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ORNITHOLOGICAL REPORT ON THE FARNE ISLANDS FOR 1956

Compiled by

GRACE HICKLING, M.A., M.B.O.U.

The most important feature of the breeding season has again been the large number of nesting Sandwich terns and the fact that, as in 1955, the biggest colony was on Inner Farne. It is difficult to give an accurate estimate of the numbers present, but there were between 1,975 and 2,485 pairs, the probable figure being 2,200-2,300 pairs. The greatest numbers hitherto recorded were in 1932 and 1939 when, according to Goddard, there were approximately 2,000 pairs and it seems, therefore, that the 1956 figure may well be the largest ever recorded.

There was virtually no change in the number of common, arctic and roseate terns.

Nesting shags have again increased and there has been a marked rise in the number of eider-ducks on Inner Farne. On the other hand, razorbills and fulmars, never numerous, showed a slight decrease in breeding pairs.

A new kittiwake colony, consisting of four pairs, has been started on the West Wideopens : it is the first time the birds have nested on either of the Wideopens.

The season was an early one, especially for guillemots and puffins. Westerly gales in June caused a certain amount of damage and the nests in the kittiwake colony at the north-west of Brownsman were destroyed, but the real trouble occurred at the beginning of August when there was continuous rain and gale force winds. The young terns, not yet very strong on the wing, were quite unable to resist these conditions and there was high mortality, especially among the arctics, on both Brownsman and Inner Farne. D. Lazenby thought that, on the Brownsman, about one in five had died, and when I was there on August 5th it was pathetic to see the island covered with little corpses. On the Inner Farne, in addition to the mortality from wind and rain, quite a number of the youngsters in St. Cuthbert's Cove were

drowned. Fortunately, Sandwich terns suffered less and Lazenby estimated that, on the Brownsman, only one in thirty had died as a result of this very bad weather.

Early in May an attempt (whether successful or not I do not know) was apparently made to raid the Pinnacles, for on May 20th we noticed a rope hanging down from one of these rocks.

The closing of Longstone End continues to be beneficial, but it is greatly to be regretted that all the fishermen do not co-operate in this matter. Notice boards forbidding landing can be seen quite clearly from the sea, but at low water visitors can land on the lighthouse side of Sunderland Hole and walk across the rocks to the ternery. This happened on one occasion when I was out counting seals, and the Shiels hastily altered course and landed me on Longstone End where I explained matters to the visitors. They were quite reasonable, and appeared to understand the position, but their boatman was decidedly abusive, saying that the islands " belonged to the nation " and therefore he could land where he wished !

An example of the benefit obtained by wiring off the east part of the Inner Farne is shown by the successful rearing of a fulmar chick. The adult nested under an overhang in the bank, in a place which would normally have been easily accessible to visitors, but because of the closing of this ground she was quite undisturbed and so was one of the few fulmars to rear its young.

Outside the breeding season the most notable event of the year was the abnormally heavy passage of drift migrants which took place in early September. A full account of this passage, by Dr. E. A. R. Ennion, will be published elsewhere in these *Transactions*, but this report would be incomplete without some reference to it as it affected the Farnes, especially the Inner Farne.

On September 2nd E. L. Arnold, accompanied by his son, David, and P. R. Evans, went out to spend three days in the Study Centre. When they arrived there was a strong east wind and the weather became cloudy in the evening. They found nothing to suggest any unusual movement of passage migrants, the only birds recorded being two wheatears, a willow-warbler, a house-martin, a common sandpiper and three dunlins.

By next day, however, matters were very different. The weather was decidedly unpleasant, heavy rain fell in the early morning and there was thick mist, which persisted all day in varying degrees of intensity and was accompanied by intermittent rain. Visibility improved towards evening and it was then possible to see the mainland.

The island simply swarmed with birds, and so numerous were they that an accurate count was quite impossible. The following list of species, with the numbers present, will give some idea of conditions :— kestrel 1 ; common snipe 2 ; whimbrel 2 ; wryneck 2 ; wheatear *c.* 20 ; whinchat *c.* 12 ; redstart *c.* 40 ; blackcap 1 ; barred warbler 3 ; garden-warbler 6 ; whitethroat 2 ; willow-warbler, *c.* 20 ; pied flycatcher *c.* 40 ; tree-pipit 6 ; rock-pipit *c.* 20 ; yellow wagtail 1 ; red-backed shrike 2 ; crossbill 2 ; ortolan bunting 1 ; Lapland bunting 1.

The weather continued to improve and by the following day (September 4th) the sky was clear, although there was still a slight mist. There were fewer birds than on the previous day, but still plenty to be seen. Again a list of species and numbers will prove useful:— kestrel 1 ; wood-sandpiper 1 ; greenshank 1 ; wheatear *c.* 12 ; whinchat *c.* 15 ; redstart *c.* 20 ; bluethroat 1 ; barred warbler 1 ; garden-warbler *c.* 6 ; whitethroat 2 ; willow-warbler *c.* 15 ; pied flycatcher *c.* 15 ; tree-pipit 2 ; crossbill 2 ; Lapland bunting 1.

E. A. R. Ennion paid more than one visit to the Inner Farne and the Brownsman during the period September 3rd to 10th and his observations show that on the Brownsman also there were large numbers of birds, the majority being whinchats, redstarts and garden-warblers.

Mr. G. W. Phillips, head lightkeeper at the Longstone, reports that the floodlights have been in operation on four occasions and that he found only one dead bird, a common snipe. Details are as follows :—

Date	*Wind*	*Force*	*Species seen*
21.10.56	S.W.	4	Many starlings and pipits
6.11.56	W.N.W.	8	A few starlings and pipits, one woodcock
18.11.56	S.E.	3	13 blackbirds (mostly males), one snipe (dead)
20.11.56	S.S.E.	6	Blackbirds and pipits

One new species was added to the systematic list of birds recorded for the islands. This was the ortolan bunting *Emberiza hortulana* L. For the third successive year barred warblers were seen on Inner Farne in September. This time there were three, all immature, bringing the total number so far recorded up to five.

No students have been continuously in residence in the Farne Islands Study Centre, but several visitors have spent short periods on the island and their records, especially those of Dr. J. M. Cullen,

Dr. E. Cullen and Dr. E. L. Arnold, have been of great value. As always, my thanks are extended to Dr. E. A. R. Ennion for his invaluable list of records and for his help in ringing. Thanks are due also to the watchers, Messrs. D. and R. Lazenby, J. Mullins and R. Nelson, for the very useful information they provided about the breeding birds and for their assistance in ringing, and to Messrs. J. and W. Shiel, and young Jack Shiel, who have passed on to me much interesting bird news.

Members of the Natural History Society paid an unusually large number of visits to the islands during 1956 and I must add a final word of thanks to those who took part in the ringing, in particular Mr. J. C. Coulson and Mr. E. White, or in the seal parties, and whose observations are included in this report.

Below is a list of the birds arranged in systematic order :—

Great Northern Diver *Colymbus immer* Brünn. J. and W. Shiel reported seeing occasional birds in November and December.

Manx Shearwater *Procellaria puffinus* Brünn. Single birds were seen on June 11th and September 17th.

Fulmar Petrel *Fulmarus glacialis* (L.). Fewer birds nested than in 1955. On April 2nd eleven pairs were on ledges on Inner Farne, but so far as is known only eight birds actually laid and of these five (all on the west cliff) lost their eggs. A new site was chosen by a bird which nested on the east side of the island, under a grassy overhang. On July 19th she had a chick, two or three days old, and on September 9th this youngster was still on the nesting site. It was well-feathered, and appeared quite able to fly. No birds nested on Brownsman and only two pairs were on Staple Island.

On December 6th we saw four fulmars and J. Shiel remarked that this was the first time he had seen them since they left the islands at the end of the breeding season.

Gannet *Sula bassana* (L.). Parties of varying size were seen in all months from April to November ; they were specially numerous in April and September.

On August 4th E. A. R. Ennion noticed an adult gannet sitting on the Pinnacles : this recalls a similar incident on July 13th, 1950, when I also saw a gannet on the Pinnacles, at a time when these rocks were still thickly covered with guillemots.

Cormorant *Phalacrocorax carbo* (L.). No landing could be made on the Megstone this year, but there seemed to be about 60 occupied nests. E. A. R. Ennion landed on North Wamses on June 11th and

found that some of the nests were empty, there were a few clutches of four, and the majority of nests had only two or three eggs. Eight nests had chicks between five and fourteen days old. On July 12th we counted 130 nests on this island, but there were only a few well-grown young. The largest clutch was three, and there were several nests with single eggs, and it was obvious that the colony had been systematically robbed. Dr. Ennion was again able to land on August 4th when he found some 70 young birds, the majority of which he ringed.

SHAG *Phalacrocorax aristotelis* (L.). There were 22 nests on Inner Farne, 23 on Brownsman and 108 on Staple Island : this is an increase of 29 on the 1955 total of 124.

The breeding season is an extended one, for on April 2nd there were fifteen half-made nests on Brownsman, while on September 9th a nest on this island still contained young. On April 14th two nests on Inner Farne had eggs—one a clutch of four.

One of the interesting features of the islands in winter is the very large numbers of shags, both mature and immature, which can be seen. They are often perched on the rocky islets, especially the Scarcars and Skeney Scar, or they may appear, as on the late afternoon of December 8th, in great rafts on the sea.

HERON *Ardea cinerea* L. Small numbers frequented the Megstone and the Outer Group from late August until the end of the year.

MALLARD *Anas platyrhynchos* L. Small flocks were seen occasionally in April, October, November and December.

TEAL *Anas crecca* L. and WIGEON *Anas penelope* L. There is only one record of a teal, a bird put up from the Brownsman pond on October 27th. A small flock of wigeon was seen on September 9th, while on the 26th a single bird, which had obviously intended to land on one of the Inner Farne pools, hastily changed its mind when it saw our party. On December 9th another, and much larger, flock flew west over the Farne.

COMMON SCOTER *Melanitta nigra* (L.). Occasional small flocks were seen in April, July and August.

EIDER-DUCK *Somateria mollissima* (L.). According to the watchers 670 ducks nested on Inner Farne, 128 on Brownsman and 15 on Staple Island. There are no figures for the Longstone. On April 29th a scrape, lined with grass, but without down, and containing one egg,

was found on Inner Farne. Two days later, on May 1st, the egg had disappeared. The first duck laid on the Brownsman on May 2nd and on Staple Island on May 8th, while the last brood of ducklings left the Inner Farne on July 17th.

A duck which laid under a board in the little galilee of the Inner Farne chapel had chosen an unusual nesting site.

SHELD-DUCK *Tadorna tadorna* (L.). E. A. R. Ennion saw 18 birds on the Wideopens on April 2nd, but only two pairs are known to have nested. One nest was in a bank near the Brownsman flat, while the other was on the West Wideopens. J. M. Cullen found the remains of this last nest, and heard later that the parents had been seen with nine young.

GREY LAG-GOOSE *Anser anser* (L.). The usual summering party was first seen on June 10th and was last reported on August 5th, when four grey geese were on the South Wamses. At the beginning there were only seven birds, but during July between sixteen and twenty appeared to be present. They were usually on the Wamses, but also visited the Harcars, and on two occasions a dozen or more were seen swimming (once in a very rough sea) between these two islands.

BRENT GOOSE *Branta bernicla* (L.). On August 4th (a very early date) E. A. R. Ennion saw a dark-breasted brent goose swimming with eiders near the Northern Hares—it may have been a " pricked " bird.

BUZZARD *sp.* (L.). On May 20th E. A. R. Ennion watched a large hawk flying high over Inner Farne. He thought at first that it was a common buzzard, but after considering the style of flight, and comparing the two silhouettes, he states that he has little doubt that the bird was, in fact, a honey buzzard. The Ornithological Committee has considered this record, but feels that it is open to doubt, and accordingly, cannot be accepted. The bird must, therefore, be regarded simply as a " buzzard."

PEREGRINE FALCON *Falco peregrinus* Tunst. A pair spent the winter of 1955-56 on the islands. They were seen frequently on both the Inner and Outer Groups and also visited Holy Island, and the area near Monk's House, for prey. A single falcon appears to be wintering in 1956-57, but up to January, 1957, no tiercel had been observed.

MERLIN *Falco columbarius* L. An adult female was seen on Knoxes Reef on April 2nd and another, whose sex was not determined, but which may have been the same bird, was on Inner Farne on April 14th.

KESTREL *Falco tinnunculus* L. One was on Inner Farne on September 3rd and 4th.

OYSTERCATCHER *Haematopus ostralegus* L. A flock of some 20 birds frequented the Wideopens in winter; they left in spring, but had returned by July 19th. On September 17th there were at least 60 on Knoxes Reef, but they were probably on passage. Eleven pairs are known to have nested: of these two were on Inner Farne, one on the East Wideopens, one on Staple Island and seven on Brownsman, but it is probable that there were additional nests on Knoxes Reef, the Wideopens and, possibly, the Inner Farne.

LAPWING *Vanellus vanellus* (L.). Seen occasionally on Inner Farne during April, as many as eight being observed flying south on April 14th. Single birds were recorded on this island on July 1st and September 26th.

RINGED PLOVER *Charadrius hiaticula* L. According to the watchers, six pairs nested on Brownsman and two on Staple Island and there were at least two nests on Inner Farne.

TURNSTONE, REDSHANK, PURPLE SANDPIPER and DUNLIN *Arenaria interpres* (L.), *Tringa totanus* (L.), *Calidris maritima* (Brünn.) and *Calidris alpina* (L.). A few turnstones, and an occasional redshank and dunlin, were seen during most months of the year. There was a big movement of purple sandpipers on April 26th, when about 200 were present on the various islands, while on August 4th there was a considerable autumn movement of waders, including at least 200 turnstones and 40 purple sandpipers.

Considerable flocks of turnstones, with smaller numbers of purple sandpipers, dunlins and redshanks, wintered as usual on the islands.

COMMON SNIPE *Capella gallinago* (L.). There are three records: one on Inner Farne on April 8th, two on the same island on September 3rd, and one found dead near the Longstone lighthouse on November 18th. This, incidentally, was the only bird killed at the lighthouse during the autumn passage.

WOODCOCK *Scolopax rusticola* L. There are three November records, single birds being seen on the Northern Hares on the 6th and on the Brownsman on the 13th and 18th.

CURLEW *Numenius arquata* (L.). Flocks numbering up to 30 were seen in April and the birds reappeared in early July when there were

about 60 near the Longstone. On the 19th some 200 were on this island, and on August 4th 150 were counted, the majority again being on the Longstone. Small numbers were seen on most of the October, November and December visits.

WHIMBREL *Numenius phaeopus* (L.). Recorded, usually in ones and twos, from mid-July until early September.

GREEN-SANDPIPER *Tringa ocrophus* L. One was on Brownsman on September 7th.

WOOD-SANDPIPER *Tringa glareola* L. One was seen flying over Inner Farne on September 4th.

COMMON SANDPIPER *Tringa hypoleucos* L. One was on Inner Farne on September 2nd.

GREENSHANK *Tringa nebularia* (Gunn.). Single birds were on Inner Farne on September 4th and on Brownsman on September 7th.

KNOT *Calidris canutus* (L.). Three were on Inner Farne on August 5th.

CURLEW-SANDPIPER *Calidris testacea* (Pall.). One was on the Brownsman flat on July 19th.

ARCTIC SKUA *Stercorarius parasiticus* (L.). One was near the Megstone on August 25th, and three flew N. past Inner Farne on September 2nd.

GREATER BLACK-BACKED GULL, LESSER BLACK-BACKED GULL, HERRING-GULL, COMMON GULL and BLACK-HEADED GULL *Larus marinus* L., *Larus fuscus* L., *Larus argentatus* Pontopp., *Larus canus* L. and *Larus ridibundus* L. Very large numbers of gulls, of all species, both mature and immature birds, frequent the islands during winter. Rocks such as the Crumstone, the Knivestone, Longstone End, the Harcars, Blue Caps and the Scarcars seem to be the most popular. Most of the birds are herring and common gulls, but there are also smaller numbers of greater black-backs, lesser black-backs and an occasional black-headed gull. These last are also seen in small numbers on the Brownsman in late summer.

A few herring-gulls nested on Staple Island and Brownsman and at least one clutch of lesser black-backed gull's eggs hatched off on this last island. The majority of the lesser black-backs were, however,

on the Harcars and the Wamses, the colonies on the Wideopens being considerably smaller than in recent years. As usual the eggs were collected during the early part of the season, but by late August a number of chicks had hatched and 200 were ringed.

KITTIWAKE *Rissa tridactyla* (L.). J. M. Cullen counted 333 nests on Inner Farne : this is a decrease of 16 on the 1955 figure. On the other hand a new colony has been started on the West Wideopens, where there were four nests and six chicks hatched. The birds also appear to be spreading on Staple Island for on July 7th I found a nest with one chick, and an unhatched egg, among the shags to the west of the main shag cleft. Unfortunately, the nest had disappeared on my next visit, a fortnight later.

On the Outer Group the first egg was laid on May 8th and hatching started on June 7th. The colony at the N.W. end of Brownsman was washed away by a W.S.W. gale in June, but the birds laid again and on July 22nd these nests still contained very small chicks.

Immature and non-breeding birds were again seen, during the summer, on rocks such as Skeney Scar and Longstone End. Many of the breeding birds, with their young, stayed near the islands during August and early September and often rested either on their nests, or in flocks on the cliffs of Inner Farne, Staple Island, Brownsman and the Wideopens. The numbers then decreased and most of the birds which remained were immatures. On October 9th up to a dozen were " kittiwaking " on Inner Farne and even on December 20th several were flying overhead.

COMMON TERN *Sterna hirundo* L. There was a mixed colony of from 150 to 400 pairs of terns—common, roseate and arctic—on the West Wideopens. The commons probably numbered between 100 and 250 pairs. There were approximately 20 pairs on Longstone End, from 25 to 30 on Brownsman, while J. M. Cullen estimated that the numbers on Inner Farne were virtually the same as in 1955, i.e., 100-500 pairs.

ARCTIC TERN *Sterna macrura* Naum. D. Lazenby estimated that some 1,300 pairs nested on Brownsman and seven pairs on Staple Island. There were 10-20 pairs on Longstone End, 40-125 pairs on the West Wideopens, one or two on Knoxes Reef and not less than 2,000 pairs on Inner Farne. The colony on the top of the Farne appears to be spreading and there were between ten and twenty nests to the west of the path.

Arctic terns were first seen on April 23rd and the first eggs were laid on Brownsman on May 22nd, hatching commencing on this island on June 14th.

One of the birds nesting on Brownsman still retained some of the immature plumage, having a white patch on its forehead. It will be recalled that W. J. Lewis described a similar occurrence on the Northern Hares in 1953. (*Trans. Nat. Hist. Soc. Northd., Durham and Newcastle*, Vol. XI, p. 60.)

ROSEATE TERN *Sterna dougallii* Mont. From 61 to 76 pairs are known to have nested. There were four on Brownsman, five to ten on Inner Farne, forty to fifty on Longstone End and at least a dozen on the West Wideopens.

LITTLE TERN *Sterna albifrons* Pall. One was on Inner Farne on June 18th.

SANDWICH TERN *Sterna sandvicensis* Lath. There was again a very considerable increase and the number nesting was probably the largest ever recorded for the Farnes. For the second successive year birds nested on Inner Farne. Here there were two colonies, the main one, as in 1955, in the campion overlooking the rocks east of St. Cuthbert's Cove, and the smaller one, also in the campion, but nearer the path. Various estimates of size were made. The watcher, J. Mullins, said that it was half as large again as the 1955 colony—i.e., that there were approximately 1,350 pairs. J. M. Cullen based his figure on the amount of ground occupied by the birds and suggested 1,500 to 2,000 pairs. E. A. R. Ennion, W. B. Alexander and R. T. Peterson each made independent estimates and finally agreed that the main colony consisted of not less than 1,000 and not more than 1,500 pairs and that, in addition, there were 40 to 50 pairs in the smaller colony. On May 23rd there was a number of single eggs and one clutch of two, by July 7th several of the young were on the wing and on July 22nd I could find only one young bird in the colony, most of them being on the Wideopens.

There were three separate colonies on Brownsman, totalling 635 pairs. The first, which arrived on May 21st and laid eggs next day, was just to the west of the cottage and extended down the bank towards the lower garden. This is normally arctic territory and is a new site for the Sandwiches. The other two colonies, both in the campion near the upper garden, arrived later, and on June 27th,

when there were good-sized chicks in the first colony, none of their eggs had hatched. Indeed, there were still eggs, and very small chicks, as late as July 19th.

In addition, there were some 300 pairs on Longstone End.

Razorbill *Alca torda* L. Four pairs nested on Staple Island and there was probably a pair or two on Inner Farne.

On December 8th two heavily oiled birds were on the rocks near Sunderland Hole.

Guillemot *Uria aalge* Pontopp. No birds were present on March 31st, but on April 2nd the Pinnacles were crowded, although on the 14th the numbers had again decreased.

Quite a number nested on the Megstone ; there were some among the cormorants on North Wamses and three or four on Inner Farne, and more than usual appeared to be on Brownsman. The first egg was seen on Staple Island on May 4th and on June 27th one young bird was on the water. By July 7th most of the birds had left the Pinnacles, but as late as August 5th there were still a few, with young, on Staple Island. An occasional bird was seen in November.

Black Guillemot *Uria grylle* (L.). Single birds were seen on April 28th and 29th, while two were recorded on June 22nd.

Puffin *Fratercula arctica* (L.). As with the guillemots, there were no puffins on March 31st, but by April 2nd literally thousands were present. Large rafts were on the sea near the islands, scattered birds were further out, but only on the Wideopens were they actually on land. It is, of course, impossible to count these birds, especially when they have started to lay, but both E. A. R. Ennion and I decided, quite independently, from our observations on April 2nd, that the numbers were greater than in previous years. This was borne out at the end of the season when, on July 19th, I wrote " I have seldom seen so many." The season seems to have been an unusually early one, for on that day they were already circling the islands, the normal preliminary to departure, and by August 5th there was none on land and only a few small rafts on the sea. Even in late September and early October an occasional bird could, however, be seen.

On July 7th I witnessed an amusing incident when three puffins were on the nests in Kittiwake Gully. There was no apparent reason for them to be there, but they were having a real " scrap " with the rightful owners of the nests.

SHORT-EARED OWL *Asio flammeus* (Pontopp.). One flew off the Brownsman towards the Longstone on October 27th.

SWIFT *Apus apus* (L.). Small numbers were seen flying round Inner Farne on July 10th and 13th and a single bird passed S.W. over that island on September 17th.

WRYNECK *Jynx torquilla* L. Two were on Inner Farne on September 3rd and 10th.

SKYLARK *Alauda arvensis* L. One was on Inner Farne on April 2nd and two on Brownsman on October 27th.

SWALLOW and HOUSE-MARTIN *Hirundo rustica* L. and *Delichon urbica* (L.). A swallow flew into the Brownsman cottage on June 30th and another was seen over Inner Farne on July 9th, while a house-martin was recorded from this last island on September 2nd.

CARRION-CROW *Corvus corone* L. In May a pair was reported to be nesting on the East Wideopens and, later, an adult and two young were seen on Inner Farne.

WREN *Troglodytes troglodytes* (L.). Single birds were on Inner Farne on October 9th and on Brownsman on October 27th and December 1st.

FIELDFARE, SONG-THRUSH, RING-OUZEL and BLACKBIRD *Turdus pilaris* L., *Turdus ericetorum* Turton, *Turdus torquata* L. and *Turdus merula* L. On April 2nd E. A. R. Ennion saw about a dozen blackbirds. These were part of the widespread return passage which, he says, was exceptionally well-defined this spring. He records, on the other hand, that the autumn passage was very late, and that on Inner Farne on September 17th there was only one blackbird and one continental song-thrush. Passage movements of blackbirds were recorded at the Longstone on November 18th and 20th and there must have been other movements on October 27th, November 16th, December 1st and 6th when several birds were seen on Brownsman, Staple Island and Inner Farne.

