispersal of Swifts and Swallows after Nesting, 355.
- HUXLEY, JULIAN S., Note on Nests and Broods in 1936 in Whipnade Bird Sanctuary, Bedfordshire, 224.
- hyemalis*, *Clangula*, see Duck, Long-tailed.
- hyperboreus*, *Larus*, see Gull, Glaucous.
- hypoleuca*, *Muscicapa h.*, see Flycatcher, Pied.
- hypoleucos*, *Tringa*, see Sandpiper, Common.

- ibis*, *Ardeola i.*, see Heron, Buff-backed.
- immer*, *Colymbus*, see Diver, Great Northern.
- INGRAM, GEOFFREY C. S., and SALMON, H. MORREY, Letter on Colour of Lesser Black-backed Gull affected by angle of light, 96; Note on Birds taking Rubber rings, 374.
- Injury-feigning, by Wood-Lark, 81; by Lesser Whitethroat, 82.
- intermedia*, *Alauda*, see Lark, Eastern Sky.
- interpres*, *Arenaria i.*, see Turnstone.
- ispida*, *Alcedo a.*, see Kingfisher.
- Jackdaw, Recovery of marked, 74, 254; Food of, 211.
- , Scandinavian, in Scotland, 224.
- Jay, Recovery of marked, 74, 254; Return migration of, 80, 170; Food of, 212.
- JOURDAIN, REV. F. C. R., Notes on Large Clutches of Eggs of Mistle-Thrushes, 28; Early Breeding of Stone-Curlew, 133; Coloration of soft parts of nestling Great White Heron, 136; Incubation Periods of Blue Tit, 191; flock of Avocets in Hampshire, 196; Gulls taking Ants off surface of Water, 261; almost white Iceland Gull in S. Hampshire, 353.
- JOY, DR. NORMAN H., Departure of Summer Residents observed at Dungeness, Kent, 288. Notes on Bluethroats in Kent, 227; Common Eiders in Kent, 323.
- KAYE, C. H., and HEYCOCK, C., Note on Large Brood of Mistle-Thrush, 28.
- KENNEDY, REV. P. G., Roosting Habits of the Tree-Creeper, 2.
- KERR, MRS. H. RAIT, Notes on Redwings singing in November, 320; Robin singing at Night, 352.
- KERR, W. MARK, Notes on Chiffchaffs in Perthshire, 82, 83; Golden Plover and Starlings performing joint Aerial Movements, 90.
- Kestrel, Food of, and possible seed-dispersal, 192; Recovery of marked, 258.
- Kingfisher, Recovery of marked, 78; Moulting-Periods, 191.
- Kittiwake, Recovery of marked, 130, 316; in Middlesex, 259; inland, 374.
- kleinschmidti*, *Parus a.*, see Tit, Willow-.
- Knot, in Cheshire, 348.
- kuhlii*, *Puffinus*, see Shearwater, Mediterranean Great.
- LACK, DAVID, Letter on Woodland Bird Inquiry, 264.
- , see VENABLES, L. S. V.
- lapponica*, *Limosa*, see Godwit, Bar-tailed.
- lapponicus*, *Calcarius l.*, see Bunting, Lapland.
- Lapwing, Driving Sheep from Nest, 90; Recovery of marked, 127, 311; Food of Young, 134; Habitat Inquiry, 351.
- Lark, Shore-, in North Kent, 291.
- , Sky-, Recovery of marked, 77.
- , Eastern Sky-, at Fair Isle, 231.
- , Wood-, "Injury feigning" by, 81.
- leucopsis*, *Branta*, see Goose, Barnacle-.
- leucopterus*, *Chlidonias*, see Tern, White-winged Black.
- , *Larus*, see Gull, Iceland.
- leucorodia*, *Platalea l.*, see Spoonbill.
- leucorrhoa*, *Oceanodroma*, see Petrel, Leach's Fork-tailed.
- LEVETT, MISS MARY J., Note on Fulmar Petrels in Northumberland in 1936, 295.
- LEVICK, D. R., Note on Peregrine Falcon taking Lapwing on ground, 294.
- LEWIS, STANLEY, Birds of the Island of Steep Holm, 219.
- l'herminieri*, *Puffinus a.*, see Shearwater, Audubon's Little.

- limosa*, *Limosa*, see Godwit, Black-tailed.
- Linnet, Recovery of marked, 76, 255.
- LLOYD, BERTRAM, On the Behaviour of Male Mallards with Broods, 334. Notes on Summer Passage Movements of Swifts, 131; Status of Sandwich and Arctic Terns in Pembrokeshire, 297.
- LOCKLEY, R. M., Notes on Lapland and Ortolan Buntings in Pembrokeshire, 190; Sandwich Terns in Pembrokeshire, 260; Letters on Reported breeding of Fulmar and Manx Shearwater in Pembrokeshire, 200; Black-backed and Herring-Gulls and Ravens feeding on Ants, 325.
- London, Birds of Inner, 365.
- LOW, DR. G. CARMICHAEL, and PEDLER, E. G., Note on Scaup and Black-necked Grebe in Inner London, 30.
- , ——, see MACPHERSON, A. HOLTE.
- MACALISTER, MRS. E., Notes on Chiffchaff and Grasshopper-Warbler Association, 131; Merlin in Inner London, 174.
- MACDONALD, J. D., Note on distinguishing characters of nestlings of Goosander and Red-breasted Merganser, 89.
- MACFARLANE, D., and MACRAE, A., Note on Great and Sooty Shearwaters off the Hebrides, 324.
- MACKWORTH-PRAED, C. W., and GILBERT, H. A., Further Notes on Orierton Decoy, 1935-36, 159.
- MACPHERSON, A. HOLTE, LOW, DR. G. CARMICHAEL, and PEDLER, E. G., Note on Rare Birds in and near London, 323. Birds of Inner London, 365.
- MACRAE, A., Note on Sooty Shearwaters and a Great Shearwater off the Hebrides, 174.
- , see MACFARLANE, D.
- macrura*, *Sterna*, see Tern, Arctic.
- MADOC, COL. W. H., Note on Water-Pipit in Kent, 225.
- Magpie, Recovery of marked, 74, 254.
- major*, *Puffinus*, see Shearwater, Great.
- Mallard, Recovery of marked, 125, 307; Behaviour of male with broods, 334.
- MANN, E., see WRIGHT, W. A.
- MANSER, G. E., Action of Jack Snipe in feeding, 325.
- marila*, *Nyroca m.*, see Duck, Scaup.
- marinus*, *Larus*, see Gull, Great Black-backed.
- maritima*, *Calidris*, see Sandpiper, Purple.
- Marked Birds, Recovery of, 74, 125, 254, 307.
- MARPLES, GEORGE, Behaviour of Starlings at Nesting Site, 14; Further Notes on Behaviour of Starlings at the Nesting-site, 41; Note on Woodpecker Nesting-holes and the Compass, 84; The Song of the Mistle-Thrush, 305; Letter on Reflected Colour of Nightjar's eyes, 322.
- Martin, House-, Homing Experiments with, 31; Young of normal and albinistic, 84.
- , Sand-, Recovery of marked, 78, 258; Dates of departure of, 289; Late in Hertfordshire, 326.
- May, Isle of, Scarce birds on the, 297.
- MCWILLIAM, REV. J. M., Letter on Colour of Lesser Black-backed Gull affected by angle of light, 56.
- MEARES, D. H., Note on Hobby and Grey Squirrel, 132.
- MEIKLEJOHN, M. F. M., see ELLIOTT, H. F. I.
- melophilus*, *Erithacus r.*, see Robin, British.
- merganser*, *Mergus m.*, see Goosander.
- Merganser, Red-breasted, Characteristics of Nestlings, 89; in Middlesex, 323; influx inland, 374.
- Merlin, in Inner London, 174.
- merula*, *Turdus m.*, see Blackbird.