There is no record of a redwing and only a single one of a fieldfare—a bird seen on Inner Farne on May 1st—and of a ring-ouzel—a hen seen on Brownsman on April 29th.

Song-thrushes, too, were only occasional visitors, single birds being recorded on Inner Farne during September, October and December, and on Brownsman on December 20th.

WHEATEAR *Oenanthe oenanthe* (L.). On April 29th two pairs were on Brownsman and one pair on Inner Farne. Three or four birds were seen on May 20th and on May 31st E. A. R. Ennion identified several as of the Northern form. The return passage was first recorded on August 25th, when at least twelve were on Inner Farne, and there was a further large influx at the beginning of September. The latest was a single bird seen on Brownsman on October 9th, in all probability of the Greenland form.

WHINCHAT *Saxicola rubetra* (L.). There is only one spring record—two birds seen on Inner Farne on May 31st. Whinchats were among the species included in the September movement and were seen on both Brownsman and Inner Farne, there being at least twelve or fifteen on the Farne on September 3rd and 4th.

REDSTART and BLACK REDSTART *Phoenicurus phoenicurus* (L.) and *Phoenicurus orchruros* (Gm.). Single female black redstarts were present on Inner Farne on April 2nd and May 1st, while on May 5th a pair, and two pairs of redstarts, were on Brownsman. There are no other spring records of redstarts, but they were much more numerous in autumn, the first reported being a female, seen on Inner Farne on August 25th. Between September 3rd and 10th they were present intermittently, in large numbers, on both Brownsman and Inner Farne, up to forty being counted on this latter island on September 3rd. On September 28th a pair was on Inner Farne.

BLUETHROAT *Cyanosylvia svecica* (L.). Single immature birds, showing no blue on the breast band and presumably *C. s. svecica*, were seen on Inner Farne on September 4th and 10th.

ROBIN *Erithacus rubecula* (L.). There is only one record, a bird seen on Inner Farne on September 17th.

SEDGE-WARBLER, BLACKCAP, BARRED WARBLER, GARDEN-WARBLER, WHITETHROAT, LESSER WHITETHROAT and WILLOW-WARBLER *Acrocephalus schoenobaenus* (L.), *Sylvia atricapilla* (L.), *Sylvia nisoria* (Bech.), *Sylvia borin* (Bodd.), *Sylvia communis* (Lath.), *Sylvia curruca* (L.) and *Phylloscopus trochilus* (L.). There is only one spring record of a warbler, a willow-warbler seen on Inner Farne on April 29th.

The unusually heavy passage of early September resulted in the appearance of large numbers of warblers on Inner Farne. On September 3rd there were some twenty willow-warblers, six garden-warblers, two whitethroats, a hen blackcap and three immature barred warblers

on the island. The willow and garden-warblers, and the whitethroats, were still present next day, and one of the barred warblers, and about a dozen of the willow-warblers, as well as three or four garden-warblers, probably remained until the 10th. Incidentally, this is the third successive year that barred warblers, which had not previously been recorded, have been seen on the Farnes. A few sedge-warblers arrived on the 4th and some were still to be seen on the 10th, when there was also a lesser whitethroat. Numbers on Brownsman were smaller, but on September 4th there were some fifteen garden-warblers and a whitethroat, while on the 10th there were ten garden-warblers, one whitethroat and a few sedge-warblers.

The last warblers were seen on September 26th when there was a cock blackcap and a willow-warbler on Inner Farne.

GOLDCREST *Regulus regulus* (L.). One, which was extremely tame, was in the Inner Farne garden on October 9th.

SPOTTED FLYCATCHER *Muscicapa striata* (Pall.). Three were on Inner Farne on September 9th.

PIED FLYCATCHER *Muscicapa hypoleuca* (Pall.). Considerable numbers were included in the heavy passage of early September. On September 3rd there were at least forty on Inner Farne ; next day the numbers had halved and by the 10th only three were left.

MEADOW-PIPIT and TREE-PIPIT *Anthus pratensis* (L.) and *Anthus trivialis* (L.). On July 5th a meadow-pipit was seen carrying nest material on Inner Farne, but so far as is known no birds actually nested. A few meadow-pipits and six tree-pipits were among the birds on Inner Farne on September 3rd and 4th, while on November 16th there were half-a-dozen meadow-pipits on this same island. Pipits (*sp.*) were recorded at the Longstone in the movements of October 21st, November 6th and 20th.

ROCK-PIPIT *Anthus spinoletta* (L.). Rock-pipits were seen on most of the larger islands throughout the year and the numbers increased in August and September. The watchers reported that six pairs nested on Brownsman and five on Staple Island.

YELLOW WAGTAIL *Motacilla flava* L. One, of undetermined subspecies, was on Inner Farne on September 3rd.

RED-BACKED SHRIKE *Lanius collurio* L. Two immature birds were on Inner Farne on September 3rd.

STARLING *Sturnus vulgaris* L. Small numbers nested as usual. Starlings are winter visitors to the islands and a few are often trapped in the old buildings—this year we found four dead in the Brownsman cottage at the end of April. They were recorded at the Longstone in the passage movements of October 21st and November 6th.

LINNET *Carduelis cannabina* (L.). Two were on Inner Farne on April 2nd and one on Brownsman on September 9th.

CROSSBILL *Loxia curvirostra* L. Two crossbill invasions were recorded. In the first, from July 4th to 11th, five or six, of which at least two were cocks, were seen on Brownsman, while a female was on Inner Farne. The second invasion appeared to be part of the September passage, for on September 3rd and 4th two birds, both juveniles, were on Inner Farne and on September 10th there were four, including one adult male.

ORTOLAN BUNTING *Emberiza hortulana* L. An immature bird was on Inner Farne on September 3rd. It was identified by E. L. Arnold, who watched it feeding on seeds, and grain from gull pellets. This is the first time this species has been recorded from the Farnes.

LAPLAND BUNTING *Calcarius lapponicus* (L.). An immature bird was on Inner Farne on September 3rd and 4th.

RINGING

During the year 2,704 nestlings and 903 adults were ringed and, in addition, 124 adults were re-ringed. The total—3,731—is again a record, being 469 greater than the 1955 figure. Dr. Ennion, and his students from Monk's House Bird Observatory, contributed a valuable 445 to this total, the species ringed by them being mainly adult puffins and young lesser black-backed gulls and cormorants. The most important feature of the year's work has been the ringing of 689 adult kittiwakes, the majority by J. C. Coulson and E. White, and this should yield interesting results in the future. Numbers of individual species were as follows :—

Fulmar 2 ; cormorant 86 ; shag 266 (including 71 re-ringed) ; oystercatcher 5 ; lapwing 1 ; lesser black-backed gull 183 ; herring-gull 21 ; kittiwake 1,369 (including 47 re-ringed) ; arctic tern 728 (including 6 re-ringed) ; Sandwich tern 905 ; razorbill 2 ; guillemot 59 ; puffin 104.

RECOVERIES

There have been 209 recoveries of birds ringed on the islands: this includes two additional 1955 recoveries, one a cormorant and the other a shag. The increase of 39 on the 1955 figure is mainly due to the fact that this year 136 birds have been re-trapped on Brownsman, Staple Island and Inner Farne. The number of re-traps in 1955 was 102.

In addition, three birds, a shag, an eider-duck and an arctic tern, all ringed in the vicinity, have been found dead on the islands.

Some of the recoveries have provided very interesting and useful information. Out of 50 young cormorants ringed on the North Wamses on August 4th, twelve were dead by January 22nd, 1957. These included six shot on the Tweed. This gives a 24% mortality rate for the first six months and indicates that the expectation of life of a young cormorant is far from high.

The finding of a lesser black-backed gull at Siracusa, in Sicily, is of particular interest, for this is some 250 miles further east than any previous recovery of this species. Incidentally, in 1955 a Farne island ringed lesser black-back provided another record, for in the " Report on Bird Ringing for 1955 " (*British Birds*, Vol. L, p. 58), R. Spencer states that AH 5929, ringed on August 31st, 1955, and recovered near Freetown, Sierra Leone, on December 29th, 1955, is the most southerly recovery so far recorded.

There have been an unusually large number of arctic tern recoveries. The recovery in Fife, within a month of ringing, of two birds of the year, is further proof of the northerly dispersal movement often undertaken by young terns before starting the main southward passage. Two foreign recoveries are of particular interest. The first, at Lamberts Bay, Clanwilliam, is the first arctic ringed at the Farnes to be recovered in South Africa, while the second is not only the first foreign recovery of a bird ringed as an adult at the Farnes, but also the first Farne bird to be found in Denmark.

The South African Sandwich tern recovery is also of interest. It has been proved by the recovery of birds ringed elsewhere that the southward passage of Sandwich terns is down the west coast of Africa, round the Cape of Good Hope and up the east coast as far north as Natal. So far as the Farnes are concerned the most southerly bird so far recovered was the one found, six years after ringing, at the mouth of the Berg River, 80 miles north of Cape Town, in August, 1925. Now we have, in the recovery near Mossel Bay, Cape Province, on

April 17th, 1956, of a bird ringed in July, 1955, proof that Farne birds do actually round the Cape, for Mossel Bay is approximately half way between Cape Town and Port Elizabeth.

RE-TRAPPING

Special efforts have again been made to re-trap a number of shags, kittiwakes and arctic terns, and the results are analysed in section (*d*) of the recoveries list.

J. C. Coulson and E. White have continued their study of the effective life of the rings at present used on shags and kittiwakes and in the course of this work have re-ringed any of the re-trapped birds whose rings showed signs of wear. By special permission of the Ringing Committee of the British Trust for Ornithology they have been using D.E. rings, instead of the normal No. 3 (overlapped) rings, on adult kittiwakes and, in addition, some of these adults have been ringed with the new type of rings now being tried out by the Trust.

Several of the shags have been re-trapped in previous years and many have now been re-ringed at least once. It was again noticeable how soon the shag rings showed signs of wear and in the case of one ring, put on this summer, two month's wear had practically obliterated one figure.

J. M. Cullen spent a fortnight on Inner Farne in July and during that period he re-trapped 14 arctic terns. Eight of these had been re-trapped before, including one of the 1937 and three of the 1939 ringed birds. Another (X 27,263) ringed as young on Inner Farne on July 20th, 1954, was in St. Cuthbert's Cove on July 9th, but was not breeding, nor was its plumage fully adult.

RECOVERIES OF RINGED BIRDS

(*a*) Ringed on Farne Islands and recovered elsewhere

Date ringed	*Place recovered*	*Date recovered*
CORMORANT		
1.9.54	Spey Dam, nr. Crathie, Inverness-shire (shot)	Nov., 1955
26.8.55	Mill Beach, Maldon, Essex	2.1.56
9.7.52	R. Tweed (shot)	5.1.56
3.9.51	Tilmouth, Northumberland (shot)	11.1.56
26.6.55	Aberlady Bay, E. Lothian	15.1.56
26.8.55	Nr. Dumbarton (shot)	21.1.56
26.6.55	Cornhill-on-Tweed (shot)	3.2.56
26.8.55	Doune, Perthshire	6.2.56
31.8.55	Inverbervie, Kincardineshire (found injured, died later)	11.2.56
26.8.55	R. Tweed (shot)	18.2.56
4.8.51	R. Tweed (shot)	21.2.56
26.6.55	R. Tweed (shot)	22.2.56
31.7.53	Dundee	2.3.56
4.8.51	Fenham, nr. Beal, Northumberland	18.4.56
,,	R. Tweed (shot)	6.5.56
4.8.56	R. Tweed (shot)	10.9.56
,,	Brimsdown, Enfield, Middlesex	21.9.56
9.6.56	Nr. Kincardine Bridge, Firth of Forth	25.9.56
4.8.56	Berwick-on-Tweed (shot)	20.11.56
,,	R. Tweed (shot)	30.11.56
,,	Newburn, nr. Newcastle upon Tyne (shot)	30.11.56
,,	R. Tweed (shot)	4.12.56
,,	Nr. Berwick-on-Tweed (shot)	31.12.56
SHAG		
5.7.55	Clacton-on-Sea	24.12.55
14.7.55	Newbiggin-by-the-Sea, Northumberland	10.1.56
24.4.53	R. Tweed	26.1.56
15.7.55	Bridlington, Yorks.	early Feb., 1956
14.7.55	Swaffham, Norfolk (found exhausted, later released)	11.2.56
,,	Ongar, Epping, Essex (found exhausted)	16.2.56
25.6.53	R. Tweed (shot)	20.4.56

Date ringed	*Place recovered*	*Date recovered*
SHAG—*continued*		
24.6.56	Hebburn, Co. Durham (found blind in one eye and now being kept in captivity)	29.8.56
27.6.56	Tweedmouth	12.9.56
8.7.54	Cresswell, Northumberland	23.10.56
3.8.53	Scarborough, Yorks. (ring found, probably been removed)	3.11.56
27.6.56	Cellardyke, Fifeshire	18.12.56
LESSER BLACK-BACKED GULL		
26.8.56	Nr. Siracusa, Sicily (killed)	16.11.56
KITTIWAKE		
18.7.55	At sea (10 m. W.) off Whitehaven (badly oiled, destroyed)	15.2.56
7.7.54	At sea off Blaavand, Ribe, W. Jutland, Denmark (oiled, ring removed)	13.3.56
19.7.55	*North Pier, Tynemouth, Northumberland	12.4.56
18.8.55	St. George's Channel (caught, ring removed)	8.5.56
7.7.56	Sjaellands, Odde, Sjaelland, Denmark (shot)	22.8.56
22.7.56	Minsmere, Suffolk	2.9.56
1.6.56	*Beadnell, Northumberland	19.9.56
27.6.56	At sea nr. Heligoland, Germany (shot)	12.10.56
16.7.56	Kalö Vig, Jutland, Denmark (shot)	4.11.56
3.7.56	*Skagen, Jutland, Denmark (found dead, oiled)	16.11.56
,,	*Off Hållö, Smögen, Bohus, Sweden (caught on fishing vessel, *c.* 20 m. W. of Hållö)	early Nov., 1956
ARCTIC TERN		
19.7.53	Lamberts Bay, Clanwilliam, S. Africa	24.1.56
7.7.56	North Carr lightvessel, off Fifeness (exhausted)	28.7.56
,,	St. Andrews, Fife	4.8.56
14.7.52	*Nr. Saksköbing, Lolland Is., Denmark	17.8.56
13.7.56	Budle Bay, Northumberland	19.8.56
,,	West Hartlepool, Co. Durham	30.9.56

Date ringed	*Place recovered*	*Date recovered*
SANDWICH TERN		
5.7.55	Kata Lagoon, Gold Coast (caught)	10.1.56
25.7.55	Off Morocco (released)	14.2.56
5.7.55	Porto Amboin, Angola	20.3.56
9.7.55	Nr. Dakar, Senegal (killed)	3.4.56
13.7.55	Chaume, Benguela, Angola (caught)	5.4.56
,,	Dakar, Senegal (released)	14.4.56
4.7.55	Vleesbaai, nr. Mossel Bay, Cape Province, S. Africa (caught, ring removed)	17.4.56
16.7.54	Kinnehult, Älvsborg, Sweden	1.8.56
7.7.56	North Somercotes, nr. Louth, Lincs.	10.8.56
19.7.56	Bamburgh, Northumberland	16.8.56
27.6.56	West Ferry, nr. Dundee	25.8.56
,,	Newton-by-the-sea, Northumberland	6.9.56
,,	Dalgetty Bay, nr. Aberdour, Fife	9.9.56
,,	Dakar, Senegal (killed)	19.10.56
GUILLEMOT		
10.7.56	*Skagen, Jutland, Denmark (shot)	Oct., 1956

* Indicates bird ringed as adult

Unless otherwise stated all birds have found dead

(*b*) Ringed on Farne Islands and recovered there (re-traps *not* included)

SHAG		
10.6.55	*Brownsman	18.5.56
,,	*North Wamses	24.6.56
,,	Staple Island	21.6.56
EIDER-DUCK		
6.6.53	*Wideopens	8.4.56
KITTIWAKE		
19.6.56	*Staple Island	21.7.56

* Indicates bird ringed as adult

Unless otherwise stated all birds have been found dead

(*c*) Recovered on Farne Islands, but ringed elsewhere

Date and place ringed	*Recovered*	*Date recovered*
SHAG		
25.8.55 (j.) Seahouses	Wideopens	8.4.56
EIDER-DUCK		
10.7.55 (j.) Budle Bay, Northumberland	Inner Farne	28.8.56
ARCTIC TERN		
4.8.56 Emblestone, Low Newton, Northumberland	Inner Farne	28.8.56

(j.) Indicates bird ringed as juvenile

Unless otherwise stated all birds have been found dead

(*d*) Analysis of birds ringed on Farne Islands and re-trapped there in 1956

Species	*1937*	*1939*	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*
SHAG								
Young	—	—	—	3	4	6	1	—
Adult	—	—	—	5	10	17	10	23
KITTIWAKE								
Young	—	—	1	4	8	2	—	—
Adult	—	—	—	1	—	1	10	2
Age doubtful	—	—	—	—	—	—	—	8
ARCTIC TERN								
Young	2	4	3	—	—	—	1	—
Adult	—	—	—	—	3	1	—	1
GUILLEMOT								
Adult	—	—	—	—	—	—	—	1
PUFFIN								
Adult	—	—	—	—	—	—	3	1

Total of re-trapped birds (excluding birds ringed in 1956)

Shag	79
Kittiwake	37
Arctic tern	15
Guillemot	1
Puffin	4

Table showing the number of times shags were re-trapped in 1956

Year of ringing	*Ringed as young Re-traps*			*Ringed as adult Re-traps*			
	One	Two	Three	One	Two	Three	Four
1951 ...	1	1	1	4	—	1	—
1952 ...	2	1	1	6	2	—	—
1953 ...	2	4	—	12	4	1	—
1954 ...	1	—	—	2	6	1	—
1955 ...	—	—	—	7	11	2	1
1956 ...	—	—	—	12	2	2	—

VISITORS TO FARNE ISLANDS STUDY CENTRE 1956

Name	*Where from*	*Date of stay*	*Main object of visit*
C. M. Adamson	Northumberland and Durham Nat. Hist. Soc.	July 8–12	Bird behaviour
Dr. E. L. Arnold D. Arnold	Northumberland and Durham Nat. Hist. Soc.	Sept. 2–4	Bird study, especially migrants. Netting and ringing for Monk's House Bird Observatory
R. G. B. Brown	New College, Oxford	June 22–27	Bird behaviour

Name	*Where from*	*Date of stay*	*Main object of visit*
Dr. E. Cullen Dr. J. M. Cullen	Oxford University	June 27–July 14 July 7–14	Reproductive behaviour of arctic terns, kittiwakes and shags
P. R. Evans	St.Catharine's College, Cambridge	Sept. 2–4	Special migration study on behalf of Monk's House Bird Observatory
J. A. Hodgson	Northumberland and Durham Nat. Hist. Soc.	June 27–July 1	Bird study
Mrs. J. E. Lindsay D. S. Lowen	London Nat. Hist. Soc.	July 4–7	General bird study
C. N. Rollin	Glanton, Northumberland	May 16–21	Daily behaviour of birds
B. Sowerby	ex King's College, Newcastle upon Tyne	June 17–20	Completion of botanical survey of Inner Farne
W. R. Wooff	King's College, Newcastle upon Tyne	March 27–31 April 20–26 May 19–24 June 14–22 July 21–25 Aug. 20–25 Sept. 18–22	Completion of entomological survey of Inner Farne

ORNITHOLOGICAL REPORT FOR NORTHUMBERLAND AND DURHAM FOR 1956

Compiled from the notes and records of members of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne and many other observers throughout the two Counties

by

GEORGE W. TEMPERLEY, M.Sc., M.B.O.U.

Once again the Society expresses its gratitude to all those members and others who have contributed observations and notes to this Report. Without their help it would have been impossible to have given any clear picture of the bird life throughout the wide area covered by the Report. Although few of the very large number of notes received can be printed in detail, every one of them is of value in forming a true estimate of the status, distribution and movements of the birds in the two Counties. A list of the names of the chief contributors will be found at the end of this Report, from which the initials, placed after the individual records in the Classified List, can be checked.

A leaflet has been issued containing advice to bird-watchers as to the form in which records should be submitted. Further copies can be obtained from the compiler or at the Hancock Museum.

In future, " sight " records of less common and not easily identifiable species will be scrutinised by a special committee of ornithologists before being accepted. It is therefore necessary that full reports and descriptions should be sent in.

The omission of the name of a common species from the Classified List does not signify that it has not occurred ; but rather that nothing of special interest has been reported about it. In order to make this quite clear, the names of such species are given in a list at the end of this Report.

Abbreviations used :—N=Northumberland ; D=Durham ; *B.B.* =*British Birds* ; *O.R.*=*Ornithological Report* ; *F.I.O.R.*=*Farne Islands Ornithological Report.*

WEATHER CONDITIONS AFFECTING BIRD LIFE

From the strictly human point of view, the weather conditions throughout 1956 appeared so abnormal that they are still the subject of comment and objurgation. April was the coldest for 27 years; May's rainfall was the lowest since 1922 and its hours of sunshine were the highest since 1940; June and July were the wettest for over a quarter of a century; August's rainfall was the highest at least since 1886; November was phenomenally dry and December unusually dull. Nevertheless, so far as our records show, bird life was but slightly affected. There is some evidence that the early broods of some species, chiefly passerines, died in the nest, either from cold or from lack of food; but many species nested later in the year and good broods were then reared.

The first summer migrants were reported on about their usual dates. The autumn passage migration culminated in a very considerable " drift " of smaller passerines which took place on September 3rd and 4th. From Monks' House Observatory E.A.R.E. wrote: " It was quite beyond anything that I have ever experienced, with Redstarts, Pied Flycatchers, Garden-Warblers and Whinchats in hundreds everywhere and, all told, a good sprinkling of Barred Warblers, Red-backed Shrikes, Bluethroats, Ortolan Buntings and Wrynecks. It has been the same from Fair Isle in the north to Norfolk in the south." A full report on this movement appears on pages 69-76.

The arrival of waders and ducks on the coast in the autumn was later than usual. One observer, F.S., who spent the last fortnight of October on Fenham Slakes, reported that the bird life present was reminiscent of mid-September rather than of late October.

Two or three interesting movements of sea-birds and duck were noted off the coast at various times; but these could not be correlated with any but purely normal and local conditions.

The first of these was on June 9th when, against a N.E. wind, many birds were flying north. Off Souter Point, D., during 2 hours' watch, no less than 19 Manx Shearwaters, accompanied by other species, were counted; while off Seahouses, N., in 1½ hours 12 Manx Shearwaters, 227 Gannets and *c.* 900 Kittiwakes, with many birds of other species went by.

The next large movement recorded was during the four-day period from July 29th to August 1st. Winds were variable—from E. to N.W. and back to S.E.—but never of gale force. The birds affected were Shearwaters, Fulmars, Gannets, Terns, Kittiwakes, Auks, Eiders and Scoters, which streamed past in a northerly direction up the coast.

Another large movement began on October 6th and continued for three days. On the 6th, against a strong north wind with heavy seas, a very large number of duck of various species flew past and, although on the 7th and 8th the wind had fallen to a light breeze and the sea had gone down, the movement was unabated. Its unusual feature was the large number of "fresh-water" duck involved: Mallard, Teal and Tufted with a few Pintail, Shoveler, Golden-eye and many Wigeon. Sea-duck were in the minority, but Mergansers were very plentiful; one flock of 62 was counted. Other species which were caught up in this movement, but to a lesser degree, were Gannets, Terns, Skuas and Shearwaters. This passage was observed from many points along the coast from Teesmouth to Holy Island. To give an idea of the intensity of this movement: on the 6th, off St. Mary's Island, 690 duck were counted in 1¼ hours (J.D.P.), and off Teesmouth, 333 in 5¾ hours. (P.J.S. & D.G.B.) On the 7th, off St. Mary's Island, 600 in 4¼ hours (J.D.P.) and off Hartlepool, 358 in 3 hours. (B.J.C.) On the 8th, off St. Mary's Island, 915 in 2½ hours. (J.D.P.) By the 9th the movement had practically ceased.

BIRD-RINGING

During 1956 there has been a marked increase in the number of birds ringed by the Society, the total, 6,882, being one of the largest recorded by any natural history society or bird observatory. Birds ringed at the Farnes accounted for 3,731 of this figure, the remaining 3,151 consisting of birds ringed in the State Forests at Hamsterley, Kielder and Redesdale, and in various parts of the two counties. The increase has been largely due to the efforts of a few enthusiastic members, in particular J. and T. H. Alder, A. Blackett, L. G. Holloway and B. Little, who have not only ringed nestlings, but have trapped large numbers of adults, including such interesting species as a Raven, a Cuckoo, a Northern Tree-Creeper, six Dippers, two Lapland Buntings and two Snow-Buntings.

Full details of the Farne Islands ringing are given in *F.I.O.R.*, 1956. The numbers of the remaining individual species were as follows:—

Mallard 1; Montagu's Harrier 3; Merlin 5; Kestrel 3; Lapwing 125; Curlew 7; Common Sandpiper 5; Redshank 6; Dunlin 2; Common Gull 1; Black-headed Gull 1; Kittiwake 36; Common Tern 2; Arctic Tern 5; Wood-Pigeon 6; Cuckoo 1; Tawny Owl 1; Long-eared Owl 4; Skylark 3; Swallow 38; Sand-Martin 1; Raven 1; Rook 1; Jackdaw 5; Jay 9; Great Tit 44; Blue Tit 71;

Coal Tit 67 ; Northern Tree-Creeper 1 ; Wren 1 ; Dipper 10 ; Mistle-Thrush 5 ; Song-Thrush 45 ; Redwing 2 ; Ring-Ouzel 3 ; Blackbird 96 ; Wheatear 1 ; Whinchat 18 ; Redstart 92 ; Robin 33 ; Sedge-Warbler 4 ; Blackcap 5 ; Garden-Warbler 5 ; Whitethroat 67 ; Willow-Warbler 64 ; Goldcrest 1 ; Pied Flycatcher 52 ; Hedge-Sparrow 52 ; Meadow-Pipit 6 ; Pied Wagtail 6 ; Starling 1,840 ; Greenfinch 50 ; Linnet 32 ; Chaffinch 30 ; Yellow Hammer 79 ; Corn-Bunting 1 ; Reed-Bunting 28 ; Lapland Bunting 2 ; Snow-Bunting 2 ; House-Sparrow 14 ; Tree-Sparrow 50.

The number of recoveries has increased considerably and there have been several foreign ones, as will be seen from the following list.

Recoveries of ringed birds :—

Date and place ringed	*Place recovered*	*Date recovered*
MONTAGU'S HARRIER		
15.7.56 Nr. Hamsterley S.F.	Bouzy, Marne, France (found with broken wing ; being cared for)	*c.* 10.9.56
MERLIN		
26.6.56 Nr. Hamsterley S.F.	Crossgill, nr. Garrigill, Cumberland (shot)	19.9.56
LAPWING		
4.7.53 Hamsterley S.F.	Etang de Lacanau, Gironde, France	4.3.56
KITTIWAKE		
29.6.53 North Shields	Where ringed (released)	1.7.56
2.7.54 ,, ,,	South Shields (found exhausted, died later)	*c.* 1.7.56
22.6.56 ,, ,,	Templeuve, Hainaut, Belgium	13.10.56
PIED FLYCATCHER		
12.7.55 Thrunton S.F.	Oegstgeest, Leiden, Holland	11.5.56
PIED WAGTAIL		
5.6.54 Nr. Hamsterley S.F.	Sunde, Hordaland, Norway	26.4.56
STARLING		
31.1.56 *North Shields	Wallsend, Northumberland	12.3.56
1.2.56 * ,, ,,	Nr. Choppington, Northumberland	23.3.56

Date and place ringed		*Place recovered*	*Date recovered*
STARLING—*continued*			
20.3.56	*Newcastle/Tyne	Kongerslev, Aalborg, Jutland, Denmark (caught by cat)	14.4.56
29.1.56	*North Shields	Valkeenmaki, Imatra, Kymi, Finland (caught by cat)	26.4.56
3.3.56	*Newcastle/Tyne	Enstaberga, nr. Nyköping, Sodermanland, Sweden	8.5.56
7.3.56	*North Shields	Where ringed	14.5.56
21.3.56	* ,, ,,	,, ,,	28.5.56
25.4.56	*Whickham	,, ,, (found drowned)	29.6.56
2.3.56	*Newcastle/Tyne	Föhr Is., Schleswig-Holstein, Germany (shot)	29.8.56
17.4.56	* ,,	Newcastle/Tyne (came down chimney ; released)	24.10.56
1.2.56	* ,,	Blaydon-on-Tyne (found dead in empty house)	6.11.56
12.1.56	*North Shields	Cramlington, Northumberland	21.11.56
18.3.56	*Newcastle/Tyne	Sunniside, Co. Durham	5.12.56

* Indicates bird ringed as adult

Unless otherwise stated, all birds have been found dead

NESTING-BOX RETURNS. SEASON 1956

HAMSTERLEY FOREST

Nesting species	*Nests found 1956*	*Nests found 1955*	*Broods ringed*	*Broods missed*	*Broods or eggs deserted*	*Birds ringed 1956*	*Birds ringed 1955*
Pied Flycatcher	17	(10)	11	2	4	47	(46)
Redstart	16	(19)	8	4	4	35	(63)
Great Tit	12	(25)	3	5	4	17	(67)
Blue Tit	9	(3)	0	8	1	0	(2)
Coal Tit	9	(10)	5	3	1	40	(27)
Creeper	3	(0)	0	3	0	0	(0)
Totals	66	(67)	27	25	14	139	(205)
				52 (1955 61)			

From the above table it will be seen that, out of 265 boxes visited, the number of boxes found to be occupied was 66, almost the same number as in 1955 (67). This was considerably less than in 1954 when 90 boxes were found to be occupied.

It will be noted that out of 66 nests found, 52 broods were reared, or 79% as compared with 93% last year.

The percentage of Pied Flycatcher's nests to the total of occupied boxes was 25% as compared with only 15% last year and 23% in 1954, while that of the Great Tit has fallen to 18% only, as compared with 37% in 1955. It would be interesting to be able to account for this reversal in numbers.

It is noteworthy that in 1950, the second year of ringing operations, no less than 40 nests of Pied Flycatchers were found, out of a total of 108 occupied boxes; a figure which has never since been approached.

We are indebted to C.G., D.N.B. & A.W.J. for the above figures.

BRITISH TRUST FOR ORNITHOLOGY ENQUIRIES

Heronry Census. This was continued in 1956. The total number of occupied nests was about the same as last year. For particulars see under 30, Heron, below.

Common Buzzard Census. Only one bird recorded, a single straggler in the Alwin Valley, Upper Coquetdale, N., in July. Although breeding Buzzards are spreading into new regions in many other parts of the country, they have not yet reached Northumberland and Durham, though there are many suitable nesting sites. Readers are asked to report if any breeding birds are located next spring.

Mute Swan Census. A more complete account of our Swan population was obtained in 1956 than in the previous year; but probably many scattered breeding pairs were missed. The request for information from our own members met with a poor response. The census is not to be continued in 1957.

Seaward Movements of Swifts in Summer. Such movements, often on a large scale, have been observed on many parts of the coast. Any local bird-watchers who may have noted anything of the kind on the N.E. coast should report upon it at once.

Albinism and Melanism. This is a subject on which further observation and study is to be undertaken. All records will be welcome.

These should give date, locality, species concerned and a brief description. Photographs and drawings would be of great value. These may be sent to the Regional Representative (G. W. Temperley) or direct to Brian L. Sage, 11 Deepdene, Potters Bar, Middlesex. Any specimens coming to hand, if not too much decomposed, should be sent to that address.

Holiday Records. Members who go bird-watching in other parts of the country should realize that their records may be of great value to the compilers of the Ornithological Reports for the particular counties visited. The names and addresses of such compilers can be obtained by application to G. W. Temperley.

OPERATION WATERLOG

The registration of inland waters in Northumberland and Durham, "Operation Waterlog," proceeds satisfactorily. There are now seventy-five forms in the Register.

The Society is greatly in debt to Miss Ursula M. Grigg for the work that she has done for this important record of the haunts of wildfowl. From the inception until the summer of 1956, Miss Grigg was in charge, helping to plan the whole project, devising the organisation, compiling the questionnaire and recording on a map, now in the Museum for reference, the information that was collected. Based upon this valuable work, a combined effort should now be made to fill in the blanks in the Register. To that end, before the period of petrol rationing, a number of lakes and waters in Northumberland had been visited and, once the petrol rationing is removed, this work must continue. In the meantime, members of the Society might volunteer information about waters with which they are familiar or which are not too far distant from their homes to enable them to be visited. In years to come, "Waterlog" should be a valuable source of information on the state of the haunts of wildfowl in the two counties in the mid-20th century. Members with the special knowledge required are asked to report on the flora and under-water fauna which affect the food supply of water-fowl.

All information should be sent to Professor J. Boyes, 41 Clayton Road, Newcastle upon Tyne 2.

THE WILDFOWL CENSUS

This Census has been maintained throughout another season, despite adverse weather conditions. The intrepid wildfowl-counters are to be thanked, and congratulated on the determined and punctual manner in which they have carried out the arduous work. This Census will be continued in the season 1957-58. All information and offers of help should be sent to the Organiser : Mr. J. E. Ruxton, 59 Swansfield Park Road, Alnwick.

RECORDS OF UNUSUAL INTEREST IN 1956

Full details will be found below of the following records of unusual interest :—Leach's Petrel (12), Storm Petrel (14), Little Egret, first occurrence in Northumberland (32), Spoonbill (42), Montagu's Harrier, successful breeding (102), Osprey (103), Temminck's Stint (173), Avocet (185), Mediterranean Black-headed Gull, first occurrence in Durham (205), Gull-billed Tern, first record for Northumberland (215), Wryneck (265), Golden Oriole (278), Bluethroat (324), Reed-Warbler (333), Brown Flycatcher, first record for Northumberland (367), Red-breasted Flycatcher (370), Water-Pipit, first records for Northumberland and Durham (379d), Serin, first record for Northumberland (400), Ortolan Bunting (416).

CLASSIFIED NOTES

(Records relating to the Farne Islands will be found in the *Ornithological Report on the Farne Islands for 1956*)

1. Black-throated Diver *Colymbus arcticus* L.

From January to mid-April a few were on the coast, usually single birds. On February 18th one was identified on Whittle Dene Reservoirs (D.E.E. & R.M.E.) and on the 21st, during a blizzard, one came down in a locomotive works at Darlington ; it was unharmed and was released on the coast next day. (A.Ba.) A very late bird was seen off Hartley Point, N., on May 27th. (J.D.P.)

The first arrival in the autumn was seen on August 3rd off Seaton Sluice, N., a single bird in summer plumage. (J.D.P.) Very few others were recorded ; but on November 4th one was seen on Tunstall Reservoir, D., 25 miles inland. (R.M.)

2. Great Northern Diver *Colymbus immer* Brünn.

During January and February up to six were present off Holy Island. (B.L., J.F. & A.F.)

In autumn the first noted were on September 15th, but very few thereafter, until November and December, when up to six were always present off Holy Island. (B.L.)

4. Red-throated Diver *Colymbus stellatus* Pontop.

Unusually numerous from January to April. On February 26th and March 31st northerly passages were noted along the coast. (J.P.D. & D.H.) On April 12th a tight flock of 11 was seen swimming north. (B.J.)

First seen in autumn on August 27th, one in full breeding plumage, at Teesmouth. (P.J.S.) On October 28th, off St. Mary's Island, N., during a northward movement of sea-birds and duck, 40 were counted in three hours, including one flock of 16. (D.G.B.) On December 26th, off Hartlepool, D., 39 were counted during three hours, all flying north. (P.J.S. & A.Ba.)

5. Great Crested Grebe *Podiceps cristatus* (L.)

No breeding was proved on any of the loughs or reservoirs, though adult pairs were seen occasionally. This may perhaps be accounted for by the very dry season having reduced the water-level. A few single birds were seen on the coast in winter.

6. Red-necked Grebe *Podiceps grisegena* (Bodd.)

A few single birds on the coast from January to March. On March 20th, one inland on Westerhope pond, N. (C.M.A.) Only one recorded in the autumn ; a single bird off St. Mary's Island, N., on October 28th.

7. Slavonian Grebe *Podiceps auritus* (L.)

Small numbers reported in early January from Holy Island and a few more at the end of March. On February 26th, near Graythorp Shipyard, Teesmouth, one—only the fourth record for the Durham side of the Tees since 1947. (P.J.S. & A.Ba.) On April 12th, on Holywell pond, N., one in transitional plumage. (W.D.R.)

8. Black-necked Grebe *Podiceps caspicus* Hablizl

Single birds off Holy Island in early January and again at the end of March. On April 15th in Hartlepool Dock, D., one in full breeding plumage. (R.T. per P.J.S.) On April 28th single birds were seen in breeding plumage on Newton Pond, N. (W.S.C.), and on Holywell ponds, N. (D.H. & M.B.) No more reported until August 4th, when one was again on Holywell ponds. (J.D.P.)

12. Leach's Petrel *Oceanodroma leucorhoa* (Vieillot)

On June 18th and 19th a bird of this species was seen at Whitburn, D. (J.R.C.)

14. Storm-Petrel *Hydrobates pelagicus* (L.)

On November 10th, 1955, five birds followed a ship into Hartlepool Dock. They were seen flying round and one fell down the funnel of a steamer. The same day one was picked up alive on the beach at Seaton Carew, D., and released. It was a calm day with fog. (P.H. per P.J.S.)

On July 31st, after two days of violent westerly gales, a dead bird was picked up between Winston and Staindrop, D. It was probably a storm-driven waif from the west coast. (A.Ba.) During August a single bird was haunting Fenham Flats, Holy Island, N. (J.L.) In late November two birds were brought into Hartlepool aboard a ship. They were fed by an R.S.P.C.A. officer and subsequently released. (P.J.S.)

16. Manx Shearwater *Procellaria p. puffinus* Brünn.

On February 15th, at South Shields, one was found dead on the beach. A most unusual date ! From May onwards, very numerous off the coast. On several occasions northerly movements were noted.

On June 9th, off Souter Point, D., with a north-east wind, 19 were counted in two hours (F.G.G.) and, on the same day, off Seahouses, N., 12 were counted in 1½ hours. (B.J.C.) On July 31st, off St. Mary's Island, N., unusual numbers were seen ; in 1½ hours 60 Shearwaters passed north, 45 of which were definitely identified as Manx. Next day, during 1½ hours, 82 Shearwaters passed north, 57 identifiable as Manx, and most of the others probably Manx also. (J.D.P.) Other lesser movements were noted on August 29th and September 2nd. Last seen on October 29th : five flying north in a N.E. gale off Marsden, D. (A.N.)

On July 9th, when birds were flying north off the coast (see above), a single bird was seen flying about Shotton Colliery Brickyard, D., three miles from the sea. It also flew off to the north against the wind. (D.W.S.)

19. Great Shearwater *Procellaria gravis* O'Reilly

Definitely identified on two occasions. On July 29th, off St. Mary's Island, N., one (D.H. & J.D.P.) and on July 31st, off Holy Island, N., two flying north with other Shearwaters, chiefly Manx. (J.D.P.)

21. Sooty Shearwater *Procellaria grisea* Gmelin

On February 8th, at sea off Holy Island, one. " This is the only time I have seen one during the winter months. During my lifetime here I have only seen about six or seven, and it has always been during the month of September—before the mackerel fishing finished." (R.H. per G.W.) On September 2nd, one was seen off Holy Island (D.W.), on the 10th, one off Seahouses, N. (B.L.), and on October 6th, one off the North Gare, Teesmouth, D. (P.J.S. & D.G.B.)

26. Fulmar *Fulmarus glacialis* (L.)

At the end of March, birds were haunting three different crags in North Northumberland, all over four miles from the sea (W.D.R.) and on July 21st, on a quarry face at least six miles inland, a full-grown chick was ringed. (B.L.)

27. Gannet *Sula bassana* (L.)

By March 10th many were passing up the coast. (E.A.R.E.) From March 31st to April 5th a steady passage was noted. (J.D.P., W.S.C., F.G.G.) On June 9th, off Seahouses, N., in a N.E. gale, 227 were counted flying north in 1½ hours. (B.J.C.) During August and September other northerly movements were reported. On August 30th,

off Seahouses, in a N.E. wind, *c.* 2,100 passed in 2¼ hours and next day *c.* 2,000 in 1¾ hours. (B.J.C.) On October 28th, off St. Mary's Island, N., during a northerly movement of other species, *c.* 105 were counted in three hours. (D.G.B.)

28. Cormorant *Phalacrocorax carbo* (L.)

On Marsden Rock, D., ten nests were counted, the largest number for this colony. (F.G.G. & D.W.)

29. Shag *Phalacrocorax aristotelis* (L.)

On March 23rd, at Corbridge, N., 25 miles from the sea, a bird was fishing in the river and perching on the buttress of the bridge. (T.F.H.) It is very unusual for a Shag to be seen so far from the coast.

30. Heron *Ardea cinerea* L.

Northumbrian Heronries: Longridge, Berwick, no nests. (H.F.C.) Chillingham Park, six nests (C.B.) Boundary Wood, Alnwick, eight nests. (J.E.R.) Woods near Bellingham, six nests. (K.I.) Styford, Tyne Valley, five nests. (R.L.B.)

Durham Heronry: Dyance Wood, Gainford, six nests. (A.Ba) Total number of occupied nests in the two counties: 31.

A further reduction has been noted, in both the summer and winter population, on the rivers and along the shore. (H.F.C. *et al.*)

The organiser of the B.T.O. Heronry Census writes: "I share your disappointment in the continued decrease of your Heron population, but since this is in keeping with the trends down the whole length of the east coast of England, which is connected, I believe, with climatic factors, I feel sure that it will make a recovery in due course. Only in the Midlands and the Cheshire area has the population remained stable."

On April 7th, from the North Gare, Teesmouth, a bird was seen to fly in from the sea, circle the estuary and fly out again in a N.N.E. direction. (P.J.S.) On August 24th, at Teesmouth, one was seen to fly in from the sea and pass up the estuary. (D.G.B.)

32. Little Egret *Egretta garzetta* (L.)

An adult Little Egret spent at least a week on the shore of Catcleugh Reservoir, Upper Redesdale, N. It was first seen on May 25th, again on the 28th and finally on the 31st. Excellent views were obtained, as it was usually standing at the edge of the streamlet which flows over exposed mud at the north end of the reservoir, within

c. 100 yards of the Newcastle to Jedburgh road. It was also seen in flight and perched on pine trees close to the water. It wore the white plumes of an adult bird. (A.McR., J.H.A., K.I.) This is the first record for Northumberland. " The pattern of the records in recent years so strongly supports the idea of an annual trickle of wild birds into Britain, that the suggestion of any of them being of captive origin is so slight that it can safely be ignored." (I. J. Ferguson-Lees).

38. Bittern *Botaurus stellaris* (L.)

Early in January near Seaton Burn, N., a man, shooting Carrion Crows flying in to roost at dusk, brought down a bird which, on examination, proved to be a Bittern. " The chance of such a thing occurring in Northumberland must be one in a million ! " (M.W.R.)

From March 25th to April 14th at Gosforth Park Sanctuary one was heard " booming " at dusk and occasionally seen in daylight. (W.D.R., M.G.R., J.B.) On October 28th and again on November 1st, one was seen flying over the lake. (W.D.R.)

42. Spoonbill *Platalea leucorodia* L.

From June 15th to July 1st in the Teesmouth area, two adult birds in full breeding plumage were seen several times. They were first seen on Cowpen Marsh (B.G.) and later on Greatham Creek. (P.J.S. & A.Ba.) From the 25th until July 1st they were at Hurworth Burn Reservoir and from there they were seen to fly to Seal Sands ; but they were not seen subsequently. (J.R.C.)

45. Mallard *Anas platyrhynchos* L.

In Upper Coquetdale a nest was found at an altitude of over 900 ft. (E.M.)

Many large concentrations were noted throughout the year. On January 22nd there were *c.* 300 at Teesmouth (A.Ba.) and on the 28th at Gosforth Park *c.* 600 were standing on the ice on the lake. (W.D.R.) On October 28th at Capheaton Lake, N., *c.* 350 (W.D.R.) and by the end of the year at Gosforth Park *c.* 400 (B.J.)

46. Teal *Anas crecca* L.

In October on Fenham Flats, Holy Island, an unusual sight was witnessed. A single Teal was caught up in a pack of Dunlin and was wheeling and turning with them, appearing to have no difficulty in conforming to their evolutions. (F.S.)

47. GARGANEY *Anas querquedula* L.

One or two noted on Teesmouth marshes in early spring: on March 25th and April 4th, a drake and on April 21st, three or four (B.J.C. & N.Y.); but no breeding proved. On April 28th, two drakes and a duck were on Holy Island Lough (P.L.) and on May 12th, a pair. (W.D.R.)

49. GADWALL *Anas strepera* L.

Between March 19th and April 28th, single birds and pairs were seen on several waters near the coast and inland; total number reported, 17. From August 29th to the end of the year, on Gosforth Park Lake and neighbouring waters, one or two were frequently seen, perhaps the same birds. On October 20th, off Greatham Creek, Teesmouth, two; the only birds reported from that area. (D.S-S.)

50. WIGEON *Anas penelope* L.

In January, on Holy Island slakes, max. *c.* 12,000. (R.H. per G.W.) In the autumn, arrivals were late. Very few on the slakes in October but by November 4th, *c.* 3,100, increasing to *c.* 8,000 by the end of the year; then by the first week in January, 1957, large arrivals brought the number up to *c.* 20,000. (R.H.)

52. PINTAIL *Anas acuta* L.

Noted in every month of the year except June and July. Certainly increasing in numbers on the coast. At Teesmouth in March and April, flocks of up to 26 birds, of which 15 were drakes—the largest flocks recorded at Teesmouth in recent years. (P.J.S. & B.J.C.) In the autumn, the largest flock reported there was 16. (J.R.C.) A few birds wintered on Jarrow Slakes, D. (F.G.G.) On Gosforth Park lake and neighbouring waters, two or three were present from February to April and again from September to the end of the year.

53. SHOVELER *Spatula clypeata* (L.)

In the Teesmouth area a few pairs were seen, a nest with seven eggs was found and at least one brood was successfully reared. (P.J.S.) On a pond in North Northumberland a duck with eight ducklings in down was seen. (W.S.C.) Considerable concentrations were noted in the autumn: on Gosforth Park lake, max. 31, on November 5th (W.R.L.); on Killingworth Mere, N., on November 1st, *c.* 45, "the largest flock I have ever seen there." (W.D.R.) On the Northumbrian loughs, on October 7th at Grindon, 25 (D.W.) and November 4th at Broomlee, 20. (D.W.) At Teesmouth, max. 42 on August 24th. (P.J.S.)

55. Scaup *Aythya marila* (L.)

Early in the year, following the freezing up of the Baltic, a very marked invasion was recorded on the coast. On Holy Island on February 16th and 17th very large numbers flew up the harbour and passed between the Snook and Beal Lane Ends. It is estimated that very many thousands followed this route. (R.H.) It is very many years since such numbers were recorded. Thereafter, many flocks of varying numbers were present off the coast. On February 19th, off St. Mary's Island, *c.* 117. (W.D.R. *et al.*) On March 17th there were 44 on Holywell ponds. (W.D.R.) In March at Teesmouth " more than usual," max. 45 on the 11th. (P.J.S.) Single birds were seen on several inland waters. " In mid-March a flock of 23 to 25 spent most of the day on the sea in the area Seahouses-Inner Farne, coming in daily as one flock to Monks' House pool for an hour or so each morning to rest, sleep and preen. A smaller group of five reversed this process, living on the pool and visiting the sea. A similar thing occurred on Newton Pond, where numbers were less ; 22 counted once." (E.A.R.E.) In the autumn, however, very few indeed were reported up to the end of the year.