- Middlesex, Birds in, 249.
 Midlothian Ornithological Club, Unusual "Hold-up" of Spring Migrants on East Coast of Scotland, 167.
minimus, *Lymnocyptes*, see Snipe, Jack.
minuta, *Calidris*, see Stint, Little.
minutus, *Larus*, see Gull, Little.
 MITCHELL, M., Notes on Herring-Gulls feeding on Larvæ of Moths, 92; Glaucous Gull in Denbighshire, 230.
modularis, *Prunella m.*, see Sparrow, Hedge-, Continental.
mollissima, *Somateria m.*, see Eider.
monedula, *Colæus m.*, see Jackdaw, Scandinavian.
 MOODY, A. F., Note on White-tailed Eagle in Northamptonshire, 28.
 Moorhen, Winter Behaviour, 120; Recovery of marked, 316.
 MORETON, B. D., Note on Crossbills' Method of feeding on Larch Cones, 27.
 MORLEY, MISS AVERIL, The Winter Behaviour of Moor-Hens, 120.
 MOUNTFORT, G. R., Note on long Incubation Period of the Blue Tit, 190.
musicus, *Turdus*, see Redwing.

naevia, *Locustella n.*, see Warbler, Grasshopper-.
 NEAME, H., Letter on Reflected colour of Nightjar's eyes, 379.
nebularia, *Tringa*, see Greenshank.
nesa, *Pyrhula p.*, see Bullfinch.
newtoni, *Parus m.*, see Titmouse, Great.
 NICHOLSON, E. M., The Index of Heron Population, 1936, 202; Letter on Cuckoo calling with bill open (or closed), 264; Notes on Dunlins in Inner London, 30; Black Redstart in Inner London, 320.
 —, —, see WITHERBY, H. F.
niger, *Chlidonias n.*, see Tern, Black.
 Nightjar, at Fair Isle, 168; Reflected colour of eyes, 322, 356, 379.
nigricollis, *Podiceps n.*, see Grebe, Black-necked.
nisus, *Accipiter*, see Hawk, Sparrow-.
nivalis, *Plectrophenax*, see Bunting, Snow-.
 Nutcracker, in Surrey, 93.

obscurus, *Anthus s.*, see Pipit, Rock-.
 —, *Parus c.*, see Titmouse, Blue.
occidentalis, *Prunella m.*, see Sparrow, Hedge-, British.
 —, *Hæmatopus o.*, see Oystercatcher.
œdicnemus, *Burhinus*, see Curlew, Stone-.
enanthe, *Enanthe æ.*, see Wheatear.
œnas, *Columba*, see Dove, Stock-.
 OLDHAM, CHAS., Notes on immature Little Gull in Hertfordshire, with notes on its characteristics, 51; on Redshank, nesting at Tring in 1936, 175.
olor, *Cygnus*, see Swan, Mute.
 Orierton Decoy, Further Notes on, 1935-36, 159.
 Oriole, Golden, in Suffolk, 82.
oriolus, *Oriolus o.*, see Oriole, Golden.
 Osprey, in Kent, 135.
 Ouzel, Ring-, Incubation and fledging Periods, 94.
 OWEN, J. H., Further Notes on the Sparrow-Hawk, 22.
 Owl, Barn-, Recovery of marked, 79, 258; in Inner London, 232.
 —, Little, Recovery of marked, 79, 258.
 —, Snowy, Recorded in Fifeshire, 94.
 —, Tawny, Taking Prey during the Day, 47, 86, 173; Recovery of marked, 79.
 Oystercatcher, nesting inland in Cheshire, 49; Young swimming under water, 135; Recovery of marked, 311.

paludicola, *Acrocephalus*, see Warbler, Aquatic.
palumbus, *Columba p.*, see Pigeon, Wood-.
 Parasites, obtained from Birds on Skokholm Island, 317.