56. Tufted Duck *Aythya fuligula* (L.)

Generally distributed, but some unusually large concentrations noted. On Gosforth Park lake on February 21st, 95 ; on the 25th, 90 ; on the 27th, 63. (W.D.R., F.G.G. *et al.*) On March 3rd at Holywell ponds, 55 (P.J.) ; on March 6th, on Newton pond, 30 (W.S.C.) ; on April 2nd, on Capheaton Lake, 70. (W.D.R.) A marked feature was the large number seen flying up the coast with other fresh-water duck on October 6th to 8th.

57. Pochard *Aythya ferina* (L.)

The usual small flocks wintered on inland waters and in June a few drakes were seen, but no breeding was proved.

60. Golden-eye *Bucephala clangula* (L.)

As usual a few were reported from most of the inland waters each winter, some remaining into early May. Unusually plentiful in the Tweed estuary in January and February : on January 9th, *c.* 150, February 23rd, *c.* 200. (H.F.C.) On January 18th, on Whittle Dene Reservoirs, there were 31. (E.L.A.) First reported in autumn on August 14th. (E.L.A.)

62. Velvet Scoter *Melanitta fusca* (L.)

Rather more plentiful than usual in the winter of 1955-56, particularly off Teesmouth, where on February 26th, 21 were counted and on April 7th, 24 : " the largest flock recorded at Teesmouth." (P.J.S.) Seen in larger numbers than usual all along the coast up to the end of April. A few were present in July and August. In the autumn very few were reported, usually single birds.

67. Eider *Somateria mollissima* (L.)

Normally adults are rarely seen as far south as the Tees Estuary, but during January flocks of up to 14 were counted (N.Y.) and on April 28th an adult pair was present. (D.G.B.) Breeding was very successful, not only on the Farnes, but in a few places on the mainland.

69. Red-breasted Merganser *Mergus serrator* L.

More numerous at Teesmouth than in any recent winter. (P.J.S.) Inland :—On November 9th on Gosforth Park lake, a drake. (F.J.N.)

70. Goosander *Mergus merganser* L.

Increasing in numbers on the Northumbrian rivers and inland waters and spreading further south. From February 21st to 24th a duck was on Shotton Colliery Brickfield pond—" the first of this species to be seen in this district." (D.W.S.) On February 26th a duck was in the Tees Estuary—" only the second I have seen in the estuary." (P.J.S. & A.Ba.)

71. Smew *Mergus albellus* L.

From February 18th to March 27th a drake and two ducks were on Gosforth Park lake and, at various dates in between, a similar trio was seen on Whittle Dene Reservoirs, probably the same birds. In February, single ducks or immature birds were seen on the Aln at Alnwick (J.E.R.), on Howick Pond (W.S.C.), off Seaton Carew, D. (P.J.S. & A.Ba.) and in March on Grindon Lough (R.T.G. *et al.*) and on Billingham Pond, D. (P.J.S., P.E. *et al.*), while on March 20th an adult drake was on the Tyne near Haltwhistle. (M.P.) In autumn none had been reported up to the end of the year.

73. Sheld-Duck *Tadorna tadorna* (L.)

Very numerous indeed. At Teesmouth on February 11th, *c.* 700 —" the largest flock ever recorded at Teesmouth." (P.J.S.) On February 16th and 17th, at Holy Island, a considerable northerly movement took place, many hundreds passing the Island at the same time as large flocks of Scaup were moving. (R.H.) Breeding was

successful in many places. " At Teesmouth on June 18th, 40 young in down were counted. Three of the adults present feigned injury to attract my attention from the young and one drake swam beside me all along the sea wall pretending it could not fly, lurching along the surface of the water, frequently dipping its head underneath and emitting weak mewing cries all the time. It kept a few yards ahead of me, trying to lead me on and coming back for me whenever I stopped." (D.G.B.) Further up the coast, birds of the year were frequently noted. At the close of the year, 440 were counted at Teesmouth (P.J.S.) and 108 on Holy Island.

Moult migration. " On July 6th at Haltwhistle, N., the first clear night for a week, with a light north-westerly wind, three skeins of Sheld-duck were seen flying east over the town at about 1,000 ft. At 8.55 p.m., 50, at 9.15, 30 and at 9.20, 13. The skein of 13 was led by a bird which flew about 200 yds. to the right and about 100 yds. ahead of the flock, as if trying to get them to change their course further to the south." (M.P.) On July 1st at North Low, Beal, N., 58 adults were counted, all paired and without young ; but on July 22nd not a single bird was present on Fenham Flats—" presumably all had migrated for the moult in the interval." (H.F.C.)

75. Grey Lag-Goose *Anser anser* (L.)

The usual flock " summered " on the Farne Islands from mid-June to mid-August ; maximum number counted was 20. (G.H.) The Holborn Moss flock increased from 45 in October to 450 by the end of the year. (F.B. & B.L.) Numbers counted on Holy Island rose from 25 in October to *c.* 300 in December. (R.H.) On November 3rd, 84 were on Fontburn Reservoir, N. (H.R.C.) and on the 30th, 50 on Kimmer Lough. (J.E.R.) These may all have been part of the same flock, as a good deal of movement from place to place had been noted.

78. Pink-footed Goose *Anser arvensis brachyrhynchus* Baillon

Very few indeed on the Holy Island flats during the winter of 1955-56 ; maximum number recorded only 45. (R.H.) In the autumn of 1956 numbers rose to *c.* 300 by the end of the year. (R.H.)

80. Brent Goose *Branta bernicla* (L.)

On January 1st, on Holy Island, there were 120 and on the 29th another 100 arrived (G.W.) ; but by mid-February there were over 2,000. (R.H.) By the end of March only 85 remained. (F.G.G. *et al.*) A single bird remained about Holy Island throughout the summer—perhaps a " pricked " bird. (R.H.)

First seen in winter on Holy Island : seven on December 2nd, increasing to *c.* 300 at the end of the year ; but by January 9th, 1957, they numbered nearly 1,000. (R.H.)

81. Barnacle-Goose *Branta leucopsis* (Bechstein)

On October 24th, just before dusk, a single bird flew in to Fenham Flats and settled on " The Swad." (F.S.) On October 30th, at 9.0 a.m., over Haltwhistle, N., a flock of 27. When first seen they were flying directly east at about 300 ft. up ; they then circled round three times and finally flew off to the west in a close " V," heading for the Tyne Gap. (M.P.) (For a note on Barnacles crossing Northumberland in autumn, see *O.R.* 1954.)

82. Canada Goose *Branta canadensis* (L.)

On May 31st at Wallsend, some Boy Scouts identified a flock of some 17 birds which flew over their school yard. (per A.McD.) On June 1st at dusk, a flock of 18 to 20 unidentifiable geese passed over Adderstone Crescent, near Osborne Road, Newcastle upon Tyne. It was flying due south—" the only type of geese that should be here in June would be Canada Geese." (F.S.) On the same day a party of 15 to 20 Canada Geese was clearly identified flying low over Langley Moor, just south of Durham City. The following day a flock of 29 was seen off the Stag Rocks, Bamburgh. (E.A.R.E.) About the middle of June a flock of eleven birds was reported to be on a colliery pond at Thornley, D. A few days later, when they were definitely identified, their number had shrunk to four—local " gunners " had accounted for the rest. (D.W.S.) On June 10th to 12th a party of four was consorting with Mute Swans on the Tweed. (H.F.C.) These reports may all refer to the same flock. It is the first time that a flock of this size has been recorded ; but as this species is breeding in a feral state in increasing numbers no further away than Yorkshire, such visitations may in future be expected.

85. Whooper-Swan *Cygnus cygnus* (L.)

Very numerous indeed during both winters and very widely distributed on all inland waters, including the reaches of some rivers. On January 1st, on Holy Island slakes, there were at least 100 with *c.* 300 Mutes. (G.W.) Some remained until mid-April. First seen in autumn on September 15th. By the end of the year there were *c.* 250 on the Holy Island slakes. (R.H.) Frequently present on Gosforth Park lake and neighbouring waters ; maximum at Gosforth, 17 on November 5th. (M.B.)

86. Bewick's Swan *Cygnus bewickii* Yarrell

Again very few reported. In early January on Grindon Lough, N., a flock of 14. These may have been the same birds which were on Whittle Dene Reservoirs in December. (E.L.A.) On March 3rd, on Outer Dawdon Pond, D., two, with Whoopers. (J.E.E.) From March 19th to 23rd on Monks' House pool, seven, joining two Whoopers which had been there for a month. " Characteristically they spent most of the day grazing far away from water, like geese." (E.A.R.E.) From March 29th to 31st a flock of eleven on a flooded field near the Hexham to Acomb road, N. (K.I.) On April 4th, on Newton Pond, Embleton, N., two. (E.A.R.E.)

In the winter, two records only : on November 25th, on Saltholme Pool, Teesmouth, two (J.H.) and on December 30th on Holy Island, three. (R.H.)

91. Common Buzzard *Buteo buteo* (L.)

" Nest-building but non-breeding birds were again in Upper Teesdale in the spring ; but the nests were not on the Durham side of the river." (H.W.) During July in the Alwin Valley, Upper Coquetdale, N., a single bird was seen on two occasions. (T.G.W.)

100. Hen-Harrier *Circus cyaneus* (L.)

On May 8th, over a small marsh just S.E. of Bamburgh Castle, N., an adult female was watched at close range as it quartered the ground. (E.A.R.E.) On October 28th, on the mainland opposite St. Mary's Island, N., a female was watched for half an hour, hunting over the coastal fields. (D.G.B.)

102. Montagu's Harrier *Circus pygargus* (L.)

On May 13th a pair was seen not far from its previous breeding area in Co. Durham. A nest was found with four eggs from which three young were subsequently reared. Before the young were fledged the hen was missing, probably shot ; but the cock continued to feed the young unaided and later all three were seen with him on the wing. (C.G. & D.N.B.) Single birds were seen occasionally elsewhere, but no breeding was established.

103. Osprey *Pandion haliaetus* (L.)

On September 2nd, between Newsham and Cambois, N., one was killed against a high-tension electric cable. It was sent to the Hancock Museum and identified ; but it was too badly burnt to be worth preserving. It was a bird of the year. (S.E.C.)

105. Peregrine Falcon *Falco peregrinus* Tunstall

A pair wintered on the coast near Holy Island, preying chiefly upon waders (B.L., A.Bl. *et al.*), and a single bird on the Farnes. A pair attempted to breed on Cheviot, but unsuccessfully. (B.L.) A pair bred in S.W. Durham, but only one young was reared. Not since 1934 has a pair bred successfully in Co. Durham. (H.W.)

" On October 18th, on Fenham Flats, N., we noticed a Jackdaw hovering back and forth over our heads, while about 40 yds. above was a Peregrine ' waiting on.' When the Peregrine flew off the Jackdaw left us too. On the open slakes, where there is no cover, it is common for birds to seek shelter from hawks by flying to a human being. On one occasion, a Meadow-pipit, pursued by a Merlin, came aboard my punt and crept under my knee." (F.S.)

107. Merlin *Falco columbarius* L.

In May at South Shields, a hen was picked up dead. It was so begrimed with smoke and dirt that it might well have been taken for a melanistic form. (F.G.G.) Single birds were seen several times on the coast in the autumn. (W.S.C., P.J.S. *et al.*)

110. Kestrel *Falco tinnunculus* L.

Frequently seen flying over Newcastle and Gateshead and perching on buildings. A pair bred on King's College tower again this year. (R.M.P.) At North Shields a pair bred on an old warehouse and at South Shields on the Hospital buildings. (H.M.S.B.) Further records of such nesting-sites should be reported next year, and members are asked to look out for them.

113. Black Grouse *Lyrurus tetrix* (L.)

Appears to be very slowly increasing in numbers again, but still absent from many previous haunts.

116. Partridge *Perdix perdix* (L.)

On January 5th, at Long Newton Reservoir, D., a covey of eleven was seen to fly up the embankment, cross the water, round and settle on the water, but take off immediately. (D.R.S. & P.S.)

117. Quail *Coturnix coturnix* (L.)

Only one record : a dead bird picked up on the main road near Bardon Mill in the Tyne Valley. (W.J.)

125. Corncrake *Crex crex* (L.)

Fewer, and not so widely distributed as in the last few years. First reported on April 27th at Kielder, N., where young were seen later. (per A.McD.) Nearly all the reports came from the valleys of the Tyne and its tributaries, west of Hexham. The Shaftoe Trust School Nature Club at Haydon Bridge had records from 14 places in that area. (per W.J.) None was reported from Co. Durham.

127. Coot *Fulica atra* L.

Well distributed and common ; very large flocks indeed wintering on some waters.

131. Oystercatcher *Haematopus ostralegus* L.

In the Derwent Valley, D., two nests were found in fields well away from water. (W.A.W. *et al.*) On August 17th, at Seaton Snook, D., a flock of 223—the largest flock seen at Teesmouth since the war. (B.J.C. per P.J.S.)

133. Lapwing *Vanellus vanellus* (L.)

Very large movements took place on October 28th and 29th. On the 28th, at St. Mary's Island, N., during a three-hour watch, a continuous stream of birds flew in from the sea ; estimated number, *c.* 20,000. (D.G.B.) On the same day, off South Shields, a northerly passage was in progress during the whole of the day. At 4.30 p.m., a flock of 100 to 150 was seen to fly N.E. out to sea over the harbour. On the following day at 9.45 p.m., in calm, clear moonlight, large flocks were seen flying due east over South Shields ; during 20 minutes it was estimated that from 1,500 to 2,000 had passed. (J.E.E. per F.G.G.)

A juvenile ringed at West Boldon, nr. Sunderland, D., on June 2nd, 1955, was shot out of a flock of *c.* 100 on January 10th, 1956, at Bilbao, Vizcaya, Spain (800 miles S.).

Another, ringed at the same place and time, was found dead on February 20th, 1956, near Celorico da Beira (Beira-Baixa), Portugal (1,010 miles S.S.W.). (A. & R.)

134. Ringed Plover *Charadrius hiaticula* L.

Bred successfully on river gravels in Upper Coquetdale. (E.M.) One pair attempted to do so on the South Tyne. (M.P.) Breeding was attempted in several places between South Shields and Sunderland

on the shore, apparently without success; but on August 4th a two-day-old chick was seen. (L.K.) At Teesmouth about half-a-dozen pairs tried to nest and at least one pair succeeded. (A.Ba.)

A first-winter bird, ringed at Annstead, near Seahouses, N., on September 8th, 1955, was recovered on April 29th, 1956, at Gironde, France. (E.A.R.E.)

139. Grey Plover *Charadrius squatarola* (L.)

Some ten non-breeding birds spent the summer at Teesmouth. (P.J.S.) Unusually plentiful about Holy Island at the end of the year —196 counted. (J.R.C.)

151. Whimbrel *Numenius phaeopus* (L.)

On February 26th at St. Mary's Island, N., a single bird flew in from the sea. (J.D.P.) It is 24 years since a bird was seen in February; they usually arrive in April at earliest. Very plentiful indeed in the autumn when several large flocks were seen; maximum *c.* 180 on August 25th at Fenham Mill, N. (B.L.)

154. Black-tailed Godwit *Limosa limosa* (L.)

Fewer in number, but much more widely spread than usual. During May at Teesmouth, up to three; at Newton Pond, three and at Monks' House Pool, two. On return migration, from July 26th to September 1st, maximum three together, Catcleugh Reservoir, Teesmouth, North Shields, Grindon Lough and Holy Island.

155. Bar-tailed Godwit *Limosa lapponica* (L.)

" On February 26th on the Sand-rigg, Holy Island, there were some 20,000 ' waders,' most of them Godwits. I have never seen so many Godwits there before." (R.H.)

" In mid-October more than usual on Fenham Flats, N., even more than the normal one or two thousand. On the 14th a flock of 500 together, with about as many Dunlin." (F.S.) Large numbers at Teesmouth and on other parts of the coast.

156. Green Sandpiper *Tringa ocrophus* L.

On January 21st on the lake at Doxford, Chathill, N., one, a most unusual date. (E.M.) In April two single birds were reported, one at Whittle Dene Reservoirs (E.L.A.) and one at Whitworth Park, D. (C.G.) During August and September, about the usual numbers were reported from various localities, chiefly single birds.

157. WOOD-SANDPIPER *Tringa glareola* L.

Only one recorded on spring passage ; a single bird at Holywell Ponds, N., on April 28th. (M.B. & D.H.) Several reported during July and August, chiefly from Teesmouth, where from one to five were seen almost daily in Saltholme Marsh. (P.J.S. *et al.*) Last recorded September 11th : two at Monks' House pool. (E.A.R.E.)

161. REDSHANK *Tringa totanus* (L.)

On April 7th on Fenham Flats, N., a flock of *c.* 2,000, " the largest number I have ever seen at one time." (F.B.)

161(B). CONTINENTAL REDSHANK *Tringa t. totanus* L.

On September 26th at Monks' House pool, N., *c.* 60 birds, of which a sample trapped and measured proved to be of this form. (E.A.R.E.)

162. SPOTTED REDSHANK *Tringa erythropus* (Pallas)

Two records of spring migration :—From April 22nd to 28th at Darlington Sewage-farm, D., one in breeding dress (A.Ba.), and on April 28th, one, and 29th, two, at Cowpen Marsh, Teesmouth, in breeding dress. (B.J.C.) During August and September several, usually single birds, were reported, chiefly from the coast. Single birds were seen at Teesmouth on October 6th (P.J.S.) and at Wallsend Swallow as late as December 2nd. (W.D.R. *et al.*)

165. GREENSHANK *Tringa nebularia* (Gunn.)

On February 7th at Holy Island, one feeding on the shore with other waders. An unusual date. (E.L.A.) On April 21st at Gosforth Park, one. (W.D.R.) On May 6th at Cowpen Marsh, Teesmouth, one (B.J.C.) and on June 1st at Colt Crag Reservoir, N., one. (K.I.)

The autumn passage began on July 8th and during August and September they were unusually numerous both on the coast and at inland waters. At Teesmouth during the last week in August from one to six were seen daily. (D.G.B.) On the 30th, one was at Blagdon, N., " a new record for that area." (M.W.R.) On September 8th at Fenham, N., *c.* 15. (B.L.)

169. KNOT *Calidris canutus* (L.)

Some very large flocks reported from January to March. At Fenham Flats, N., up to 1,500 (F.B.) and at Teesmouth up to 3,000. (A.Ba.)

On October 16th at Fenham Flats, N., hundreds were flighting down from the north, stopping to feed for a short time and then passing on to the south. (F.S.) At Seaton Sluice, N., at the end of the year, there were *c.* 530. (J.D.P.)

171. Little Stint *Calidris minuta* (Leisler)

No spring records; but many more reported in autumn than in the previous year. Between August 25th and September 16th, single birds and small parties were seen at various places on the coast. Largest flock, 11, seen on Budle Bay on September 6th (F.G.G. & F.B.) and eight near Beal on September 1st. (B.L.)

173. Temminck's Stint *Calidris temminckii* (Leisler)

From May 10th to 13th at Primrose Pond on the river Don near Jarrow, D., one was seen in company with a Dunlin. (F.G.G. & T.H.A.) This little passage migrant has very rarely been recorded in either county; it has usually occurred away from the coast.

178. Dunlin *Calidris alpina* (L.)

Small breeding colonies have been reported on the Cheviots and on the Wear-Tees watershed.

An adult Dunlin ringed at Annstead, N., on August 13th, 1956, was recovered at Seudre Est, Charante-Maritime, France, on September 27th, 1956. (E.A.R.E.)

179. Curlew Sandpiper *Calidris testacea* (Pallas)

Rather more frequently reported than usual An early arrival was one on the Brownsman, Farne Islands, on July 19th. (G.H.) From August 5th to September 22nd single birds and small parties were seen all along the coast. Flocks of 10 to 12 were not uncommon.

181. Sanderling *Crocethia alba* (Pallas)

Very numerous in the early months of the year; some large flocks being reported. On March 4th at Seaton Carew, D., *c.* 100 (C.G.); on the 10th at Fenham Flats, N., *c.* 100 (E.A.R.E.); on the 25th at St. Mary's Island, 88, increasing to 120 by the end of April. (J.D.P.) A few were noted in June and July.

184. Ruff *Philomachus pugnax* (L.)

Very numerous indeed, particularly so in August. Seen regularly at Teesmouth from July 22nd onwards: maximum 41 on August 25th-26th; falling off in numbers after September 1st when shore-shooting

began. (P.J.S.) At Holy Island in the first week of September, from eight to 14. (D.W. & D.H.) On August 20th on Monks' House pool, N., 18 (E.A.R.E.), on the 26th at Wallsend Swallow, N., 17 (J.D.P. *et al.*) and in smaller numbers at many other places. Last seen on November 2nd, near Cleadon, D., and on December 7th, near Washington. (A.H.B.)

185. Avocet *Recurvirostra avosetta* L.

On March 29th at the mouth of the Embleton Burn, N., two (F.G.); from the 31st until April 2nd, two, probably the same birds, were at the mouth of the Swinhoe Burn, just south of Seahouses, N. (E.A.R.E.)

On August 24th at Fenham Mill, N., a single adult was present for several hours. (B.L.)

187. Grey Phalarope *Phalaropus fulicarius* (L.)

On October 29th on the shore at Seaton Carew, D., during a strong northerly gale, one. (D.G.B. & A.V.) This is the only record for the year.

193. Arctic Skua *Stercorarius parasiticus* (L.)

Noted off the coast in about the usual numbers from May until the end of October, but no large movements were recorded, as in 1955.

194. Great Skua *Stercorarius skua* (Brünn.)

During the summer about a dozen were reported off the coast, usually single birds; but on September 3rd off Seaton Snook, Tees-mouth, three were seen together. (V.B.) On August 29th one was seen to kill a Kittiwake. (B.G. per P.J.S.)

195. Pomarine Skua *Stercorarius pomarinus* (Temminck)

Not so numerous as last year. Only nine were definitely identified, though others may have been of this species. First seen, June 9th; last on November 3rd.

198. Greater Black-backed Gull *Larus marinus* (L.)

Unusually large concentrations were noted in September. On the 2nd, on Jarrow Slake, D., 450 were counted and many more were present (F.G.G.) and on the same day at Teesmouth there were *c.* 1,200. (A.Ba.) On the 22nd in Embleton Bay, N., many more than 1,000 gulls assembled, most of them being of this species. (W.S.C.)

On December 2nd, off Seaton Sluice, N., an immature bird was seen to seize a Common Scoter and fly up to a height of *c.* 10 ft. with it ; but the Scoter fell back into the sea and escaped by diving. (D.G.B.)

On February 15th, on Jarrow Slake, D., an immature bird was found dead bearing a ring showing that it had been ringed as a juvenile at Bareksta, near Florö (61° 39′ N. 4° 54′ E.) in Norway, on July 6th, 1955. (per F.G.G.)

200 (B). Scandinavian Herring-Gull *Larus argentatus* Pont.

From October 18th for a few days, in and about a garden at North Shields, an adult, with very distinct yellow legs. (T.H.A.)

201. Common Gull *Larus canus* L.

On January 11th at Long Newton Reservoir, D., a bird was seen to perch for several minutes on a telephone wire *c.* 25 ft. from the ground in company with some Starlings. The wire presented a good look-out for food. (D.R.S. & P.S.)

202. Glaucous Gull *Larus hyperboreus* Gunn.

Several were seen on the coast from January to March and one as late as mid-April. Nearly all were immature, but from February 11th to March 11th an adult bird haunted the Seaton Carew, D., refuse-tip. It became so " tame " that it allowed an approach to within five yards. (P.J.S.) On March 23rd two were on the Black Middens, Tynemouth, N., and a third on the beach at South Shields. (F.G.G.)

A few immature birds were on the coast during November and December ; two present at North Shields Fish Quay. (B.L.)

203. Iceland Gull *Larus glaucoides* Meyer

On February 21st, in Berwick Harbour, one. (E.L.A.) From March 3rd to 12th an immature bird was seen several times at North Shields Fish Quay, N. (W.D.R. *et al.*), and on the 17th one was at St. Mary's Island, probably the same bird. On August 19th one was again at the Fish Quay. (J.A.) On November 9th on the river Tyne, just below the Swing Bridge, Newcastle, one was identified with other gulls. (A.McD.) On December 2nd off Seaton Sluice, N., two immature birds were seen with Glaucous. (D.G.B.)

205. Mediterranean Black-headed Gull

Larus melanocephalus Temm.

The bird which was present at the North Shields Fish Quay from November 12th, 1955, to the end of that year (see *O.R.* 1955) remained until March 17th, 1956. During its stay it was known to visit and

perch upon a railing close to the South Shields Ferry Landing-stage, thus establishing a first record for this species in County Durham. Before it left, it had almost completed its change into summer plumage, the black hood developing down to the base of the neck and over the ear-coverts. (W.D.R., A.Bl., L.G.H. *et al.*) Later, on April 14th, at Holy Island Lough, N., a bird of this species was identified which differed in no degree from the bird previously at North Shields and was most probably the same individual. (A.Bl. & B.L.)

On October 29th on the sea off Hartlepool, D., an adult in winter plumage was identified. It was seen there frequently up to the end of the year and during the early months of 1957. It was usually feeding with other gulls at the mouth of a sewer about half-a-mile north of Hartlepool breakwater. (D.G.B., P.J.S. *et al.*) It was thought to have been the same bird as had visited the Tyne the previous winter and on one occasion a bird did occur at the North Shields Fish Quay (November 4th, D.G.B.), fishing with other gulls at the same spot as before, and in exactly the same manner. However, on January 19th, 1957, a bird was seen on the coast between Hartley and St. Mary's Island, N. (L.G.H. & J.D.P.) at exactly the same time, between 3.0 and 4.0 p.m., as the Hartlepool bird was under observation. (D.G.B.) Two birds must therefore have been involved.

207. Little Gull *Larus minutus* Pallas

Seen off the coast on several occasions between January and November, but chiefly during August. The largest group was seen on August 25th when, off Crimdon, D., a party of 13 was seen, of which eight were adults and five juveniles ; four of the former having partial black hoods. (J.R.C.) On the next day, at Teesmouth, four immature birds were seen to fly up the estuary together. (C.G. & D.N.B.) During August and September several different birds visited Monks' House pool, N. (E.A.R.E.) On November 3rd at Holywell Ponds, N., an adult was seen bathing with many Black-headed Gulls. (W.D.R.)

208. Black-headed Gull *Larus ridibundus* L.

The Newton Pond, N., colony had a most successful season ; by June 30th young were quite numerous, some already in flight. (W.S.C.) At Whitfield Lough at least 230 pairs bred ; at Coanwood pond, at least 120 pairs ; and at Unthank Lake, 20 pairs—an entirely new site. (M.P.) Still attempting to breed at Greencroft Ponds near Annfield Plain, D., where the nests are built on the stumps of felled trees ; but the water around them is too shallow to protect them, so the eggs are collected for food. (E.S.)

On October 25th, on Fenham slakes, N., in a N.W. gale, very large numbers were seen flying over the slakes, passing without ceasing for 1¼ hours as dusk fell. The procession was almost continuous and the total number was estimated to have been well over 100,000. They alighted for shelter in Mill Burn Bay, where, in the dusk, for over a mile, the bay seemed to be solid with gulls. A most unusual concentration. (F.S.)

On December 26th at Elton, D., a curious melanistic bird was seen. Its body generally was a dark chocolate-brown with crown light grey becoming yellowish-tawny on the nape, while its wings and tail were completely normal. (D.S-S.)

212. Black Tern *Chlidonias niger* (L.)

More than usual were noted during August and September, chiefly over fresh-water ponds and reservoirs not far from the coast. Several were in the Tees estuary, maximum 17, including a flock of 12 on August 26th. (P.J.S. *et al.*) On September 26th one arrived on Monks' House pool and stayed for three weeks. (E.A.R.E.)

215. Gull-billed Tern *Gelochelidon nilotica* (Gmelin)

On August 14th at St. Mary's Island, N., a bird of this species was under close observation for a quarter-of-an-hour, both standing and in flight, at a distance of some 25 yds. with binoculars x 7. When first seen it was standing on a rock close to an adult Sandwich Tern, with which it could be compared in every detail as to its proportions and plumage. In comparison it was slimmer and slightly shorter; its shortish tail not reaching the tips of its folded wings. Its mantle was pale grey with tail and underparts pure white; head flat-crowned and smoothly feathered, the black of the crown descending over the nape. Its beak was entirely black, stout, shorter than its head and quite a half-inch shorter than that of the Sandwich, while the lower mandible was clearly seen to be angled. Its legs and feet were black and, owing to its longer legs, it stood slightly higher than the Sandwich Tern in its company. In flight it was noticed that the first four or five primaries were dark at the tips and that its tail was only very slightly forked. On being flushed it uttered a deep guttural note, easily distinguished from that of the Sandwich Tern. (J.D.P.)

This is the first definite record for Northumberland; but it will be remembered that on July 3rd, 1955, at Goswick Sand-rigg, N., a tern, seen in flight, was considered by the observers to have been most probably of this species. (B.L., L.G.H. & A.Bl.) See *O.R.* 1955.

217. Common Tern *Sterna hirundo* L.

In the Teesmouth area various attempts at breeding were made, but with little success. At the most, only five or six pairs reared young. (P.J.S. *et al.*)

217/218. Common and Arctic Terns

On the Northumbrian mainland, in a mixed colony of about equal numbers, about 90 pairs were breeding. Some 20 young were fledged from the first nests. From later layings over 50 young did well until three-quarter-grown, when rain destroyed half of them. (E.A.R.E.) At another mainland colony, high tides destroyed the earlier nests ; but the birds bred later on another site, where, counting Little Terns amongst them, *c.* 120 young were reared. (B.L.)

219. Roseate Tern *Sterna dougallii* Mont.

On the Farnes from 61 to 76 pairs nested ; the majority on Longstone End. (G.H.) Three pairs attempted to breed on a mainland site with Common and Arctics. On July 4th two eggs were seen, but no young survived. (E.A.R.E.)

Although breeding in increasing numbers on the Farnes, N., this species has rarely been identified on passage off the Durham coast. Last year, 1955, in July and August a few birds were identified at Teesmouth. This year at Seaton Snook, Teesmouth, on July 8th, three were seen (A.Ba.), on the 15th, two (B.J.C.) and on the 22nd, two. (P.J.S. & A.Ba.)

222. Little Tern *Sterna albifrons* Pallas

The usual colony at the Teesmouth was wiped out by a high tide, but on July 8th five birds were incubating late clutches, when again a high tide swept the eggs away. A few odd chicks may possibly have been reared at Teesmouth. (P.J.S. & A.Ba.)

On the Northumberland coast, high tides flooded the usual nesting-places ; but a number of pairs reared young successfully on another site with Common and Arctics. (B.L.)

223. Sandwich Tern *Sterna sandvicensis* Latham

For the second successive year there was a large colony on the Inner Farne, estimated to number *c.* 1,300 pairs. Together with the colonies on the Longstone End and the Brownsman, the total breeding population must have amounted to some 2,200 or 2,300 pairs. (G.H.)

Very plentiful all up and down the coast. Counts made at Teesmouth were, on July 25th, *c.* 500, and on August 5th, *c.* 400. (B.J.C.)

226. Little Auk *Plautus alle* (L.)

Following the large "invasion" which took place in the late autumn of 1955, many remained along the coast and dead birds were picked up on the beach at various places; but by the end of February few living birds were left. Fishermen on the coast stated that they had not been so plentiful for at least 30 years past. (D.H.W.) On January 2nd at Chollerton Farm, North Tyne, a bird was found alive and uninjured in a turnip shed. It is probable that it had been blown inland from the west coast by the south-westerly gales of the previous days. (K.I.) On March 1st a dead bird was picked up near Sharperton in Upper Coquetdale, 20 miles from the sea. (E.M.) Very few were seen in the autumn, but on October 15th, seven were picked up dead on the tide-line at Holy Island (B.L.) and on December 16th, one on Ross Links, N. (J.R.C.)

227(a). Northern Guillemot *Uria a. aalge* (Pontopp.)

On October 27th at the North Gare, Teesmouth, a bridled bird of this form came in out of the sea; it was very badly oiled. (D.G.B.)

229. Black Guillemot *Uria grylle* (L.)

Only four recorded. On January 4th near Staple Island, Farnes, one. (F.B.) On March 31st off St. Mary's Island, N., one. (M.B.) From March 31st for three weeks, one remained off the coast in the Seahouses area, N., in company with Eiders. During its stay it changed almost completely into summer plumage. (E.A.R.E.) On October 28th off St. Mary's Island, one in winter plumage. (D.G.B.)

234. Wood-Pigeon *Columba palumbus* L.

Recent recoveries of ringed birds show the sedentary character of some local birds. The following were all ringed as nestlings on the dates shown.

17.8.48	Blagdon, N.	shot	*c.* 5 miles from Morpeth	4.3.56	(7½ yrs. old)
31.7.49	Seaton Burn, N.	,,	where ringed	18.2.56	(6½ yrs. old)
2.10.51	Blagdon, N.	,,	,, ,,	25.2.56	(4½ yrs. old)
21.7.55	Stannington, N.	,,	Blagdon	18.2.56	
21.7.55	,,	,,	near Redcar, Yorks (42 miles S.S.E.)	21.2.56	(A. & R.)

In May a white Wood-pigeon was breeding at Detchant, N. (B.L.)

241. Barn-Owl *Tyto alba* (Scop.)

An adult ringed at the nest at Fleetham near Chathill, N., on August 16th, 1954, was recovered at Dunblane, Perthshire, on October 28th, 1956 (100 miles N.W.). " One would hardly expect that adults would roam so widely." (E.A.R.E.)

249. Short-eared Owl *Asio flammeus* (Pontop.)

Not so many as usual reported, either from their normal breeding-haunts in the summer or from the coast in winter. But in mid-July several were noted flying over the Carter Bar forests at dusk. (J.H.A.)

252. Nightjar *Caprimulgus europaeus* L.

On September 8th one was flushed from the sand-dunes near the North Gare, Teesmouth, an unusual situation. (P.J.S.)

255. Swift *Apus apus* (L.)

In view of the B.T.O. Inquiry into the seaward movement of Swifts at dusk, the following is of interest. " A Craster fisherman reported that between July 6th and 8th at *c.* 4.30 a.m. B.S.T., when starting out to fish, he had seen ' hundreds ' of Swifts coming in from the sea from the N.E." (W.S.C.)

On migration :—On September 5th at Tanfield Ponds, Stanley, D., *c.* 500 to 800 birds were gathered and many more were flying in from the north. " I have never seen so many Swifts together before." (R.M.P.)

262. Green Woodpecker *Picus viridis* L.

Pairs and single birds are often seen foraging along the sand-dunes between Bamburgh and Seahouses, N., so birds seen on the coast are not necessarily immigrants. (E.A.R.E.) On August 5th at Teesmouth, one was on the sea-wall, presumably hunting for ants. " The first that I have ever seen or heard of there." (A.Ba.) On November 7th, on the coast north of Craster, N., one was flushed from the rocks below high-water mark. It flew across the beach to a post in an open field. (J.R.C.) See *O.R.* 1954 for a juvenile of this species seen flying in from the sea near Seahouses in August.

263. Greater Spotted Woodpecker *Dendrocopos major* (L.)

On November 18th, in the garden of Chester Close, Adderstone Crescent, Newcastle-on-Tyne 2, one was watched for ten minutes at close quarters on an oak tree. (F.S.)

264. Lesser Spotted Woodpecker *Dendrocopos minor* (L.)

On July 15th, in the evening at Beal, N., a hen bird was seen on a telegraph post, no doubt on passage. (B.L. & A.Bl.)

265. Wryneck *Jynx torquilla* L.

From August 29th until September 10th, at least a dozen were seen on or near the Northumberland coast, probably driven off their normal migration route by the unusual weather conditions referred to above. On Holy Island during this period from one to two were frequently seen and it is probable that from 5 to 6 birds were involved. (B.L. *et al.*) On the Inner Farne between September 3rd and 10th, from two to four birds were present, two of which were trapped and ringed. (E.A.R.E.) On the 8th one was seen at Fenham Mill, N. (T.H.A. & B.L.) On August 29th at Wallsend Swallow, N., one was watched at close quarters as it flitted about amongst some bushes in company with House-Sparrows and Linnets. (M.B., D.H., J.D.P. *et al.*) From September 8th to 10th, on a steep slope below the Collingwood Monument, Tynemouth, one was under observation on three occasions. It was busily engaged pecking in the clay for food (earwigs ?), creeping about in a mouse-like manner and never moving far from the same spot. (M.G.R., I.R. & G.W.T.)

273. Shore-Lark *Eremophila alpestris* (L.)

The small flock reported from Holy Island in December, 1955, was still present in early January—on the 6th, eight were counted. (G.W. *et al.*) No more were seen until March 10th and 11th when at least 14 were present. (J.A. & T.H.A.) On December 9th, 1956, on Holy Island, three. (H.F.C.)

274. Swallow *Hirundo rustica* L.

Near Chevington, N., a pair built a nest, laid five eggs and then deserted. Another pair (?) later adopted the nest, strengthened the outside, raised the edge about half-an-inch, put feathers over the five eggs and laid four upon the top of them. Having done this, they also deserted. (J.W.C.)

During June and July a white Swallow was breeding at Lowick, nr. Fenwick, N. About 250 birds were ringed in the Fenwick district this year. (B.L.)

276. House-Martin *Delichon urbica* (L.)

At the cliff-breeding colony, south of Cullernose Point, N., 57 nests were counted. (W.S.C.)

277. Sand-Martin *Riparia riparia* (L.)

Still nesting in the heaps of stone-dust left by the crusher at the quarry above High Force, Upper Teesdale. (T.F.T.)

278. Golden Oriole *Oriolus oriolus* (L.)

On June 23rd in the " Bluebell " wood near Shotton Colliery, D., a cock was seen feeding in an oak-tree. The yellow plumage and black wings were clearly seen. It was uttering a harsh grating note. Later it was heard in song—a beautiful warbling whistle ; each burst of whistling followed by a cry like the mewing of a cat. It was not seen subsequently. (D.W.S.) On September 24th on Holy Island, an adult female was seen near the castle. (B.L.)

279. Raven *Corvus corax* L.

A very successful breeding season reported ; many family parties being seen on the wing. A pair bred at a site in quite a new district. (M.P.)

281. Hooded Crow *Corvus cornix* L.

Even less frequently reported than usual ; chiefly single birds. Maximum number seen together five. (H.T.) A few birds remained until May—last seen on the 15th at Teesmouth. (P.E.) In autumn, none recorded until early November and only one or two seen up to the end of the year.

284. Magpie *Pica pica* (L.)

During the last few years Magpies have been steadily increasing in numbers. In some districts they are invading " built up " areas. In South Shields they are frequently seen in town gardens and allotments and a pair bred, for the second year, in the grounds of a house now the headquarters of a football club. (H.M.S.B.) Also increasing in the Consett (E.S.), Whickham and Brasside areas. (J.L.K.) In Stocksfield they may often be seen on the tops of the clipped beech garden-hedges searching for the nests of other birds which they pull out to devour eggs or young. (G.W.T.)

286. Jay *Garrulus glandarius* (L.)

Becoming more and more numerous throughout both counties, particularly in the neighbourhood of towns and villages.

288. Great Tit *Parus major* L.

An adult bird, ringed at South Shields on November, 1952, was re-trapped at exactly the same spot on February 20th, 1956, and on

July 26th was found dead. If it was a first-year bird when ringed, its age would be at least 4¼ years. (F.G.G.)

296. NUTHATCH *Sitta europaea* L.

In June a pair was seen in Hulne Park, Alnwick. (per E.A.R.E.) This is the first record for North Northumberland, except for a single bird seen on the Inner Farne in 1952.

298(B). NORTHERN TREE-CREEPER *Certhia f. familiaris* L.

On October 21st one was trapped in Fenwick village and another about half-a-mile away. Both were carefully examined, ringed and released. (B.L. & A.Bl.)

300. DIPPER *Cinclus cinclus* (L.)

On April 29th, on a stream just below the Hen Hole, Cheviot, a nest with three eggs; at about 1,500 ft. (L.G.)

301. MISTLE-THRUSH *Turdus viscivorus* L.

During the summer, six different pairs were located in the parks and gardens near the centre of Newcastle. (R.M.P.)

302. FIELDFARE *Turdus pilaris* L.

The autumn passage was very late indeed and in very small numbers. It was not until after the turn of the year that any large flocks were reported.

303. SONG-THRUSH *Turdus ericetorum* Turton

More birds are wintering in the two counties than usual; no doubt owing to the very mild autumn and winter, and the plentiful supply of food.

303(C). CONTINENTAL SONG-THRUSH *Turdus e. philomelos* Brehm

Between October and December *c.* 12 birds of this race were trapped and ringed at Fenwick, N. They were most numerous during the October immigrations. (B.L.)

304. REDWING *Turdus musicus* L.

The autumn migration was on a very much smaller scale than usual and very few are wintering locally.

307. RING-OUZEL *Turdus torquatus* L.

Breeding pairs reported to be unusually numerous in several moorland areas. In Upper Coquetdale, N., five nests were found between Barrow Burn and Uswayford. (H.H.) In the valley of the Burnhope Burn near Edmundbyers, D., breeding Blackbirds were overlapping with breeding Ring-Ouzels. (L.J.K.)

From October 14th to 20th, more than usual were noted on passage at Fenwick, Holy Island and Monks' House. (B.L., E.A.R.E.)

308. BLACKBIRD *Turdus merula* L.

Very plentiful on the coast towards the end of March, when birds were seen to fly out to sea in a N.E. direction. On April 2nd there were ten on the Inner Farne and on the same evening, at 6.30 p.m. at Elwick, a dozen birds were seen to rise vertically from a high hedge, one after another, and fly out of sight over the sea, calling. (B.L.)

The autumn passage was late and prolonged. There was a rush on October 13th to 16th. (B.L.) On October 31st, after a night of easterly winds, the bushes and hedges near Cleadon Hills, D., were "filled" with Blackbirds. (L.J.K.)

311(A) WHEATEAR *Oenanthe oenanthe* (L.)

One of the commonest species involved in the great "drift" migration of September 2nd-3rd, huge numbers being recorded.

311(B). GREENLAND WHEATEAR *Oenanthe oe. leucorhoa* (Gmelin)

Many noted on passage during the first half of May and again in August and September.

317. STONECHAT *Saxicola torquata* (L.)

Very scarce indeed everywhere.

318. WHINCHAT *Saxicola rubetra* (L.)

One of the most plentiful species involved in the "drift" migration on September 2nd and 3rd.

320. REDSTART *Phoenicurus phoenicurus* (L.)

In "vast numbers" on the coast during the "drift" migration. Probably more plentiful than any other species involved; but as the weather cleared they moved on quickly. A large number were trapped and ringed at Fenwick and at Monks' House. (E.A.R.E. & B.L.)

321. Black Redstart *Phoenicurus ochruros* (Gmelin)

On March 25th and 26th at the North Gare, Teesmouth, a female. (B.J.C.) On April 2nd on the Inner Farne, an adult female. (B.L.) On March 31st at Newton, one ; on May 1st on the Inner Farne, one ; on May 20th at Monks' House, one ; all females. (E.A.R.E.)

On September 9th on Holy Island, one, on the 24th, another and on October 15th, three ; all females. (B.L.)

324. Bluethroat *Cyanosylvia svecica* (L.)

From September 3rd to 10th single birds, and on two occasions two birds together, were seen on Holy Island, the Farnes, Monks' House and Beadnell, N. As ten recorders were involved, sometimes together and sometimes apart, it is impossible to estimate the number of birds present.

333. Reed-Warbler *Acrocephalus scirpaceus* (Hermann)

On August 20th one was trapped at Monks' House Observatory. (E.A.R.E.) With one possible exception, this is only the second record for Northumberland. (See *O.R.* 1955 for one heard singing in Gosforth Park.)

344. Barred Warbler *Sylvia nisoria* (Bechstein)

Between August 29th and September 12th, at least nine were seen on the Inner Farne, Holy Island and near Fenwick, N. (E.A.R.E., B.L. *et al.*)

346. Garden-Warbler *Sylvia borin* (Bodd.)

Probably the fifth most numerous species in the great " drift." (B.L.) Present at Monks' House in large numbers : between September 3rd and 7th, 35 were trapped and ringed, compared with 25 in the previous five years ! (E.A.R.E.)

347. Whitethroat *Sylvia communis* Latham

Unusually numerous during the summer. More breeding pairs noted in the Lower Coquet and Druridge Bay areas than in any previous year. (M.F. & J.W.C.) In May on the moors near Edmundbyers, D., a large concentration was noted in every stream valley. In one heather patch of *c.* 20 sq. yds. no less than seven birds were heard singing. (J.D.P.) They were later found nesting in the heather up to *c.* 800 ft. (L.J.K.)

Prominent as a passage migrant from September 3rd to 8th ; but fewer this autumn as a whole. (E.A.R.E.)

A juvenile, ringed at Alnwick on June 16th, 1956, was recovered at Oporto, *c.* September 22nd, 1956. (E.A.R.E.)

348. Lesser Whitethroat *Sylvia curruca* (L.)

During the summer three or four singing cocks were seen, but no nests were located. In early September several were seen on passage : about six on Holy Island and at Fenwick (B.L.), one on the Inner Farne and one at Monks' House. (E.A.R.E.)

356. Chiffchaff *Phylloscopus collybita* (Vieillot)

Rather more numerous than usual and reported from further north.

357. Wood-Warbler *Phylloscopus sibilatrix* (Bechstein)

Reported to be much less numerous than usual in many of its breeding haunts. " In Hulne Park, Alnwick, very scarce this summer ; only three pairs seen in an area which normally contains about twenty." (J.E.R.)

366. Spotted Flycatcher *Muscicapa striata* (Pallas)

A few birds amongst the large " drift " movement. At least 15 seen on Holy Island and several trapped and ringed at Fenwick. (B.L. *et al.*)

367. Brown Flycatcher *Muscicapa latirostris* Raffles

On September 9th on Holy Island, N., a bird of this very rare species was very definitely identified by a party of seven observers. It was examined at a distance of about 4 ft. as it moved about in an elder bush. It was described as about the size of a Red-breasted Flycatcher ; the unstreaked head, mantle, back and wings were a smoky grey-brown and the darker tail was quite unmarked. The chin was white and the breast pale grey-brown and very softly streaked, fading to a white belly. The legs were blackish ; the bill very short and broad at the base and the rictal bristles were very prominent. But the most marked feature was a clearly defined white ring round the eye. (J.A., T.H.A., A.Bl., B.L., W.D.R., J.B. & A.C.) For further particulars see *B.B.* Vol L, p. 125. This is the first record for Northumberland of this very rare accidental visitor.

368. Pied Flycatcher *Muscicapa hypoleuca* (Pallas)

Fewer breeding birds were reported than usual. Very numerous indeed during the September " drift " period. In the Monks' House area they appeared " in vast numbers " between September 3rd and 9th, when about 40 were trapped. (E.A.R.E.) On September 3rd on the Inner Farne, 40 were counted (E.L.A.) and on the 6th, on Holy Island, *c.* 100. (E.L.A.)

370. Red-breasted Flycatcher *Muscicapa parva* Bechstein

On September 8th at Fenham, N., a hen or first-winter bird, with several Pied Flycatchers and one Spotted. " On September 8th-9th within 24 hours I saw four species of Flycatcher ! " (B.L.) On the 24th on Holy Island, two, an adult cock and hen and on October 13th at Fenham, a hen or first-winter bird. (B.L.) On November 11th in the village of Cleadon, South Shields, D., an adult cock was identified. (M.S. & P.H. per F.G.G.)