- Partridge, Common, Food of, 217.
 —, Red-legged, Spring habits of, 38; Food of, 217.
- PAULSON, C.W. GEOFFREY, Notes on Little Gull in Cambridgeshire, 196; Avocet in winter in Essex, 378.
- , —, and FORGES, GRAHAME DES, Note on Common Eiders in Sussex, 295.
- PEDLER, EDWARD G., Note on Great Northern Diver in Surrey, 295.
- , —, see LOW, G. CARMICHAEL; see MACPHERSON, A. HOLTE.
- pelagicus*, *Hydrobates*, see Petrel, Storm-.
- penelope*, *Anas*, see Wigeon.
- perdix*, *Perdix*, see Partridge, Common.
- peregrinus*, *Falco p.*, see Falcon, Peregrine.
- perspicillata*, *Oidemia*, see Scoter, Surf.
- PETHEN, R. W., see WRIGHT, W. A.
- Petrel, Fulmar, Breeding in Pembrokeshire, 133; Incubation and Nestling Period of, 194; First breeding of on Farne Islands and Yorkshire, Corrections to, 197; Reported breeding of, in Pembrokeshire, 200; in Northumberland in 1936, 295.
- , Leach's Fork-tailed, in Hampshire, 299; Breeding-habits of, 234, 276.
- , Storm-, Recovery of marked, 310.
- petrosus*, *Anthus s.*, see Pipit, Rock-.
- Pheasant, Food of, 216.
- PHILIPSON, W. R., Two contrasting seasons at a Redwing Roost, 343.
- philomelus*, *Turdus e.*, see Thrush, Continental Song-.
- pica*, *Pica p.*, see Magpie.
- Pigeon, Wood-, Recovery of marked, 127; Four eggs in nest of, 197.
- PIKE, OLIVER G., Note on Blackbird's large Clutch of Eggs, 44.
- Pintail, Nesting in Kent, 162; Nesting in Sussex, 162; in Surrey, 346.
- Pipit, Meadow-, Recovery of marked, 77, 256.
- , Rock-, nesting inland in Cheshire, 49; Recovery of marked, 256.
- , Tawny, at Fair Isle, 231.
- , Water-, in Kent, 225.
- platyrhyncha*, *Anas p.*, see Mallard.
- Plover, Golden, Performing joint aerial movements with Starlings, 90; Food of, 214.
- , Grey, in Outer Hebrides, 297; in Surrey, 346.
- , Ringed, Recovery of marked, 127; Food of, 214.
- POUNDS, HUBERT E., Notes on the Flight of the Sparrow-Hawk, 183; late brood of Dartford Warbler, 292.
- pratensis*, *Anthus*, see Pipit, Meadow-.
- pratincola*, *Glareola*, see Pratincole.
- Pratincole, at Fair Isle, 231.
- Puffin, Recovery of marked, 316.
- puffinus*, *Puffinus p.*, see Shearwater, Manx.
- pugnax*, *Philomachus*, see Ruff.
- PUMFRETT, D. G., Note on Heron and Cattle, 229.
- purpurea*, *Ardea*, see Heron, Purple.
- pusilla*, *Emberiza*, see Bunting, Little.
- PYE, BERNARD A., Note on Unusual "Hold-Up" of Spring Migrants on Lincolnshire Coast, 171.
- Quail, in Suffolk, 52.
- querquedula*, *Anas*, see Garganey.
- Rail, Water-, in summer in Inverness-shire, 92.
- RAMPTON, A., see ELLIOTT, H. F. I.
- Raven, Feeding on Ants, 325.
- Razorbill, Recovery of marked, 316.
- Recovery of Marked Birds, 74, 125, 254, 307.
- Redshank, Nesting at Tring in 1936, 175; Recovery of marked, 128, 312; Wintering in Hampshire, 353.
- , Spotted, Call Notes, 91; in Cumberland, 135; in Cambridgeshire, 195; in Sussex in Winter, 296; in Cheshire, 348.

- Redstart, Black, at Isle of May, 167, 298; in Surrey, 231; in Middlesex, 298; in Inner London, 320.
- Redwing, at Fair Isle, 231; Singing in November, 320; Two contrasting seasons at a Roost of, 343; Singing in November, 351.
- , Iceland, in Somerset, 32; in North Uist, 32; Eating Molluscs, 173; in Outer Hebrides, 297.
- regulus*, *Regulus r.*, see Wren, Continental Golden-crested.
- Reservoirs and Sewage Farms, Notes from, 346.
- Reviews:—
- Die Vogelwarte Rossitten auf der Kurischen Nahrung, 32.
- Transactions of the Norfolk and Norwich Naturalists' Society, 1935, 53.
- The London Naturalist, 1935, 54.
- South-Eastern Bird Report, 1935, 54.
- Report of the Cambridge Bird Club, 1935, 55.
- Report on Somerset Birds, 1935, 55.
- Ornithological Record for Derbyshire, 1934-5, 55.
- Ornithological Notes, 1933-4 (Transactions of the Cardiff Naturalists' Society), 55.
- Transactions of the Hertfordshire Natural History Society and Field Club, Vol. XX, Part II, 56.
- De Vogels van Nederland, 95.
- England's Birds, 96.
- Songs of Wild Birds, 198.
- Bird Migration, 199.
- Enigmas of Natural History, 262.
- Report on the Birds of Warwickshire, Worcestershire and South Staffordshire, 1935, 263.
- Thirty Years of Nature Photography, 299.
- Birds of the Wayside and Woodland, 300.
- The Rookeries of Somerset, 327.
- Reviews (*contd.*):—
- Skokholm, Bird Observatory Report for 1936, 329.
- Report of the Oxford Ornithological Society, 1935, 329.
- Hastings and East Sussex Naturalist, 1936, 330.
- Proceedings of the Bournemouth Natural Science Society, 1935-36 Report on Birds, 330.
- Das Leben deutscher Greifvögel, 330.
- Birds of Glamorgan, 355.
- Inventaire des Oiseaux de France, 380.
- ridibundus*, *Larus*, see Gull, Black-headed.
- Ringling, *see* Marked Birds and British Birds Marking Scheme.
- riparia*, *Riparia r.*, see Martin, Sand-
- Robin, occupying vacated territory, 196; Recovery of marked, 257; Singing at night, 352; Behaviour of male, in trap, 376.
- ROBINSON, H. W., Note on Incubation and Nestling Period of the Fulmar Petrel, 194; American Green-winged Teal in Westmorland, 378.
- Rockall, Birds of, 251.
- Rook, Molt of, 52; Recovery of marked, 74; Food of, 210.
- ROOKE, K. B., Letter on Avocet in Cambridgeshire in winter, 324.
- ROSS, MISS WINIFRED M., Note on Water-Rail in summer in Inverness-shire, 92.
- ROWAN, PROF. WM., Letter on Habits of Starlings roosting in London, 332.
- Rubber rings, Birds taking, 374.
- rubetra*, *Saxicola r.*, see Whinchat.
- rufa*, *Alectoris r.*, see Partridge, Red-legged.
- Ruff, in Outer Hebrides, 53; In summer in Cheshire, 53; in Surrey, 346.
- ruficollis*, *Podiceps r.*, see Grebe, Little.
- rufitergum*, *Garrulus g.*, see Jay.
- rustica*, *Hirundo r.*, see Swallow.
- rusticola*, *Scolopax r.*, see Woodcock.