These are the first recorded since 1951 and the South Shields bird is only the second seen in County Durham.

379(a). Rock-Pipit *Anthus spinoletta petrosus* (Montagu)

On January 2nd at Teesmouth, one. (D.R.S. & P.S.) " I rarely see a Rock-Pipit inside the estuary at Teesmouth. There has been no proof of breeding there for many years." (P.J.S.) They used to breed there regularly in holes in the slag sea-walls, in default of natural rocks. (G.W.T.)

379(d). Water-Pipit *Anthus spinoletta spinoletta* (L.)

On March 29th at Greatham Creek, Teesmouth, D., a Pipit was under close observation. Its slim build, Wagtail-like actions, its pronounced, almost pure, white eye-stripe, whitish chin and throat, pale under-parts without streaks on lower breast, grey-brown mantle and white outer tail-feathers, distinguished it from a Rock-Pipit. (B.J.C. & N.Y. per P.J.S.)

On March 30th and again on April 4th near St. Mary's Island, N., a Water-Pipit was picked out from a number of Rock-Pipits present, by the characters described above. (J.D.P.)

These are the first definite records for Northumberland and Durham.

380(A). PIED WAGTAIL *Motacilla alba yarrelli* Gould

An immature bird, ringed at Monks' House on August 3rd, 1953, was recovered at Newhaven, Sussex, in early February, 1956, and a juvenile, ringed on July 21st, 1955, was recovered at Lorient, France, in early February, 1956; both presumably on return passage. (E.A.R.E.)

380(B). WHITE WAGTAIL *Motacilla alba alba* L.

A few noted on passage, in April-May and August-September.

383. WAXWING *Bombycilla garrulus* (L.)

Very few indeed reported during the winter of 1955-56 and usually single birds. The only ones seen after the turn of the year were :— On February 2nd at Marsden, South Shields, one flying in from the sea (A.N.) and on February 4th, 22nd and 23rd, one in the garden at Wreighburn House, Thropton, N., feeding on crushed maize thrown out for the birds. (S.B.H.)

The only autumn record was on October 6th, when four were seen on Holy Island (J.L.); but in the third week of February, 1957, very large numbers suddenly arrived.

384. GREAT GREY SHRIKE *Lanius excubitor* L.

Only two reported, both on the same day. On April 15th at Greatham, D., one (D.R.S. & P.S.) and at Killingworth, N., one. (per A.McD.)

388. RED-BACKED SHRIKE *Lanius collurio* L.

On June 3rd near Belsay, N., one. (J.D.P.) From August 20th to September 24th several were recorded: on Holy Island at least ten, on the Inner Farne, two, and at Monks' House, one. (B.L., E.A.R.E., E.L.A., W.D.R. *et al.*)

389. STARLING *Sturnus vulgaris* L.

On October 21st, 26th, 27th and 28th at South Shields, D., parties were seen coming in off the sea. (F.G.G. & L.J.K.)

Birds ringed at a winter roost near Lucker, N., have been recovered from Norway, Sweden, Finland, Denmark, North Germany and North Holland; while others have been recovered in the west—Huddersfield, Chorley, Keighley, Accrington, Donegal, etc. (E.A.R.E.)

In April a pure white bird was seen near Fenwick, N. (B.L.)

391. HAWFINCH *Coccothraustes coccothraustes* (L.)

On November 29th near Whalton, N., a flock of from 12 to 15, on a hedgerow with Yellowhammers, etc. (H.T.) It is very seldom that so many are seen together.

394. SISKIN *Carduelis spinus* (L.)

A few flocks were noted in January and February ; maximum 25 on January 12th, near Darlington. (A.Ba.)

On April 28th, in their usual Cheviot-valley breeding-place, several were present and a cock was singing. (A.Bl., B.L., L.G.H.)

More plentiful in the autumn and winter than for many years past. Flocks of up to 50 birds were reported, in some cases feeding on larch cones in company with flocks of Crossbills.

396. TWITE *Carduelis flavirostris* (L.)

Only two reported : on July 30th on the cliff-top at Hartley, N., one (D.H.) ; on November 2nd at Allenheads, N., one. (M.W.R.)

397(B). MEALY REDPOLL *Carduelis f. flammea* (L.)

On February 1st at Howick, N., in alders at the edge of a pond, a cock, and on the 2nd, two cocks. (W.S.C.) On November 26th at Campville, Upper Coquetdale, N., " a single bird in my garden." (E.M.)

Note.—These are the first to be recorded since December, 1949. John Hancock (1874) gave the status of this species as " A common winter visitant, occasionally appearing in large flocks." Very few indeed have been recorded during the last twenty years and these usually single birds, not " large flocks." (See *O.R.*, 1933-1955.)

400. SERIN *Serinus canarius* (L.)

On September 24th on Holy Island, N., following 24 hours of light moderate S.E. winds, which were still blowing, a quite large drift movement of passage migrants was in progress. From a hawthorn hedge a very distinctive call-note " see-oo, see-oo " was heard repeated at regular intervals and a small bird was seen making its way along the hedge. It approached to within 20 ft. of the observer. It was a small finch about the size of a Siskin. The crown, nape and mantle were yellowish-brown streaked with darker brown. There was a faint yellowish eye-stripe, the rump was conspicuously yellow. The primaries were darker brown and there was a single buff wing-bar. The tail, which was also dark brown, was forked and without any yellow

markings, so conspicuous in the Siskin. The cheeks and chin were yellowish, lightly streaked with brown. The under tail-coverts were pale. The bill was noticeably short and stout and of a horn colour. The legs were dark. The bird flew to some trees with a flight-note the same as its call-note. After a time it flew off to the south. It was without doubt a Serin—either a female or a first-winter bird. (B.L.) This is the first record for the species in Northumberland. A cock bird seen in South Shields, D., in November, 1950, and another at exactly the same place in September, 1955, were suspected to have been escapes from captivity. (See *O.R.* 1955.)

401. Bullfinch *Pyrrhula pyrrhula* (L.)

Numbers well maintained. On August 9th a cock was seen in the gardens of Eldon Place, in the centre of Newcastle. (R.M.P.)

404. Crossbill *Loxia curvirostra* L.

On July 4th at Monks' House, N., an immature hen was trapped in the garden and on the same day five were seen on the Brownsman, Farne Islands. This was the first evidence of what proved to be a very numerous and widespread " invasion " of the species. On the 6th a party of *c.* 20 was at Langleeford, below Great Cheviot. (E.A.R.E.) Thereafter flocks were reported from many woodlands. On August 5th *c.* 55 were seen in Kyloe Woods, N., where, by the end of the year, there were at least 500 birds. (A.Bl. & B.L.) On August 22nd *c.* 40 were in the High Wood, close to Hexham. (E.L.A.) At Eggleston in Teesdale a flock of *c.* 100 was reported (A.Ba.) and many more near Middleton-in-Teesdale. (H.W.) In the Kielder district, North Tyne, they were very common. (T.F.F.) During the first week of September a flock of *c.* 30 birds was flying round the village on Holy Island (D.W. *et al.*) and birds were seen on the Farnes (E.L.A.), suggesting still further arrivals from overseas. On November 1st a flock of over 40 was seen near Falstone, North Tyne (J.A.), and in the South Tyne valley up to 33 were in the woods near Haltwhistle. (M.P.)

408. Brambling *Fringilla montifringilla* L.

Notwithstanding the phenomenal crop of beechmast and the large supply of berries of all kinds, the number of Bramblings was very considerably less than in previous years.

416. Ortolan Bunting *Emberiza hortulana* L.

On September 3rd on the Inner Farne, N., one, a bird of the year. It was seen at close range as it fed on grain from gull-pellets that lay

scattered on the short turf. (E.L.A.) From September 4th to 7th on Holy Island, N., at least four, and probably more were present. (F.G.G. *et al.*) This is the largest number ever seen on the coast.

422. Lapland Bunting *Calcarius lapponicus* (L.)

Northumberland :—During February, March and April birds were haunting pastures near St. Mary's Island, a new area. The maximum number seen was seven, two of which were trapped, ringed and photographed. (T.H.A. *et al.*) From September 11th onwards a few birds were again noted here, the largest number counted being six, until December, when two flocks of six each were seen. (J.D.P. & D.G.B.) In the Holy Island-Farnes area a few were noted during the September rush, but later much larger numbers (E.A.R.E.) ; on October 18th *c.* 40 were seen on stubble. (B.L.) An adult male trapped, proved to be of the Eastern (European) race. (E.A.R.E.)

Durham :—The flock of about half-a-dozen wintering at Teesmouth on the refuse-tip remained until well into March, by which time the cocks were showing very brilliant plumage. (P.J.S., A.Ba.) From March 25th to 28th a small flock, max. seven, was haunting a field near Marsden, South Shields. (F.G.G. *et al.*) In the autumn it was not until October 27th that birds were noted on the Teesmouth refuse-tip, where they remained until the end of the year ; but never more than six were seen together. (P.J.S. *et al.*) However, at Marsden, they were more plentiful : in October, 18 were counted, in November, 33, and in December, as many as 40. (F.G.G. *et al.*) Not since the winter of 1892-93 have so many Lapland Buntings visited the coast.

423. Snow-Bunting *Plectrophenax nivalis* (L.)

Very plentiful indeed along the coast in both winters. Some very large flocks were reported. On January 3rd on Holy Island, *c.* 50. (J.F., A.F. & M.B.) On January 1st at Teesmouth, *c.* 40. (A.Ba. *et al.*) For some weeks a flock of *c.* 20 haunted a slum-clearance area in the heart of South Shields. (F.G.G. *et al.*)

In the autumn at Teesmouth birds were seen to fly in from the sea and in November flocks of up to 80 were seen. (P.J.S. *et al.*) At Warkworth, N., a flock of 40 was counted. (F.G.G. & C.M.A.) By the end of the year it was estimated that *c.* 200 were wintering between the mouth of the Tyne and Marsden, D., *c.* three miles (F.G.G.), while on Holy Island in November there were 150 to 200. (H.F.C.)

Few were seen inland, but on March 10th one was seen at 1,600 ft. in the Cheviots, N. (W.D.R.) and on November 25th, a flock of *c.* 40 was seen at Holborn Moss, N., *c.* four miles from the coast. (E.L.A.)

Species which have occurred, but are not included in the above list :—

Little Grebe (9), Common Scoter (64), Mute Swan (84), Sparrowhawk (93), Red Grouse (111), Pheasant (118), Water-Rail (120), Moorhen (126), Golden Plover (140), Turnstone (143), Common Snipe (145), Curlew (150), Common Sandpiper (159), Purple Sandpiper (170), Lesser Black-backed Gull (199), Herring Gull (200a), Kittiwake (211), Razorbill (224), Puffin (230), Stock-Dove (232), Turtle-Dove (235), Cuckoo (237), Little Owl (246), Tawny Owl (247), Long-eared Owl (248), Kingfisher (258), Skylark (272), Carrion Crow (280), Rook (282), Jackdaw (283), Blue Tit (289), Coal-Tit (290), Marsh-Tit (292), Willow-Tit (293), Long-tailed Tit (294), Wren (299), Robin (325), Grasshopper-Warbler (327), Sedge-Warbler (337), Blackcap (343), Willow-Warbler (354), Goldcrest (364), Hedge-Sparrow (371), Meadow-Pipit (373), Tree-Pipit (376), Grey Wagtail (381), Yellow Wagtail (382), Greenfinch (392), Goldfinch (393), Linnet (395), Redpoll (397), Chaffinch (407), Yellow Hammer (409), Corn-Bunting (410), Reed-Bunting (421), House-Sparrow (424), Tree-Sparrow (425).

Key to the initials of those contributing to this Report :

C. M. Adamson J. Alder, T. H. Alder, E. L. Arnold, J. H. Arthur, S. Ash, J. S. Ash, A. & R.=J. S. Ash & M. W. Ridley, A. Baldridge, A. H. Banks, Miss D. N. Bell, D. G. Bell, M. Bell, Lady Corisande Bennet, A. Bennett, R. V. H. Benson, R. L. Bibby, A. Blackett, Dr. H. M. S. Blair, R. Bower, F. Brady, Miss W. M. Brady, K. C. Briand, H. D. Briggs, T. Brown, V. Brown, J. Bryan, J. Bryce, J. E. Caffyn, Dr. Bruce Campbell, G. Carr, H. G. H. Carter, H. R. Carter, J. H. Casson, A. Childs, H. F. Church, Mrs. R. Clayton, A. J. Clissold, S. E. Cook, B. J. Coates, G. A. Cowan, Sir John Craster, W. S. Craster, Dr. J. L. Crosby, D. M. R. Crombie, D. Drew, G. L. Drury, R. I. Duncan, J. E. Edwardson, J. Ellison, Dr. E. A. R. Ennion, Col. S. Enderby, R. M. Errington, P. Evans, T. F. Fox, R. A. Frizzell, J. A. Frizzell, C. E. Fisher, M. Flanighan, C. J. Gent, L. Gowan, E. N. Gray, Miss C. Greenwell, Miss J. Greenwell, F. Gregory, B. Grewcock, F. G. Grey, R. G. Grey, Miss R. T. Grey, Miss U. M. Grigg, W. G. Hall, C. T. L. Harrison, H. Hedley, Miss M. Henderson, R. Henderson, S. B. Hewitt, Mrs. G. Hickling, B. P. Hill, O. C. Hill, L. P. Hird, Dr. T. F. Hird, P. L. Hogg, P. Hogg, L. G. Holloway, D. Howey, J. Hudspeth, C. Hutchinson, Rev. K. Ilderton, B. Jeffrey, P. Johnson, W. Johnson, A. W. Jones, Very Rev. N. M. Kennaby, R. Key, L. J. Kinlen, Mrs. E. M. Lamb, I. Lawrence, J. Lilburn, B. Little, Miss E. M. Lobley, W. R. Lofthouse, C. H. Longstaff, R. H. Lowe, P. A. Lucking, A. Macdonald, A. MacRae, Rev. F. W. Matthew, R. Martinson, C. E. Marshall, E. Miller, Prof. F. J. Nattrass, A. Nelson, T. Nicholson, Miss M. Oates, R. M. Palmer, J. D. Parrack, M. Philipson, Dr. J. Philipson, Dr. T. G. Quinn, M. W. Ridley, N. Ridley, M. G. Robinson, Mrs. I. Robinson, J. E. Ruxton, W. D. Ryder, B. Sadler, D. R. Seaward, Mrs. P. Seaward, F. Scott, M. Scott, J. Sexton, E. Shearer, J. Shields, D. W. Simpson, F. Stabler, P. J. Stead, P. R. Steel, D. Summers-Smith, H. Tegner, G. W. Temperley, R. Thomas, T. F. Turnbull, R. O. Varley, A. J. Vittery, A. Vittery, T. G. Wallace, G. Waterston, D. Watson, H. Watson, R. Wilkin, T. Winter, D. H. Wintsch, W. A. Wright, N. Yule.

DRIFT MIGRATION ON THE EAST COAST IN EARLY SEPTEMBER, 1956

by

E. A. R. Ennion, M.A.,
Director, Monks' House Bird Observatory

A heavy fall of drift migrants from the Baltic area, affecting almost the whole eastern seaboard of Britain, took place during the first few days of September, 1956. This account refers in the main to a fifteen-mile sector of the Northumberland coast from Holy Island in the north to Howick in the south : but the writer has had opportunities since to correspond and discuss events with other Bird Observatories and observers both at home and abroad (repercussions were felt as far afield as the Camargue where Bluethroats appeared) and is able to review local conditions against a much wider background. He is greatly indebted to these many correspondents for their help and permission to publish certain details.

Study of weather charts for the last few days of August, together with reports of small numbers of certain night migrants— e.g. on Aug. 25th, *c.* 10 Pied Flycatchers and *c.* 20 Redstarts ; and on 27th, a Wryneck, 3 or 4 Red-backed Shrikes and a Barred Warbler, on Holy Island ; and on 29th, another Wryneck at Wallsend (B.L.) — suggested that, given the right conditions over the North Sea, heavy drift immigration could be forecast with confidence for the following few days. Briefly the prospect was that associated with drift from N.W. Europe as expounded so ably by Kenneth Williamson of Fair Isle B.O. : an extensive " high " on the other side of the North Sea to promote (especially night) immigration, with " lows " swinging in from the Atlantic and travelling north on this side. Migrants launching out in the evening over the " Baltic Approaches," or between the Friesian Islands or across wide estuaries like the Elbe or the Scheldt, into the eastern fringe of a " low " with its mist or rain, might be carried by morning far to the west on easterly winds blowing round the lower border of that depression : they would, in fact be approaching the east coast of Britain on, by now, a northerly tending airstream. The actual meteorological conditions at the time (August 31st to September 4th) deduced from synoptic charts, published by the Air Ministry, London, and supplied by their kind permission, were these :

A series of depressions from the Atlantic, sweeping in round the southern border of a " high " moving slowly north towards Iceland, were travelling north across France, Britain, the North Sea, the Low Countries and southern Scandinavia : meanwhile away to the east another " high," developing north of the Alps, was expanding towards the Baltic until, by 06.00 on Aug. 31st the two had coalesced to form a wide, clear, almost windless ridge reaching right across mid-Europe to the Black Sea : conditions which must have launched countless autumn migrants on their travels. The " lows " were still sweeping in but at sufficiently long intervals for fair-weather cols to intervene : as, for example at 18.00 on September 1st, when over the whole lower Baltic and Skaggerak areas, largely cloudless skies and light variable winds lured the night migrants on their way. The next " low," however, was moving north : already northern France and the Low Countries, the lower North Sea and most of Britain lay under dense cloud cover with freshening easterly winds. By midnight it had crossed the Channel, preceded by a rain belt extending right across southern England and well out over the North Sea, accompanied by squalls up to force 5. By 24.00 on September 2nd the rain belt, which had reached the Humber, stretched completely across the North Sea ; but away to the north-east of it the high pressure ridge still held, setting still more migrants on the move. Many of these also must have been overtaken by the rain belt, to drift on easterly winds towards our coast. By midnight the belt had reached Northumberland, and, through its mists and squalls, tens if not hundreds of thousands of migrants had come, or were coming, ashore. By 06.00 on September 3rd conditions south of the front had improved and many birds were beginning to re-direct their journey south.

Thus from September 1st to 4th—and as far as Northumberland is concerned, especially on the wild night of September 2nd/3rd with its east to south-east squalls rising locally to force 5 and 6—one can visualise the long scattered streams of hundreds of thousands of small night migrants, Pied Flycatchers, Redstarts, Garden- and Willow-Warblers, etc., passing north-westwards obliquely up the North Sea, with individuals and little parties peeling off continually as they came within sight of the coast lights or, after dawn, of the coast itself. It was essentially a long-drawn movement from south to north. Migrants were coming in already on the 1st September at Cley where, as on the Wash (C.D.T.M.) " undoubtedly the main passage was on the morning of the 2nd ; with a follow-up on the 3rd." At Gibraltar Point on the

mid-Lincolnshire coast, the 2nd also saw the heaviest passage, but not so marked as in Norfolk. At Spurn on the north horn of the Humber, numbers were almost equal on the 2nd and 3rd ; on the Farnes the 3rd was easily the peak day ; while on the May, in the Firth of Forth, it was September 4th.

Fortunately, at Monks' House Bird Observatory, a number of reliable watchers were in residence, including three experienced in the use of mist-nets ; and, with the virtual certainty that this movement would develop within hours, a plan to ensure as wide a coverage as possible had been evolved. It proved possible to maintain more or less simultaneous watch at five well separated points from *c.* 09.00 on September 3rd, three of them in fact being covered from dawn, with mist-nets set up to catch as large a sample as possible of the migrants involved for critical examination to reinforce observations in the field. Nearly 100 birds of 18 species were caught, the majority involved in the drift, and on the following day (4th) another 30, including three additional species. Since then further information has come in, serving in effect to amplify the records from these five stations ; and we are grateful for the large amount of comparable information supplied by many of the other East Coast Observatories and teams of observers. This is summarised in Table I.

Locally the weather, almost all day on September 3rd, varied from bad to impossible ; the five teams are to be congratulated on their pertinacity as well as on their results. So bad was it that the virtual absence of records from further south along the Northumberland coast has been ascribed to the day " looking so hopeless that nobody could have been out ! " (G.W.T.) Yet it was one of the most memorable days known. More Bluethroats (*c.* 30), for example, were ringed at the Bird Observatories during these few days than in any previous year ; in fact the *total* ringed since the B.T.O. Ringing Scheme began in 1946, up to 1955, is only 46. Two comments on weather conditions may be quoted before attempting an analysis of the movement. One is from the Farnes Study Centre, where, on September 2nd, an experienced observer (E.L.A.) together with another experienced also in using mist-nets (P.D.) had been dispatched to man this station :*

* The five stations manned were (*a*) Fenham/Holy Island, (*b*) Shada/Budle Bay, (*c*) Inner Farne, (*d*) Annstead/Beadnell, (*e*) Craster/Howick ; and it was arranged that, at mid-day, someone from (*b*), (*d*) and (*e*) should report back to the Observatory, noting any migrants in fields and on fences, etc., on the way.

" 3.9.56—Mist with heavy rain early. Mist persisting all day with intermittent rain. Mainland visible towards evening only (1¼ miles). Island swarming with birds all day and complete count of more numerous species impossible." (*Inner Farne Study Centre Log.* (E.L.A. & P.D.)

The other is from the May, for the following day (4th) :

" A movement started on 3rd, but because of strong wind and driving rain it was not possible to obtain a very clear idea of just what birds were involved, though clearly many Garden- and Willow-Warblers, Redstarts, Whinchats and others. By the morning of the 4th the island was alive with birds." (*Edin. Bird. Bull,* Vol. 7, No. 2).

Normally migration would not take place under such wretched weather conditions—for both bird and bird-watcher—but, once started (over the Baltic area in clear skies on the previous evening), it has to go on, the most fortunate birds making a landfall, the less fortunate being lost at sea.

By mid-afternoon immigration appeared to have ceased ; indeed, with some slight amelioration in the weather, at least half the migrants had moved on. By the morning of the 4th (while passage reached its peak 60 miles farther north at the May) the far fewer arrivals in the Farnes/Monks' House area probably represented mainly re-directed passage south along the coast. Even so, on the morning of the 4th, there were " still many Pied Flycatchers and Redstarts " at Fenwick (B.L.) and at *c.* 10.00 " about 70 Pied Flycatchers and 300 Redstarts still present on Holy Island." (J.B.) On the Inner Farne " fewer birds than yesterday but still plenty " (E.L.A.) suggests that arrival had continued overnight.

Table I lists the approximate numbers of certain migrants recorded over this period at six East Coast observation points arranged from S. to N. While, for geographical and other reasons, the numbers may not be strictly comparable and may refer in some cases to the same birds remaining for two or more days, it seems clear that the great majority of the birds listed were involved in the drift movement. It also demonstrates (*a*) the time-spread from south to north, and (*b*) the remarkable agreement in relative numbers and kind, and (*c*) that some species must have been moving in really large numbers : Wheatear, Whinchat, Redstart, Garden-Warbler, Willow-Warbler and Pied Flycatcher. Taking into account their relative rarity the same may be said of at least six other species : Wryneck, Bluethroat, Barred Warbler, Tree-Pipit, Red-backed Shrike and Ortolan.