- SALMON, H. MORREY, *see* INGRAM, GEOFFREY, C. S.
- Sandpiper, Curlew-, in Cheshire, 348.
- , Common, in winter in Cumberland, 134.
- , Purple, in Somerset, 95; in Middlesex, 259.
- , Wood-, at Isle of May, 167, 298; Call Notes of, 352.
- sandvicensis*, *Sterna* s., *see* Tern, Sandwich.
- scandiacæ*, *Nyctea*, *see* Owl, Snowy.
- Scaup, *see* Duck, Scaup.
- schœniclus*, *Emberiza* s., *see* Bunting, Reed-.
- scirpaceus*, *Acrocephalus* s., *see* Warbler, Reed-.
- Scoter, Surf-, at Fair Isle, 231.
- Scottish Ornithologist's Club, 332.
- serrator*, *Mergus*, *see* Merganser, Red-breasted.
- SETH-SMITH, DAVID, Note on Winter Gathering of Pied Wag-tails in London Suburb, 319.
- Shag, Recovery of marked, 127, 309; influx of, 373.
- Shearwater, Audubon's Little, in Sussex (new to the British List), 48.
- , Great, off the Hebrides, 175, 324, 378; off Isle of May, 298.
- , Manx, Breeding on Pembroke-shire mainland, 175; reported breeding of, in Pembroke-shire, 200; Recovery of marked, 310.
- , Mediterranean Great, off the Sussex Coast, 229.
- , Sooty, off the Hebrides, 174, 324, 378.
- Sheld-Duck, *see* Duck, Sheld-.
- Shoveler, Proportion of sexes of, at Orierton Decoy, 160; Recovery of marked, 308.
- Shrike, Great Grey, in Kent, 52; in Surrey, 196, 231; in Derbyshire, 231; in Staffordshire, not Derbyshire, a correction, 261.
- , Red-backed, on Isle of May, 298.
- Siskin, Status of, in Lakeland, 170.
- SMITH, K. D., Note on Iceland Gull in Hampshire and Spotted Redshank wintering, 353.
- Snipe, Common, Food of, 215; Recovery of marked, 312.
- , Jack, Food of, 215; Action of, in feeding, 325.
- SOUTHERN, H. N., Behaviour of male Robin in trap, 376.
- Sparrow, Hedge-, Sexual display by, 32; Recovery of marked, 78, 257.
- , —, Continental, on Isle of May, 298.
- , —, Hebridean, Range of, 83, 259; Movements of, in Western Scotland, 322.
- spectabilis*, *Somateria*, *see* Eider, King-.
- spermologus*, *Colæus* m., *see* Jackdaw.
- spinoletta*, *Anthus* s., *see* Pipit, Water-.
- spinus*, *Carduelis*, *see* Siskin.
- Spoonbill, in County Down, 47; in Islay, 87.
- Spring-Migrants, an unusual "Hold-up" of, on the Norfolk coast, 58; on East Coast of Scotland, 167; on Lincolnshire coast, 171.
- squatarola*, *Squatarola*, *see* Plover, Grey.
- Staffordshire Reservoirs, Notes from, 349.
- STANFORD, J. K., Letter on Coloration of soft parts in the *Herodiones* during the breeding season, 136.
- STANSFELD, A. G., Note on Ivory-Gull in Cambridgeshire, 354.
- Starling, Behaviour at the nesting-site, 14, 41; Homing experiments with, 31; Recovery of marked, 75, 76, 254; Performing joint aerial movements with Golden Plover, 90; Eating Molluscs, 173; Habits of, roosting in London, 332; Invasion of, on the Norfolk coast, 374.
- Steep Holm, Birds of the Island of, 219.
- STEINTHAL, MISS D., Note on Green Woodpecker Drumming, 46.
- stellatus*, *Colymbus*, *see* Diver, Red-throated.
- Stint, Little, Unusual numbers of, in various parts of the country, 195, 230; in Cheshire, 348.

- Stint, Temminck's, in Surrey, 347.
- STONE, MISS A. V., Note on Common Eiders in Kent, 323.
- Stonechat, Recovery of marked, 78.
- , Hebridean, range of, 259.
- STOUT, GEORGE, and WATERSTON, GEORGE, Note on the Booted-Warbler on Fair Isle, a new British Bird, 226.
- strepera*, *Anas*, see Gadwall.
- striata*, *Muscicapa s.*, see Flycatcher, Spotted.
- subbuteo*, *Falco s.*, see Hobby.
- svecica*, *Luscinia*, see Bluethroat.
- Swallow, Homing experiments with, 31; Recovery of marked, 78, 257; Inquiry, 1935, Report on the, 98; Dates of departure of, 289; and Bloodstained Cow's milk, 199, 200; Recoveries of marked, within the British Isles, 278; Food of nestling, 293; Results of ringing and trapping, in Carmarthenshire, 294; Duplicate nest-building, 322; Influence of weather on dispersal of, after nesting, 355.
- Swan, Bewick's, in Merionethshire, 262, 326; in Essex, 354; in Oxfordshire, 377.
- , Mute, Ménage à trois in the, 178, 232.
- , Whooper, in Northumberland in June, 176; in Cambridge-shire and Hampshire, 261.
- Swift, Recovery of marked, 78; Summer Passage Movements, 131; Observations on the roosting of, 206; Dates of departure of, 288; Influence of weather on dispersal of, after nesting, 355.
- sylvatica*, *Strix a.*, see Owl, Tawny.
- tadorna*, *Tadorna*, see Duck, Sheld-.
- Teal, Proportion of sexes of, at Orielton Decoy, 160; Recovery of marked, 120, 125, 307.
- , American Green-winged, in Westmorland, 378.
- temminckii*, *Calidris*, see Stint, Temminck's.
- Tern, Arctic, Status of, in Pembrokeshire, 297; Recovery of marked, 129, 314.
- , Black, in Hampshire, 95; in Shropshire, 95; in Surrey, 347.
- , Common, Recovery of marked, 129, 314.
- , Little, in Middlesex, 53.
- , Sandwich, in Pembrokeshire, 260; Status of in Pembrokeshire, 297; Recovery of marked, 128, 313.
- , White-winged Black, seen in Co. Cork, 176, 198.
- testacea*, *Calidris*, see Sandpiper, Curlew-.
- theresæ*, *Saxicola t.*, see Stonechat, Hebridean.
- THOMAS, J. F., Notes on Food of Nestling Swallows, 293; Results of ringing and trapping Swallows in Carmarthenshire, 294; Duplicate Nest-building by Swallow, 322; Black-tailed Godwit in Carmarthenshire in winter, 325.
- THOMPSON, GORDON B., Note on some Parasites obtained from Birds on Skokholm Island, 317.
- THOMSON, DR. A. LANDBOROUGH, see BOYD, A. W.
- Thrush, Mistle-, large brood of, 28; Recovery of marked, 77, 256; Large clutches of eggs, 94; Song of, 305.
- , Song-, Destroying Eggs of Wild-Duck, 44; Recovery of marked, 77, 256.
- , —, Continental, in Renfrewshire, 293, 354; in Ayrshire, 293; in Lanarkshire, 354.
- , —, Hebridean, Food of, 213.
- thunbergi*, *Motacilla f.*, see Wagtail, Grey-headed.
- TICEHURST, DR. N. F., Note on early Nesting of Sheld-Duck, in Kent, 87; Nesting of the Pintail in Kent, and Sussex, 162; Notes on Bluethroats in Kent and Sussex, 227; Collared Flycatcher in Sussex, 292.
- tinnunculus*, *Falco t.*, see Kestrel.
- Titmouse, Blue, Fed by two Birds whilst sitting, 94; Long Incubation—Period of, 190; Recovery of marked, 256.

- Titmouse, Continental Coal-, On Isle of May, 298.
- , Great, Taking Moths, 172; Recovery of marked, 256.
- , Willow, on the Distribution and Status of the British, 358; Comparison of notes and habits with the Chickadee, 379.
- TOOK, CAPT. G. E., Notes on Carrion-Crow laying twice in same nest, 80; Lapwing driving Sheep from Nest, 90.
- torda*, *Alca*, see Razorbill.
- torquatus*, *Turdus t.*, see Ouzel, Ring-.
- torquilla*, *Jynx*, see Wryneck.
- totanus*, *Tringa t.*, see Redshank.
- tridactyla*, *Rissa t.*, see Kittiwake.
- Tring Collection, Types of British Birds in the, 317.
- TUCKER, B. W., The Coloring of the soft parts of the Buff-backed Heron, 70; An Observation on the Roosting of Swifts, 206.
- TURNER, MISS E. L., Obituarial Notice of the Duchess of Bedford, 369.
- Turnstone, in Cheshire, 348.
- turtur*, *Streptopelia t.*, see Dove, Turtle-.
- Twite, Status of, in Lakeland, 170.
- urbica*, *Delichon u.*, see Martin, House-.
- vanellus*, *Vanellus*, see Lapwing.
- VAUGHAN, F. MARTIN, Note on Hoopoes in Hertfordshire and Hampshire, 173.
- VENABLES, L. S. V., and LACK, DAVID, Further Notes on Territory in the Great Crested Grebe, 60; Letter on some field notes on the Chickadee, 379.
- vidalii*, *Athene n.*, see Owl, Little.
- VINCENT, JIM, Notes on Grey-headed Wagtail in Norfolk, 44; Marsh-Harrier wintering in Norfolk, 323.
- virescens*, *Picus v.*, see Woodpecker, Green.
- viscivorus*, *Turdus v.*, see Thrush, Mistle-.
- vulgaris*, *Sturnus v.*, see Starling.
- Wagtail, Blue-headed in Surrey, 31; at Isle of May, 167, 298; —, Grey-headed, in Norfolk, 44; at Isle of May, 167, 298.
- , Pied, Recovery of marked, 77; Using roost in June, 82; Nesting and Rearing of young by an unmated, 291; Winter-gathering in London suburb, 319.
- WALLIS, H. M., Note on Young of Normal and Albinistic House-Martins, 84.
- Warbler, Aquatic, at Fair Isle, 231.
- , Barred, on Isle of May, 298.
- , Booted-, on Fair Isle, a new British Bird, 226.
- , Dartford, late brood of, 293.
- , Grasshopper-, Incubation Period, 83.
- , —, and Chiffchaff Association, 131.
- , Reed-, at Fair Isle, 168; on Isle of May, 298.
- WATERSTON, GEORGE, Letter on The Scottish Ornithologists' Club, 332.
- , —, see STOUT, GEORGE.
- WATSON, J. B., Note on Golden Oriole in Suffolk, 82.
- Wheatear, Recovery of marked, 257.
- Whinchat, Early, in Sussex, 32.
- WHITE, CHARLES M. N., Notes on the Range of the Hebridean Hedge-Sparrow, 83; *Puffinus kuhlii* off the Sussex Coast, 229.
- Whitethroat, Lesser, at Isle of May, 167, 298; in Caithness, 168; at Fair Isle, 168; Injury-feigning by, 82.
- WHITTAKER, IRVINE, Note on Twite as Fosterer of Cuckoo, 80.
- Wigeon, Proportion of sexes of, at Orierton Decoy, 160; Recovery of marked, 126, 308; Food of, 214.

- WITHERBY H. F., The "British Birds" Marking Scheme, Progress for 1936, 337. Notes on Avocet ringed in Rhone Delta found in Essex, 50; Moulting of the Rook, 52; "Injury-Feigning" by Wood-Lark, 81; Scandinavian Jackdaws in Scotland, 224; Types of British Birds in the Tring Collection, 317; The January-February influx of Grebes and Divers, 370.
- , —, and E. M. NICHOLSON, on the Distribution and Status of the British Willow-Tit, 358.
- Woodcock, Food of, 215; Recovery of marked, 128, 313; The "Roding" of, 379.
- Woodpecker, Nesting-holes and the Compass, 84.
- , Great Spotted, Recovery of marked, 79; Unusual Method of drumming, 46; nesting in a telegraph pole, 377.
- WORKMAN, W. H., Note on Spoonbill in County Down, 47.
- Wren, Continental Golden-crested in Lanarkshire, 226; in Renfrewshire, 376.
- , St. Kilda, Field Study of, 93.
- WRIGHT, W. A., Note on Goosanders spending summer in Surrey, 193.
- , —, PETHEN, R. W., and MANN, E., Note on Blue-throat in Essex, 191.
- Wryneck, on Isle of May, 167, 298; at the Bass Rock, 298.
- yarvelli*, *Motacilla a.*, see Wagtail, Pied.
- YEATES, GEORGE K., On the Fighting of Blackcock, 34; Notes on Injury-Feigning by Stone-Curlew, 134; Early Breeding of Stone-Curlew, 194.