Wheatear and Willow-Warbler occur on passage in two forms: *Oe. oe. oenanthe* and *Ph. t. trochilus* and the northern *Oe. oe. leucorrhoa* and *Ph. t. acredula*. Careful field observation and critical examination of all birds of these species trapped (by Monks' House B.O.) revealed neither of these northern races and suggests the absence of any high northern element. The breeding range of the (Red-spotted) Bluethroat *C. s. svecica*, however, lies well north of the Baltic and its presence in such exceptional numbers suggests a time rather than a geographical factor: *after* the bulk of the population had left its high northern or mountainous breeding grounds but *before* it had passed clear of the Baltic area on its way south. The Bluethroats were caught, so to speak, on the hop. By contrast the Barred-Warbler, *S. nisoria*, does not breed north of the Baltic; its presence in such numbers strongly suggests a southern rather than a more northerly origin. It seems to be appearing far more commonly on autumn passage now-a-days in Northumberland than formerly, though this may be due in part to more thorough observation. The Wryneck, *J. torquilla*, the Red-backed Shrike, *L. collurio*, and the Ortolan, *E. hortulana*, and to a lesser degree the Whinchat, *S. rubetra*, and the Garden-Warbler, *S. borin*, are very much more common in the broken scrub-plus-patchwork-cultivation of Baltic Scandinavia than in the unrelieved forest or birch-heath areas farther north. The same may well hold good for the Redstart, *Ph. phoenicurus*, and for the Pied Flycatcher, *M. hypoleuca*, the species involved in larger numbers than any others. One need only remember the fantastic provision of nest-boxes by almost every homestead and holiday bungalow throughout Baltic Fenno-Scandinavia to appreciate that their breeding density must increase considerably as the actual Baltic area is reached. Such abundant species as the Sedge-Warbler, *A. schoenobaenus*, the Whitethroat, *S. communis*, and the (rather less abundant) Tree-Pipit, *A. trivialis*, however, occurred in smaller numbers, suggesting perhaps that their origin lay to the north of the denser mid-European zones of their breeding range. While individuals of both species were involved, the immigration of Crossbills, *L. curvirostra*, had begun long before September—by then at least 500 had assembled in the Fenwick/Kyloe woods (B.L.)—and most of the Lapland Buntings, *C. lapponicus*, so much in evidence on the stubbles this winter, arrived later in the month. Nevertheless everything points to a provenance in western Europe round the southern borders of the Baltic.

As regards counts, the Whinchat's habit of sallying from a low but conspicuous perch may have made it appear unduly numerous in relation to other species: nevertheless practically every prominent

dock or thistle in late corn crops near the coast held a Whinchat (or a Pied Flycatcher), as many as forty sometimes being in sight at once. Pied Flycatchers, Wheatears and Willow-Warblers (feeding largely on flying insects) again may have seemed relatively more numerous than skulking Redstarts and Garden-Warblers—and especially Bluethroats. But the trapping figures are revealing : on September 3rd and 4th, 25 Redstarts and 14 Garden-Warblers were ringed by Monks' House B.O.—more than the total number trapped on autumn passage during the previous five years—and on September 4th no less than 29 Garden-Warblers and 10 Redstarts were trapped on the Isle of May.

Table II shows the numbers of various migrants ringed by Monks' House B.O. on September 3rd/4th, compared with those ringed during the previous and succeeding months.

Table I

NUMBERS OF DRIFT MIGRANTS RECORDED AT SIX STATIONS ON THE EAST COAST DURING THE MOVEMENT OF SEPT. 1 — 5, 1956

September:	(Aug. 30/31)	1	2	3	4	(7)	2	3	4	2	3	4	5	1	2	3	4	5	2	3	4	4
	Cley, Norfolk						Holme, Wash			Gibraltar Pt., Lincs.				Spurn, Yorks.					Farnes, Northd.			May, Forth
Wryneck ...	–	–	1	2	–	–	–	1	1	–	–	3	–	–	1+2	3	1	–	–	2	–	4
Wheatear ...	–	–+	+	–	–	–	–	–	3	–	6	5	–	–	1	20	15	20	–	2	20	12	70
Whinchat ...	–	–	10	18	–	–	–	–	3	–	4	–	–	–	2	10	20	20	–	–	12	15	20
Redstart ...	–	–	3	50	–	–	–	6	2	–	5	3	3	3	2	11	2	30	–	–	40	20	20
Bluethroat ...	–	–	–	4	–	–	–	–	–	–	1	1	1	–	–	–	1	–	–	–	–	1	5
Sedge-Warbler...	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–	–	–	–	–	–	1	1
Garden-Warbler	–	1	10	–	–	–	–	10	2	–	10	3	–	–	–	6	4	2	–	–	6	6	40
Barred Warbler	1	2	1	1	–	–	–	1	1	–	–	–	–	–	–	–	–	(1)*	–	–	3	1	–
Whitethroat ...	–	–	–	–	3	7	–	1	–	–	–	8	5	3	4	10	12	6	–	–	2	2	–
Willow-Warbler	–	–	–+	3	–	–	–	2	2	–	–	1	1	1	2	8	4	1	–	1	20	15	12
Tree-Pipit ...	–	–	1	1	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	6	2	6
Spotted Flycatcher	–	–	–	4	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	1	–	1
Pied Flycatcher	–	–	1	20	–	–	–	25	10	–	5	7	4	3	–	2	4	2	–	–	40	15	50
Red-backed Shrike	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	3
Crossbill ...	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	2	2	2
Ortolan ...	–	–	–	–+	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1
Lapland Bunting	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–

* A tired bird trapped near Ripon; probably arrived on coast on 3rd, possibly at Teesmouth (R.C. *in litt.*).

Table II

NUMBERS OF VARIOUS MIGRANTS RINGED BY MONKS' HOUSE B.O.,
AUGUST — SEPTEMBER, 1956

Species	Aug.— Sept. 2	Sept. 3	Sept. 4	Sept. 5/6	Sept. 7	Sept. 8/9	Sept. 10	To end Sept.	Total
Wryneck ...	–	2	–	–	–	–	2	–	4
Wheatear ...	6	1	1	–	–	–	1	–	9
Northern Wheatear ...	1	–	–	–	1	–	–	4	6
Whinchat ...	3	2	–	3	2	2	–	1	13
Redstart ...	4	20	6	–	5	3	2	3	43
Bluethroat ...	–	1	–	–	1	–	1	–	3
Garden-Warbler ...	8	12	2	–	7	–	–	1	30
Barred Warbler ...	–	3	–	–	–	–	–	–	3
Blackcap ...	–	–	–	–	–	–	1	1	2
Whitethroat ...	30	1	–	–	1	1	5	2	40
Lesser Whitethroat ...	–	1	–	–	–	–	–	–	1
Willow-Warbler ...	6	6	–	–	1	–	1	–	14
Spotted Flycatcher ...	3	–	–	1	–	–	–	–	4
Pied Flycatcher ...	2	27	3	1	5	3	2	3	46
Red-backed Shrike ...	1	2	–	–	–	–	–	1	4
Crossbill	–	–	3	–	–	–	–	–	3
Total	64	78	15	5	23	9	15	16	225

It is clear that more of these migrants were taken on September 3rd than during the whole of the preceding month ; and nearly as many as in the whole of the following month (83).

RECORDS OF CADDIS FLIES (TRICHOPTERA) IN NORTHUMBERLAND

With notes on their seasonal distribution in Plessey Woods

by

G. N. PHILIPSON, B.Sc., PH.D.

Department of Zoology, King's College, Newcastle upon Tyne

I. LIST OF RECORDS

In compiling this list of records of Caddis flies in Northumberland reference has been made to the literature, to the collection in the Department of Zoology, King's College, and to my own collection. The initials of the author of each record are given and a key to these initials is available at the end of the list. In some early records a vice county number only has been given as locality. In others the only date available is that of publication. The order of classification adopted is that given by Mosely (1939) with the changes in generic names proposed by Kimmins (1949).

It is not suggested that this present list is by any means complete, future additions being most probable. It serves to bring together local records, many hitherto unpublished, and forms a basis for future faunistic and ecological work.

Previous to 1934 some six species of Trichoptera had been recorded for Northumberland by J. W. Heslop Harrison and C. Robson in *The Vasculum.* In 1935 eight species were recorded in *The Journal of the Society for British Entomology* due to J. Omer-Cooper and in 1936 J. W. Heslop Harrison recorded a further nine species in *The Vasculum.* In 1938 twenty-nine records appeared, due to J. Heslop Harrison, L. W. Grensted and A. W. Grensted, of which eighteen were species new to the county. P. J. Deoras in *The Vasculum,* 1940, records a list of Caddis flies taken in Plessey Woods during 1939. Seven of these have been identified to genus only and are not included in this list. Of the remainder, two species had not previously been recorded for Northumberland.

Collecting in Northumberland, largely during the years 1937 and 1938, fifty-six species have been obtained by me. Of these, twenty-eight species had not been recorded previously for this county. In addition, examination of the collection in the Department of Zoology,

King's College, afforded additional unpublished records and one further species new to the county. These latter records, derived from material obtained by other collectors and published in this list, are indicated by an asterisk. A list of those species new to the county was published in *The Entomologist's Monthly Magazine* (Philipson, 1955).

The following list brings the present total of species recorded for the county up to seventy-two, well over one third of the species known to occur in the British Isles.

PHRYGANEIDAE

Phryganca grandis L.

67, C.R. (1916).
Whitfield Lough, J.W.H.H. (1918).

Phryganea striata L.

68, Author not given. (1915).

Adults were reared from larvae collected from a small pond, Gosforth Park, v.56, G.N.P.

Phryganea varia F.

Crag Lough, 29.vii.37, G.N.P. (1955).

Phryganea obsoleta McLach.

West Allen, J.W.H.H. (1918).

Agrypnia pagetana Curt.

Crag Lough, 25.v.38, G.N.P. (1955).

A somewhat local species. Mosely states that it is abundant on many lakes and ponds, particularly in the fens, and reports that is has been taken near Edinburgh.

LIMNOPHILIDAE

Colpotaulius incisus (Curt.).

Cheviot Hills, 4.ix.34, J.O.C.*
Ross Links, J.W.H.H. (1936).

Limnophilus flavicornis (F.).

Bolam Lake, 3.vi.38, G.N.P. (1955).

The larval cases may be made out of a variety of materials, including the shells of freshwater snails.

Limnophilus marmoratus Curt.

Crag Lough, 5.ix.34, J.O.C.,* 31.viii, 7.x.37, G.N.P. (1955).
Bolam Lake, 14.ix.37, G.N.P. (1955).

The specimens collected by me at Crag Lough were taken at light. The record for 31.viii was previously published in error as 31.vii.

Limnophilus xanthodes McLach.

Crag Lough, 25.v.38, G.N.P. (1955).

A rather local species, reported by Mosely as not uncommon on the fens and Norfolk Broads. It has been recorded as abundant on Blelham Tarn and Fishpond by Kimmins (1943).

Limnophilus lunatus Curt.

Crag Lough, 5.ix.34, J.O.C.,* 31.viii, 7.x.37, G.N.P.
Dipton, 67, 68, J.W.H.H. (1936).
Corbridge, 1936, J.H.H. (Kimmins, 1938).
Bolam Lake, 4.vi, 14.ix.37, G.N.P.
Sweethope Lough, 9.viii.37, G.N.P.

Limnophilus politus McLach.

Crag Lough, 31.viii.37, G.N.P. (1955).

Reported by Mosely to inhabit slow-running rivers, it is one of the largest species of the genus.

Limnophilus vittatus (F.).

Budle Bay, 30.viii.34, J.O.C.*
Corbridge, J.W.H.H. (1936). ix.36, J.H.H. (Kimmins, 1938).
Ross Links, J.W.H.H. (1936). ix.36, J.H.H. (Kimmins, 1938).
Forest Hall, 6.viii.37, G.N.P.
Gosforth Park, 10.viii.37, G.N.P.

Limnophilus affinis Curt.

Alnmouth, 1.ix.34, J.O.C.* (Philipson, 1955).
Whitley Bay, 29.vi.35, G.N.P. (1955).

Limnophilus auricula Curt.

Corbridge, J.W.H.H. (1936). ix.36, J.H.H. (Kimmins, 1938).
Ross Links, J.W.H.H. (1936). ix.36, J.H.H. (Kimmins, 1938).
Crag Lough, 31.viii.37, G.N.P.

Limnophilus griseus (L.).

Corbridge, ix.36, J.H.H. (Kimmins, 1938).
Ross Links, J.W.H.H. (1936). ix.36, J.H.H. (Kimmins, 1938)

Limnophilus sparsus Curt.

Whitley Bay, 23.ix.35, G.N.P. (1955).
Crag Lough, 31.viii.37, G.N.P. (1955).
Sweethope Lough, 14.ix.37, G.N.P. (1955).

Anabolia nervosa (Curt.).

Plessey Woods, 12.x.35, 20.ix.37, G.N.P., 20.ix-xi.39, P.J.D. (1940).

Corbridge, 28.viii.36, L.W.G. (Kimmins, 1938). J.W.H.H. (1936).

Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).

Crag Lough, 5.ix.34, J.O.C.,* 31.viii, 7.x.37, G.N.P.

Sweethope Lough, 14.ix.37, G.N.P.

Adults have been reared from larvae collected from R. Blyth, Plessey Woods. The larvae build cases of fine sand grains to which twigs and stems are attached. They are abundant on muddy bottoms in the quieter regions of the river.

Stenophylax rotundipennis (Brauer).

Adults were reared from larvae collected from R. Blyth, Plessey Woods, dates of emergence being 30.viii.37, 12.viii.46. The larvae were not common : in all seven were collected in 1937, three in 1946. G.N.P. (1955).

This species is described as local by Mosley, who quotes records by McLachlan from Scarborough and Carluke, and by L. W. and A. D. Grensted from the vicinity of Oxford. The larvae collected from R. Blyth had the typical smooth cases described for this species and were found in slow-flowing water.

Stenophylax stellatus (Curt.).

Plessey Woods, 6.x.34, J.O.C.,* 23, 26, 27.viii.37, 2, 20.ix.37, G.N.P., 5.ix-26.x.39, P.J.D. (1940).

Corbridge, ix.36, J.H.H. (Kimmins, 1938).

March Burn, nr. Riding Mill, 4.x.37, G.N.P.

Adults have been reared in the laboratory from larvae collected from R. Blyth, Plessey Woods, where they are numerous. Recorded dates of emergence : 26, 27.viii.37, 10.viii.46. G.N.P.

The insects emerge about dusk. This was observed on R. Derwent near Shotley Bridge on an occasion during August, 1936. As darkness fell numerous pupae were seen on exposed stones along the river banks, and eclosion was observed. The numbers increased as darkness fell, but began to decrease after about an hour. Few were found after midnight.

Of the Limnophilidae occurring in Plessey Woods this species is the most abundant and has the longest season.

Stenophylax latipennis (Curt.).

Allendale, 6.ix.37, G.N.P. (1955).

Stenophylax permistus McLach.

Whitley Bay, 10.vi.35, G.N.P. (1955).

Micropterna sequax McLach.

Plessey Woods, 12.x.35, G.N.P. (1955).

Halesus radiatus (Curt.).

Plessey Woods, 5, 20.ix.37, G.N.P. (1955).
Allendale, 16.ix.37, G.N.P. (1955).

Adults have been reared from larvae collected from R. Blyth, Plessey Woods, during 1947.

Halesus digitatus (Schrank).

67, C.R. (1916).
Allendale, 16.ix.37, G.N.P. (1955).

Halesus auricollis (Pict.).

Dipton Burn, J.W.H.H. (1936).
Corbridge, ix.36, J.H.H. (Kimmins, 1938).
March Burn, nr. Riding Mill, 30.ix.37, G.N.P.

Said to inhabit alpine regions, this species was taken at a point on the March Burn only some 250 ft. above sea level. It has been recorded by Kimmins (1943) from Troutbeck at about 500 ft. above sea level, above which point no sign of it was seen.

Halesus guttatipennis McLach.

Plessey Woods, 6.x.34, J.O.C.,* 5, 12.x.35, G.N.P. (1955).

A late autumnal and winter species, Mosely reports it having been taken as late as February. He considers it a rather local species, inhabiting lower altitudes than *H. auricollis*. Kimmins (1943) records it from above Kirkstone Pass, 2,540 ft. above sea level.

Drusus annulatus (Steph.).

Cheviot Hills, 4.ix.34, J.O.C.*
Allendale, 6.ix.37, G.N.P. (1955).
Dipton Foot, 30.ix, 4.x.37, G.N.P. (1955).

Ecclisopteryx guttulata (Pict.).

Dipton Foot, 12, 31.v.38, G.N.P. (1955).

Chaetopteryx villosa (F.).

Plessey Woods, 6.x.34, J.O.C.,* 18, 20.ix.37, G.N.P. (1955).
Dipton Foot, 30.ix.37, G.N.P. (1955).
Allendale, 6.x.37, G.N.P. (1955).
Crag Lough, 7.x.37, G.N.P. (1955).

The record for Dipton Foot, 30.ix.37, was published as 3.ix.37.

Sericostomatidae

Sericostoma personatum (Spence).

Pigden, 16.vi.34, J.O.C. (Kimmins, 1935).
Plessey Woods, 4.vii.34, J.O.C. (Kimmins, 1935).

Goera pilosa (F.).

Plessey Woods, 30.vi-10.vii.34, J.O.C. (Kimmins, 1935). 26.v, 3.vi.38, G.N.P. 6.vi-14.viii.39, P.J.D. (1940).

A pupa was found in 1938 in R. Blyth, Plessey Woods, parasitised by *Agriotypus*. G.N.P.

Silo pallipes (F.).

Plessey Woods, 3.vi.38, G.N.P. (1955).

Lepidostoma hirtum (F.).

Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Hexham, 30.viii.36, A.D.G. (Kimmins, 1938).
Plessey Woods, 3, 12, 14, 16.viii.37, G.N.P., 5.iv-11.ix.39, P.J.D. (1940).

This insect has the longest recorded flight period of the Sericostomatids occurring in Plessey Woods, extending from early April to November. Records of this species by Kimmins (1943) in the Lake District range from June to September.

Beraeodes minuta (L.).

Dipton Foot, 31.v.38, G.N.P. (1955).
Plessey Woods, 3.vi.38, G.N.P. (1955).

Odontoceridae

Odontocerum albicorne (Scop.).

Greenhead, 2.ix.36, A.D.G. (Kimmins, 1938).
March Burn, nr. Riding Mill, 15.vi.38, G.N.P.

Larvae have been collected from March Burn, R. Allen and Keenshaw Burn. The larvae make curved cases of small sand grains, resembling those of *S. personatum*. I have taken these two species together from R. Derwent near Consett, but I have not yet found *O. albicorne* present in R. Blyth at Plessey. G.N.P.

Leptoceridae

Athripsodes nigronervosus (Retz.).

Plessey Woods, 9.vi.34, J.O.C. (Kimmins, 1935).
Pigden, 16.vi.34, J.O.C. (Kimmins, 1935).

Athripsodes alboguttatus (Hagen).

Plessey Woods, 13.vii.56, G.N.P.

Described by Mosely as a rather local species frequenting large rivers and lakes, it has been recorded by Hickin and by Kimmins (1943) from several localities in the Lake District.

Athripsodes annulicornis (Steph.)

Plessey Woods, 30.vi-10.vii.34, J.O.C. (Kimmins, 1935).

Athripsodes aterrimus (Steph.).

Shotley Bridge, 67, J.W.H.H. (1933).
Bolam Lake, 4.vi.38, G.N.P.

Athripsodes cinereus (Curt.).

Plessey Woods, 28.viii.34, J.O.C.,* 3, 16.viii, 2.ix.37, G.N.P., 17.vi-14.viii.39, P.J.D. (1940).
Crag Lough, 29.vii.37, G.N.P.

Abundant in Plessey Woods, flying in swarms over the surface of the water.

Athripsodes albifrons (L.).

Jesmond and Harnham, vii, C.R. (1916).
Spital Tongues, 28.viii.34, J.O.C.*
Corbridge, 28.viii.36, L.W.G. (Kimmins, 1938).
Hexham, 30.viii.36, L.W.G. (Kimmins, 1938).
Plessey Woods, 3, 23.viii.37, G.N.P.

Athripsodes commutatus (McLach.).

Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Plessey Woods, 23, 27.viii.37, G.N.P.

Athripsodes dissimilis (Steph.).

Corbridge, 28.viii.36, L.W.G. (Kimmins, 1938).
Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Hexham, 30.viii.36, A.D.G., L.W.G. (Kimmins, 1938).

Plessey Woods. Adults were reared from larvae collected from R. Blyth, Plessey Woods, on 21.vi.56. G.N.P.

Mystacides nigra (L.).

Plessey Woods, 30.vi. (Kimmins, 1935). 4.vii.34,* J.O.C. 20, 27.vii, 3.viii.37, 21.vi, 13.vii.56, G.N.P. 25.vi-7.viii.39, P.J.D. (1940).

Frequently seen in numbers flying over the surface of the water or waterside paths.

Mystacides azurea (L.).

Chollerford, 30.vii.36, L.W.G. (Kimmins, 1938).
Corbridge, 28.viii.36, L.W.G. (Kimmins, 1938).
Crag Lough, 29.vii.37, G.N.P.
Plessey Woods, 27.viii, 2.ix.37, G.N.P.

Mystacides azurea var. albicornis Mos.

Corbridge, 28.viii.36, A.D.G. (Kimmins, 1938).
Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Hexham, 30.viii.36, A.D.G., L.W.G. (Kimmins, 1938).

Mystacides longicornis (L.).

Seahouses, 30.viii.34, J.O.C.*
Bolam Lake, 9.viii.37, G.N.P.
Plessey Woods, 1939, P.J.D. (1940).

Oecetis ochracea (Curt.).

Bolam Lake, 4.vi.38, G.N.P. (1955).

Hydropsychidae

Hydropsyche pellucidula (Curt.)

Plessey Woods, 17.vi-14.viii.39, P.J.D. (1940).

Adults were reared from larvae collected from R. Blyth, Plessey Woods, during 1947. A recorded date of emergence in the laboratory was 4.vii.47. G.N.P.

Hydropsyche angustipennis (Curt.).

Crag Lough, 31.viii.37, G.N.P. (1955).

Hydropsyche instabilis (Curt.).

Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Plessey Woods, 27.vii.37, G.N.P.

Adults were reared from larvae collected from R. Blyth, Plessey Woods. They were plentiful, but not so numerous as *H. pellucidula* and tended to inhabit faster flowing water. Recorded dates of emergence were 27, 29, 30.vi.46, 4.vii.47. G.N.P.

Cheumatopsyche lepida (Pict.).

Larvae were collected from fast flowing water in R. Blyth, Plessey Woods, during May, 1947. Recorded dates of emergence of adults: 4, 7.vii.47. G.N.P. (1955).

Rearing of larvae of this family to the adult state was accomplished by the use of stirred aquaria (Philipson, 1953a). The morphology

of the larva and pupa of *Hydropsyche instabilis* and the habits of the larva as observed in such aquaria have been described (Philipson, 1953b).

Polycentropidae

Plectrocnemia conspersa (Curt.).

Plessey Woods, 28.viii.34, J.O.C.*
Cheviot Hills, 4.ix.34, J.O.C.*
Greenhead, 2.ix.36, A.D.G. (Kimmins, 1938).

Polycentropus flavomaculatus (Pict.).

Plessey Woods, 30.vi,* 10.vii.34, J.O.C. (Kimmins, 1935). 27.vii, 3, 16, 23.viii, 2.ix.37, 11, 26.v., 3.vi.38, G.N.P. 24.v-11.ix.39, P.J.D. (1940).
Crag Lough, 29.vii.37, G.N.P.
March Burn, nr. Riding Mill, 31.v.38, G.N.P.

This species is abundant in Plessey Woods, and has a considerably longer season than the equally abundant *Cyrnus trimaculatus*.

Adults were reared from larvae collected from R. Blyth, emerging on 6, 8.vii.46. G.N.P.

Polycentropus multiguttatus (Curt.).

Plessey Woods, 9.vi.34, J.O.C. (Kimmins, 1935).

Cyrnus trimaculatus (Curt.).

Plessey Woods, 30.vi,* 4.vii,* 10.vii.34, J.O.C. (Kimmins, 1935). 20, 27.vii, 3.viii, 2.ix.37, 13.vii.56, G.N.P.
Crag Lough, 29.vii.37, G.N.P.

Psychomyidae

Tinodes waeneri (L.).

Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Plessey Woods, 16, 23.viii.37, 26.v.38, 13.vii.56, G.N.P.
Crag Lough, 29.vii.37, G.N.P.
Bolam Lake, 9.viii.37, G.N.P.