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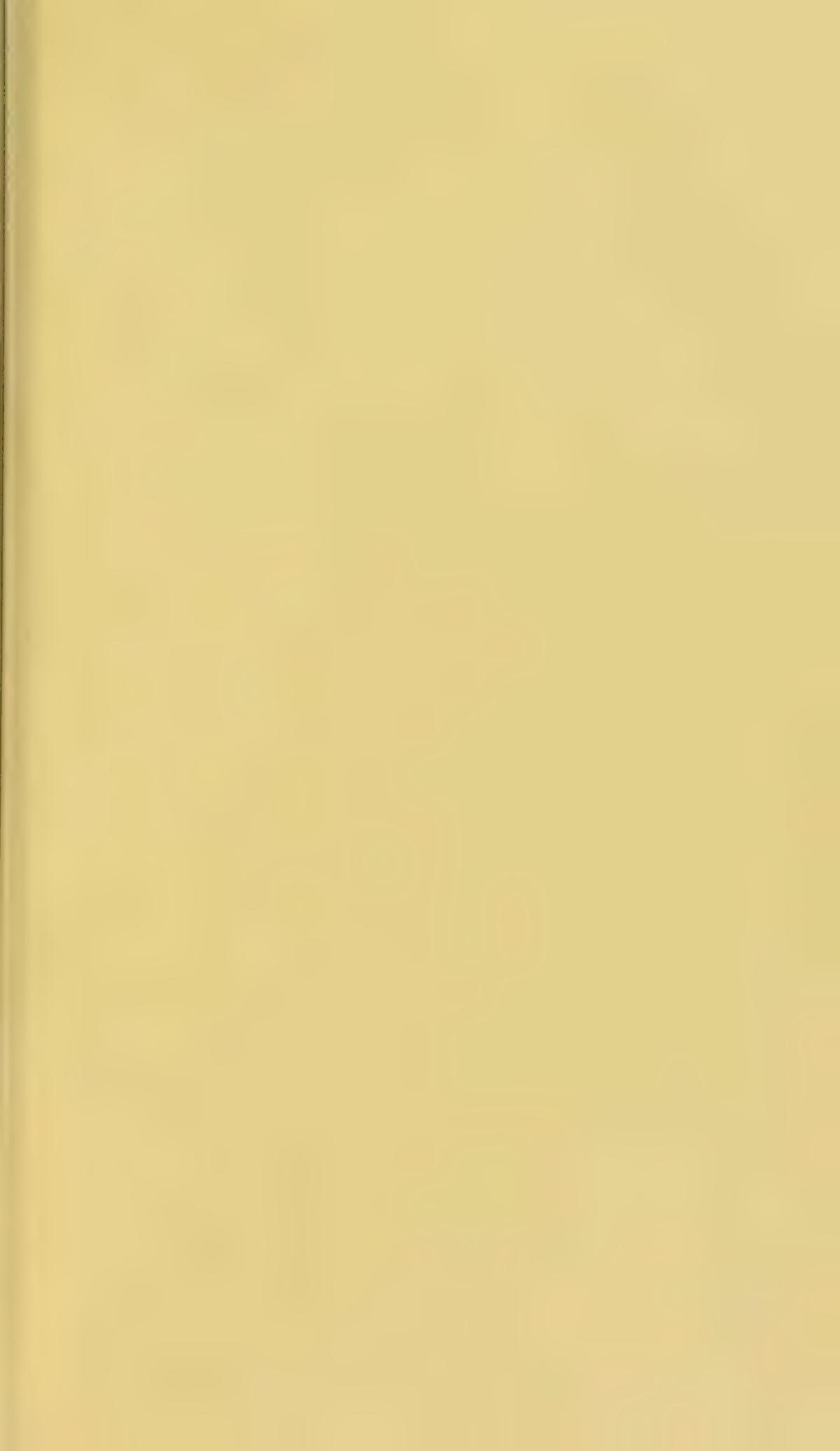
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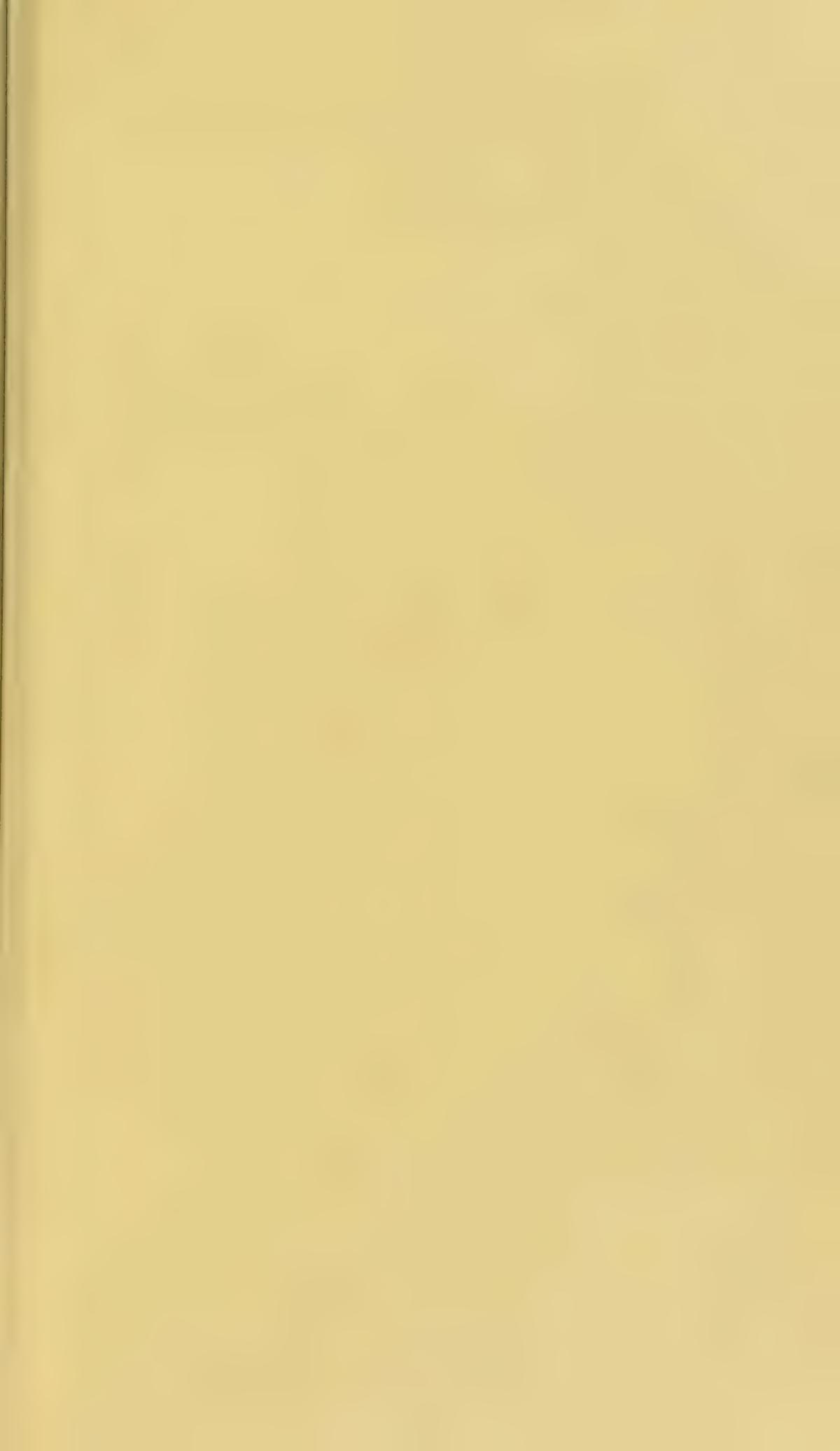
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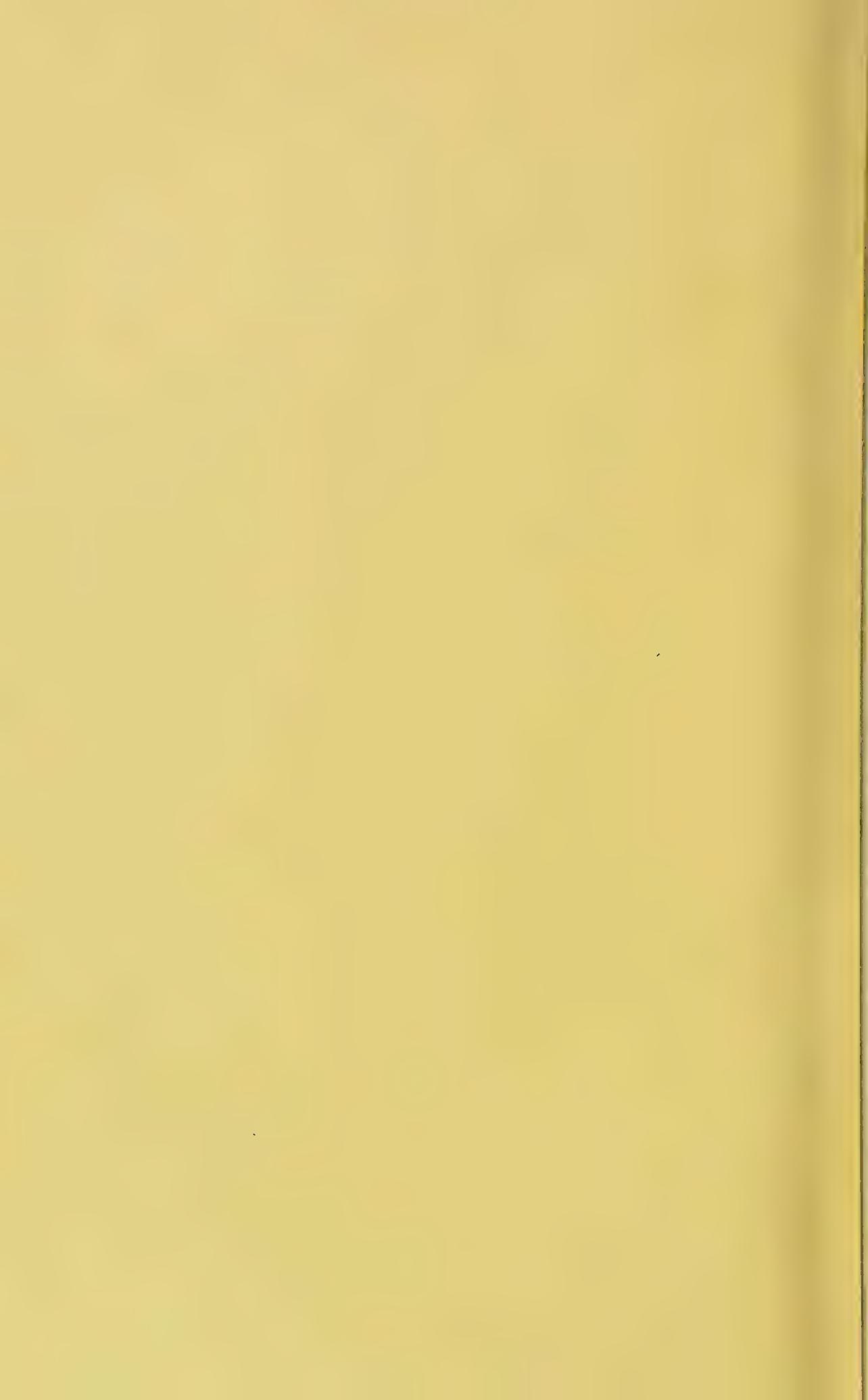
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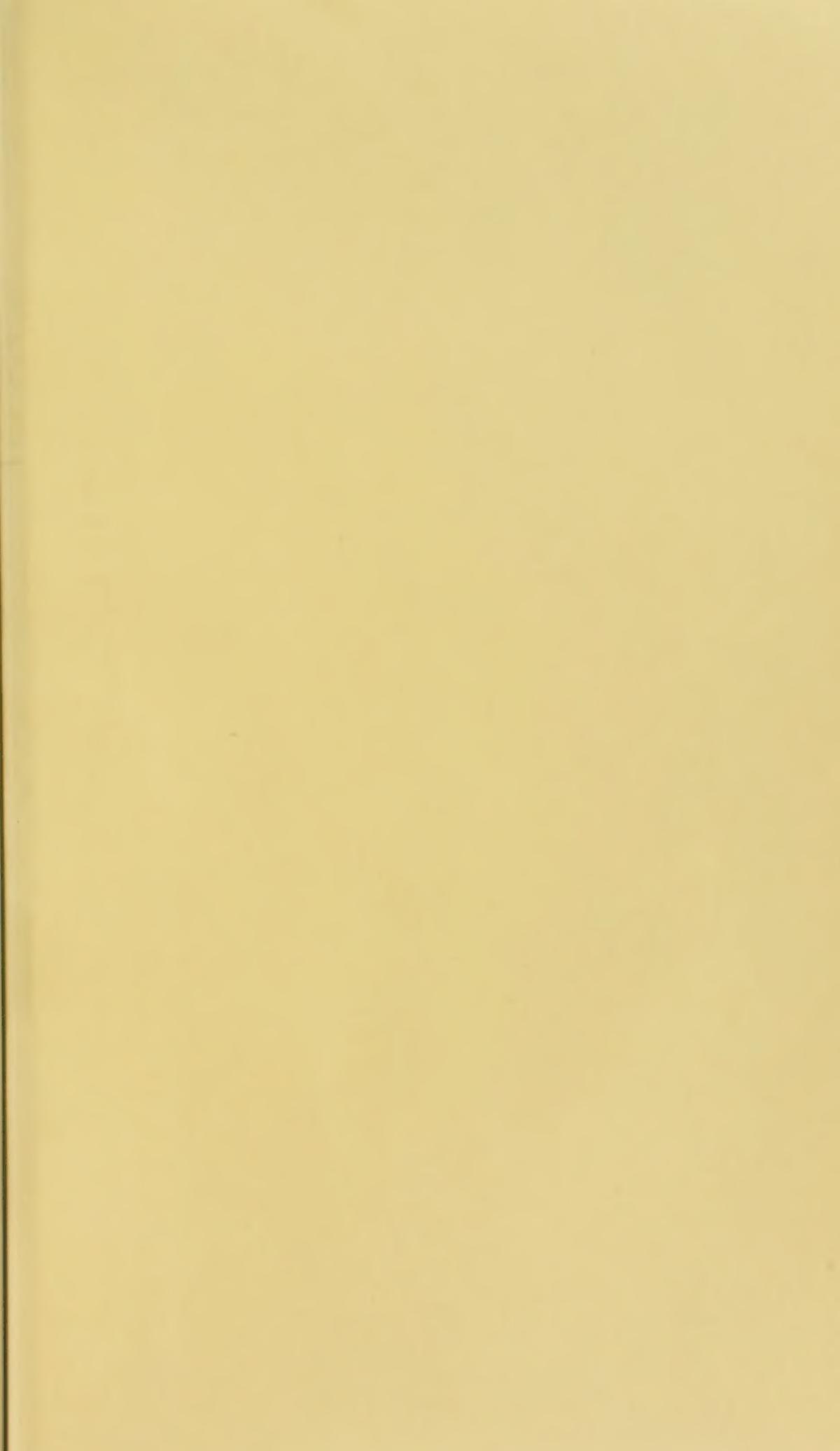


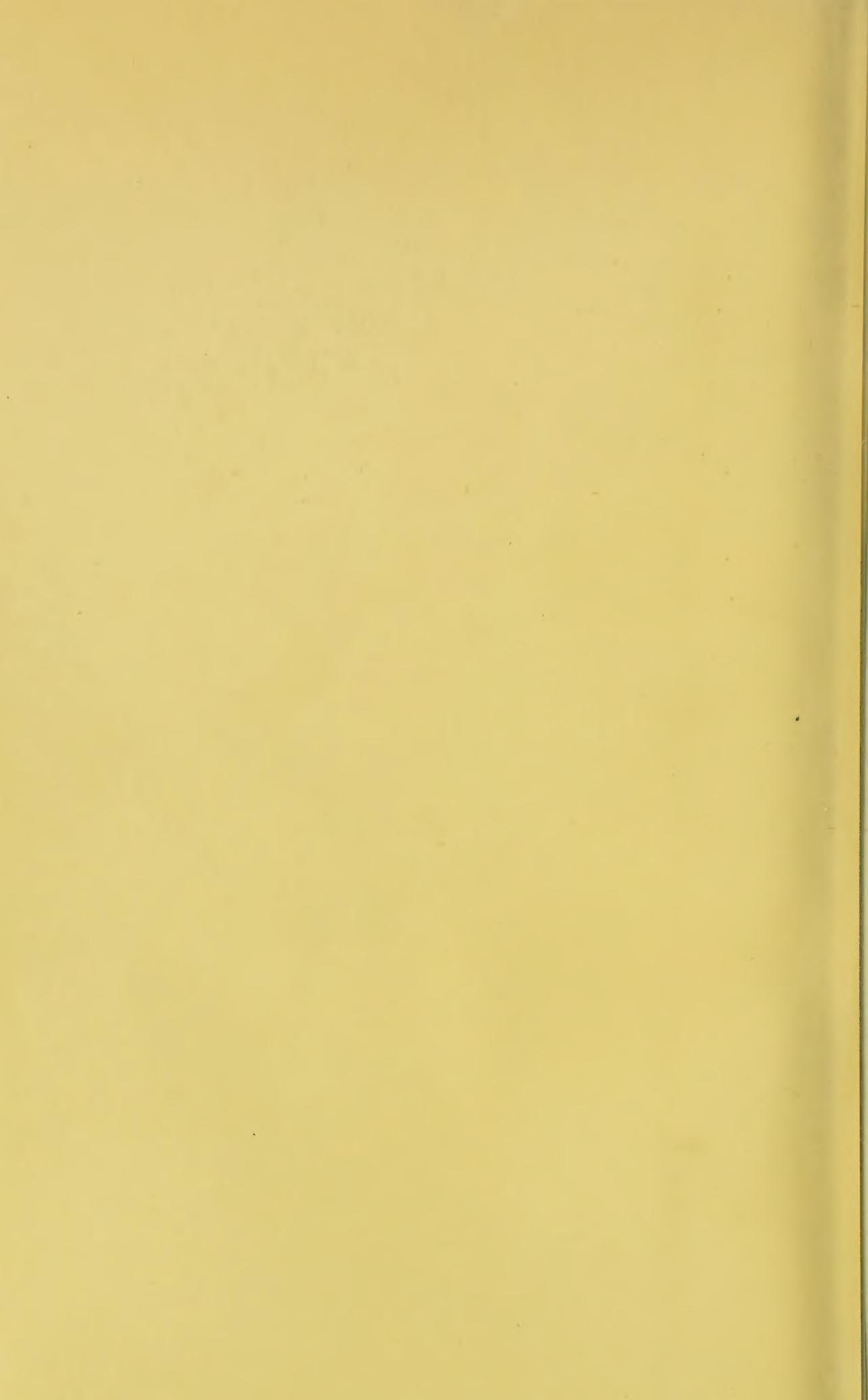












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