Abundant in Plessey Woods, with a recorded flight period only slightly shorter than *P. flavomaculatus*. The larvae construct long sinuous tubes or galleries of sand grains fastened to the surfaces of large stones in the quieter parts of the river.

Lype phaeopa (Steph.).

Crag Lough, 29.vii.37, G.N.P. (1955).

Psychomyia pusilla (F.).

Corbridge, 28.viii.36, A.D.G. (Kimmins, 1938).
Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Hexham, 30.viii.36, L.W.G. (Kimmins, 1938).
Plessey Woods, 27.vii, 3, 12, 16.vii, 23.viii.37, G.N.P. 24.vii-7.viii.39, P.J.D. (1940).

Described as one of the most widely distributed caddis flies, it inhabits rivers and streams. Mosely states that on large rivers it may swarm in hundreds of thousands.

Philopotamidae

Wormaldia occipitalis (Pict.).

Plessey Woods, 10.vii, 28.viii.34, J.O.C.* 20.ix.37, G.N.P. (1955), 1.x.53, 13.vii.56, G.N.P.
Hepple, 28.viii.37, G.N.P.

Specimens have been taken in Plessey Woods on the wing on dull days. Adults were reared from larvae collected from R. Blyth, emerging on 3.x.53. G.N.P.

Wormaldia subnigra McLach.

Greenhead, 2.ix.36, A.D.G. (Kimmins, 1938).
Plessey Woods, 3, 12, 23.viii, 18, 20.ix.37, G.N.P.

Adults were obtained from larvae collected from R. Blyth, a recorded date of emergence being 29.viii.46. G.N.P.

Larvae of *Wormaldia occipitalis* and *Wormaldia subnigra* were reared to the adult stage in stirred aquaria (Philipson, 1953a). A description of the morphology of the larva and pupa of *Wormaldia subnigra* and the habits of the larva in these aquaria has been made (Philipson, 1953c).

Chimarrha marginata (L.).

Barrasford, 23.iv.34, S.J.A.B.*

Rhyacophilidae

Rhyacophila dorsalis (Curt.).

Plessey Woods, 30.vi.34, J.O.C.,* 3, 12, 27.viii, 2, 12, 20.ix.37, 3, 11.v, 3.vi.38, G.N.P. 15.v.-26.x.39, P.J.D.
Cheviot Hills, 4.ix.34, J.O.C.*
Dipton Burn, J.W.H.H. (1936).

Rhyacophila dorsalis (Curt.)—*continued*

Corbridge, 28.viii.36, L.W.G. (Kimmins, 1938). ix.36, J.H.H. (Kimmins, 1938).
Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Allendale, 6.ix, 6.x.37, G.N.P.
March Burn, nr. Riding Mill, 12.v.38, G.N.P.

This insect is abundant in Plessey Woods, and has the longest recorded season of the Caddis flies in that locality, extending from early May to late October. A similar long season for this species is indicated by the records of Kimmins for the Lake District.

Adults have been reared from larvae collected from R. Blyth, Plessey Woods, recorded dates of emergence being 18, 21.viii.47. G.N.P.

Rhyacophila obliterata McLach.

Corbridge, ix.36, J.H.H. (Kimmins, 1938).
Dipton Burn, J.W.H.H. (1936).
March Burn, nr. Riding Mill, 11.ix, 30.ix.37. G.N.P.
Allendale, 6.ix, 6.x.37, G.N.P.

This species, appearing towards the end of the *R. dorsalis* season, has not been taken in Plessey Woods. It is stated by Mosely to be an alpine or sub-alpine species.

Glossosoma boltoni Curt.

Dipton Foot, 31.v.38, G.N.P. (1955).

Glossosoma vernale (Pict.).

Hexham, 30.viii.36, A.D.G. (Kimmins, 1938).

Agapetus comatus (Pict.).

Barrasford, 23.vi.34, S.J.A.B.*
Plessey Woods, 3.vi.38, G.N.P. (1955), 13.vii.56, G.N.P.

HYDROPTILIDAE

Hydroptila sparsa Curt.

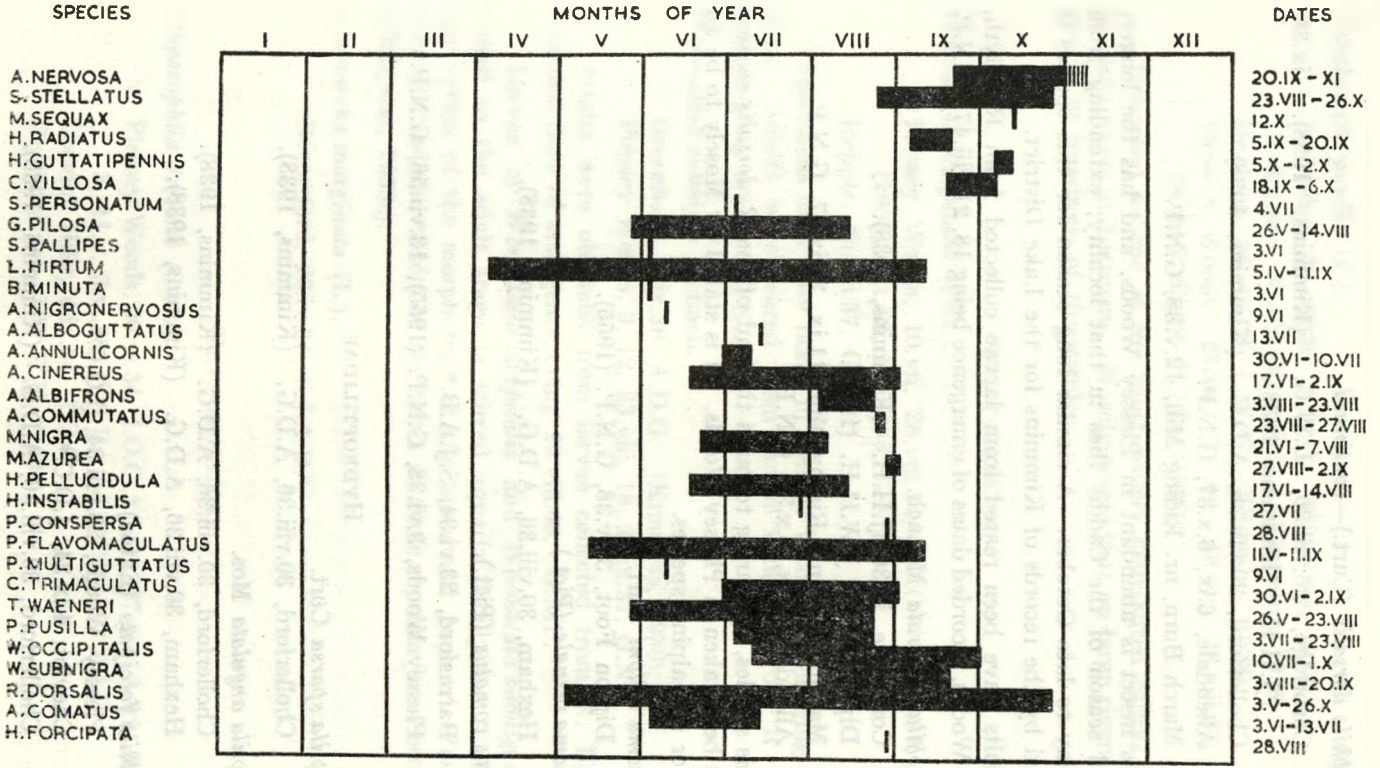
Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).

Hydroptila angulata Mos.

Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Hexham, 30.viii.36, A.D.G. (Kimmins, 1938).

Hydroptila forcipata (Eaton).

Plessey Woods, 28.viii.34, J.O.C.*
Cheviot, 4.ix.34, J.O.C.*
Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).



SEASONAL DISTRIBUTION OF ADULT CADDIS FLIES IN PLESSEY WOODS

Hydroptila maclachlani (Klap.).

Adults of this species were reared from larvae collected from R. Blyth, Plessey Woods, during May, 1947. The larvae are very plentiful, being found under stones and among masses of *Fontinalis*, to which the cases are attached when the larvae are about to pupate. G.N.P.

Ithytrichia lamellaris Eaton.

Chollerford, 30.viii.36, A.D.G. (Kimmins, 1938).
Hexham, 30.viii.36, L.W.G., A.D.G. (Kimmins, 1938).

Key to the initials of authors of records included in this list.

S.J.A.B.	S. J. A. Bosanquet	J.W.H.H.	J. W. Heslop Harrison
J.O.C.	J. Omer-Cooper	J.H.H.	J. Heslop Harrison
P.J.D.	P. J. Deoras	G.N.P.	G. N. Philipson
A.D.G.	A. D. Grensted	C.R.	C. Robson
L.W.G.	L. W. Grensted		

II. SEASONAL DISTRIBUTION OF CADDIS FLIES IN PLESSEY WOODS

Frequent visits were made by me to Plessey Woods during 1937 and 1938. In this region collecting was restricted to the area lying between Stannington Bridge and the railway bridge about three-quarters of a mile further down the valley. Adults were taken on the wing, by sweeping and by beating from trees. In some cases adults were reared in the laboratory from larvae collected from the river.

Weekly visits were also made to this area during part of 1939 by P. J. Deoras (1940), and data concerning their first and last dates of capture during that year were published.

From the numerous data available for this locality the following list of thirty-seven species of Caddis flies has been compiled. Where a species has been recorded on more than one occasion the earliest and latest dates are given. Twenty-five of the species in this list have been recorded from other localities in Northumberland. In thirteen of these the recorded dates lie outside the recorded Plessey Woods dates. In these cases the earliest and latest recorded dates, together with the locality, are included in the list.

List of Caddis Flies Recorded from Plessey Woods

†*Anabolia nervosa* (Curt.). 20.ix-xi
Crag Lough, 5.ix
Stenophylax rotundipennis (Brauer). Larvae
†*Stenophylax stellatus* (Curt.). 23.viii-26.x
Micropterna sequax McLach. 12.x
†*Halesus radiatus* (Curt.). 5.ix-20.ix
Halesus guttatipennis McLach. 5.x-12.x
†*Chaetopteryx villosa* (F.). 18.ix-6.x
Crag Lough, 7.x
†*Sericostoma personatum* (Spence). 4.vii
Pigden, 16.vi
Goera pilosa (F.). 26.v-14.viii
Silo pallipes (F.). 3.vi
†*Lepidostoma hirtum* (F.). 5.iv-11.ix
†*Beraeodes minuta* (L.). 3.vi
Dipton Foot, 31.v
†*Athripsodes nigronervosus* (Retz.). 9.vi
Pigden, 16.vi
Athripsodes alboguttatus (Hagen). 13.vii
Athripsodes annulicornis (Steph.). 30.vi-10.vii
†*Athripsodes cinereus* (Curt.). 17.vi-2.ix
†*Athripsodes albifrons* (L.). 3.viii-23.viii
Jesmond, vii ; Hexham, 30.viii
†*Athripsodes commutatus* (McLach). 23.viii-27.viii
Chollerford, 30.viii
†*Athripsodes dissimilis* (Steph.). Larvae
Mystacides nigra (L.). 21.vi-7.viii
†*Mystacides azurea* (L.). 27.viii-2.ix
Crag Lough, 29.vii
†*Mystacides longicornis* (L.). (Record : Plessey Woods, 1939, P.J.D.)
Hydropsyche pellucidula (Curt.). 17.vi-14.viii
†*Hydropsyche instabilis* (Curt.). 27.vii
Chollerford, 30.viii
Cheumatopsyche lepida (Pict.). Larvae
†*Plectrocnemia conspersa* (Curt.). 28.viii
Cheviot Hills, 4.ix
†*Polycentropus flavomaculatus* (Pict.). 11.v-11.ix
Polycentropus multiguttatus (Curt.). 9.vi
†*Cyrnus trimaculatus* (Curt.). 30.vi-2.ix

†*Tinodes waeneri* (L.). 26.v-23.viii
Chollerford, 30.viii
†*Psychomyia pusilla* (F.). 3.vii-23.viii
Chollerford and Hexham, 30.viii
†*Wormaldia occipitalis* (Pict.). 10.vii-1.x
†*Wormaldia subnigra* McLach. 3.viii-20.ix
†*Rhyacophila dorsalis* (Curt.). 3.v-26.x
†*Agapetus comatus* (Pict.). 3.vi-13.vii
†*Hydroptila forcipata* (Eaton). 28.viii
Cheviot, 4.ix
Hydroptila maclachlani (Klap.). Larvae

† Species also recorded from other localities in Northumberland.

It will be seen that the dates recorded for species in other localities do not differ from those for Plessey Woods by more than seven days, with the following exceptions. *Hydropsyche instabilis*, recorded once from Plessey Woods on 27.vii, has been recorded once from Chollerford on 30.viii. *Sericostoma personatum*, recorded once from Plessey Woods on 4.vii, has been recorded once from Pigden on 16.vi. Further, Deoras records *Sericostoma* sp. from Plessey Woods on 14.viii. *Beraeodes minuta* has been recorded once each from Plessey Woods and Dipton Foot on 3.vi and 31.v respectively. Of those species for which more than one Plessey Woods record exist, the recorded flight periods for the county of *Anabolia nervosa* is increased to 5.ix-xi, *Athripsodes albifrons* to vii-30.viii and *Mystacides azurea* to 29.vii-2.ix.

From the data included in this list the seasonal distribution of adult caddis flies in Plessey Woods has been represented diagrammatically (page 88). In comparing the flight periods of the species it must be borne in mind that the recorded period is very probably influenced by the abundance of the species concerned. Those present in only small numbers may not have been captured on certain occasions, and a flight period is unlikely to be truly represented by a single record.

It would appear that the caddis flies of this area fall into two fairly sharply contrasted groups. One of these groups consists of the Limnophilidae, represented by six species which, with the exception of *Stenophylax stellatus*, do not appear until September. Of the species in this group *S. stellatus* has the longest fully recorded flight period, lasting for about nine weeks. The length of flight period of *Anabolia nervosa* is doubtful. It appears later than *S. stellatus* and the latest fully recorded date is 12.x. Deoras records it from 20.ix to xi, with unfortunately no indication of its duration during the latter month.

The other group consists of the remaining nine families, represented by twenty-six species. These in general appear early and are finished before the first group has appeared. Fifteen species are on the wing in June, sixteen in July and seventeen in August. By the end of August nine of these species are finished, and of the remainder, three disappear during the first week of September.

It is in this second group that the caddis flies with the longest flight period are found. *Rhyacophila dorsalis* is present almost six months, *Lepidostoma hirtum* five months, and *Polycentropus flavomaculatus* four months. Species present less than three months but more than two include *Goera pilosa, Athripsodes cinereus, Cyrnus trimaculatus, Tinodes waeneri* and *Wormaldia occipitalis.* Within this group are also included four species, *Athripsodes commutatus, Mystacides azurea, Plectrocnemia conspersa* and *Hydroptila forcipata,* the records for which lie within the period 23.viii to 2.ix and which are therefore on the wing at the time of appearance of *S. stellatus,* the earliest of the Limnophilid species in this locality. *P. conspersa* and *H. forcipata* have been recorded on single occasions only.

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STAPLE ISLAND and BROWNSMAN, with (in the background) left to right, THE WAMSES, RODDAM AND GREEN, THE HARCARS and THE NORTHERN HARES

Photograph by Philipson Studios Ltd.

PLATE I

THE GREY SEALS OF THE FARNE ISLANDS

A report on investigations carried out between
April, 1956, and March, 1957

by

GRACE HICKLING, M.A.

On December 12th, 1955, the Minister of Agriculture was asked by Major Anstruther-Gray, M.P. for Berwick and East Lothian, if, in view of the danger to fishing interests, particularly salmon fishing, he would consider steps to keep the seal population of the Farnes "within reasonable limits." Major Anstruther-Gray added that such steps were urgent, as the seal population had increased eight times in the last twenty years.

In his reply Mr. Heathcoat Amory said that the Nature Conservancy had recently investigated the matter at his request, and that he was awaiting their report.

One result of the Conservancy's report was a meeting, held at Berwick in March, 1956, at which all parties interested in the future of the Farne seals were represented. It was then agreed, first, that before measures to reduce the colony could be considered much more must be discovered about it, and, second, that investigations should be made both at the Farnes and on the Tweed salmon grounds, the Farne work being entrusted to the Northumberland and Durham Natural History Society.

The Society was asked to undertake the following :—

1. Regular counts, throughout the year, of seals present round the islands. These would be linked up with counts made on the salmon grounds.
2. Counts of the number of calves, live and dead, born each year. From this it would be possible to estimate the size of the colony and also the mortality rate of calves on the breeding grounds.
3. An extended tagging programme. This would yield information, not only about the movement of the Farne seals, but about the age to which they live.
4. General investigations into behaviour, causes of death and so on.

The Nature Conservancy realised that these investigations would involve considerable expenditure on transport and boat hire, particularly on days when it was impossible to make up a full boat load, and they have accordingly given the Society an annual grant of £100 for the next three years.

This grant has been of very great value, for it has enabled visits to be made when perhaps only one, or at the most two or three people, were free to go. Unfortunately, petrol rationing has considerably interfered with the work, for not only has it sometimes been necessary to limit the party to one car load, but also a number of visits planned for the end of the breeding season had to be abandoned. Despite this the autumn of 1956 was undoubtedly a record sealing season, and this was due in part to the weather, and in part to the work of a small band of enthusiasts who were willing to give up their week-end leisure and to endure quite a lot of physical discomfort—including the risk of falling on very slippery rocks—in order to carry out this work. Several of them, incidentally, sacrificed their precious petrol in the good cause.

It is not possible to name everyone who has been on one of the sealing parties, but I should like particularly to mention W. Shiel, of the "Glad Tidings" who, with his father, J. Shiel, not only made every available effort to take us out to the islands, but was responsible for a large part of our total of marked calves (including No. 3050, our most exciting recovery to date), thereby proving himself a first-class tagger. His assistance was invaluable, especially when there were only one or two in the party. A. W. Jones and I. M. Telfer were, unfortunately, for personal reasons not able to play as big a part as usual in this work, but C. E. Marshall, who is a new member of the Society, proved a most useful recruit. Old hands included C. M. Adamson, Miss D. N. Bell, G. A. Chadwick and Mrs. Chadwick, R. M. Gledson, Miss C. Greenwell, W. Greenwell, P. Hurley, L. Kinlen, A. G. Ogilvie and Mrs. Telfer, while others who had their first experience of sealing were C. I. C. Bosanquet, F. Jackson, Mrs. N. Roberts, W. E. Pool and two schoolboys, Alan Boon and Colin Daines. These last two showed great keenness. Petrol difficulties meant that quite a number of volunteers could not be included in parties, but it is hoped that next year they, too, will become sealers. Dr. J. D. Lockie, of the Nature Conservancy, made two trips in November and was again able to see the breeding conditions.

I, myself, have paid thirty-four visits to the islands during the period under review, eleven of them during the breeding season. I was able to make reasonably accurate counts of seals present round

the islands on sixteen occasions. In this connection I should like to record my gratitude to the Northumberland Sea Fisheries Committee for allowing me to join their patrol vessel *Northumbria*, and to add a special word of thanks to Mr. A. H. Cross, Chief Fisheries Officer, and his assistant, Mr. J. Horsburgh, for their great kindness to me on my two trips in this vessel.

The Council of the Society wishes, once again, to express its gratitude to Dr. L. Harrison Matthews, F.R.S., Director of the Zoological Society of London, and to Professor H. R. Hewer, of the Imperial College, for their help in the marking scheme.

COUNTS OF SEALS PRESENT ROUND THE ISLANDS THROUGHOUT THE YEAR.—Figures obtained from these counts are given in Table I, but before they can be analysed something must be said about the conditions under which they were obtained.

Whatever the state of the tide, or the time of year, a few seals can always be seen at the Farnes, either in the water or basking on the rocks, but it is normally only possible to obtain a reasonably accurate estimate of their numbers in the period from approximately two hours before, to two hours after, low water, for during that time the seals are hauled out on the various islands. They usually lie between high and low water mark, but may sometimes climb to a height of several feet. A continuous spell of severe weather seems to drive them to seek shelter above high water mark in places which would never be awash. I noticed this on January 19th, when practically the whole colony was high up on the Harcars and the Crumstone. Again, on February 10th, although low water was not until 1600 hours, I was able to make a count between 1030 hours and 1430 hours because all the seals were well above the high tide line.

It is by no means easy to make these counts, for quite apart from difficult weather conditions, which may make it impossible to approach closely certain of the islands, in some instances the seals are so densely packed together that their numbers cannot be counted accurately. In addition, they are often extremely timid, sliding hastily into the water as the boat approaches, so leaving the observer with the task of counting bobbing heads, rather than static bodies ! All these totals, therefore, must be regarded as approximate and probably err on the small side.

With the exception of Sandbags all the islands mentioned are shown on Map 3. Sandbags is close to the Wamses, being separated from the Harcar by Piper Gut. Again, referring to the map, it should

be explained that, while all the Farnes have a greatly increased area at low water, this effect is much more marked in the case of islands like Gun Rock, the Callers, Sandbags, Roddam and Green, Blue Caps and the Knivestone, which at high water are merely tiny rocky islets. The South Goldstone, indeed, is normally covered by the sea, appearing above the surface only at spring tides. On the other hand, Staple Island, the Brownsman, the North and South Wamses, the Big Harcar, and the Longstone and Northern Hares are a fair size even at high water. This difference in area at high and low water does not seem in any way to affect the seals' choice of hauling-out grounds, for this appears to be governed partly by the season, and partly by the weather, more particularly by the weather of the past few days.

Any conclusions drawn from the counts, based as they are on only one year's work, must necessarily be purely tentative, but bearing in mind that proviso, the following results emerge :—

1. At no time was more than 40% of the colony present. In the June count the figure was as low as 4%, while in July and August it was only 13%.
2. There was no evidence in 1956 of a big April pull-out such as had been recorded in previous years.
3. It is difficult, on examining the figures, to trace a pattern in their fluctuations and it is unfortunate that there is a gap from the end of April to the end of June and another gap in July and August. Such figures as there are suggest, however, that the number of seals falls during the summer months, although the exceptionally low figure (132 +) for June 27th may have been due to the presence of six killer whales in the vicinity. There is no evidence of any marked build-up of numbers immediately prior to the breeding season ; the October figures of 660 (9th), 952 (11th) and 777+ (27th) being approximately the same as those for April and September. It should be noted, incidentally, that this last figure was obtained two days after the birth of the first calves, i.e., when the season had actually started. Out of four counts made in January, February and early March three gave the numbers as roughly 1,200 and one as 900. It should be emphasised that virtually no calves of the year are included in these figures.
4. The position of the seals within the whole group of the Farnes varies a great deal. During the spring, summer and early autumn they are widely scattered and there are only small numbers on the Harcars and Blue Caps. By contrast, during the first three

months of the year, when the weather is generally stormy, they appear to concentrate in very large numbers on a few of the more sheltered islands, particularly on the Harcars.

Exposed islands, like the Knivestone and the Megstone, are virtually deserted after a spell of stormy weather. On the other hand seals can be found, at all times, on the Crumstone, although they vary both their numbers, and their actual position on the rocks, according to the strength and direction of the swell.

On February 10th, for the first time in my experience, I saw 90 seals packed closely together on the sandy beach on the Northern Hares. This bore out observations made by Mr. G. W. Phillips, head lightkeeper of the Longstone, who reported that from November until January a party of some 60 seals had regularly hauled out on this beach.

With the exception of the small party which, for most of the year, frequents the Scarcars, seals are seldom seen round the Inner Group. It was interesting, therefore, to find that from September 26th onwards a cow appeared to be haunting the Kettle, while another was often pulled out on the Wideopens. In view of the fact that calves were later seen on both these islands it seems possible that the cows had, at this early stage, already selected their breeding ground.

5. There is a further variation in position on the actual islands themselves. This has already been mentioned in connection with the Crumstone, and it undoubtedly depends very largely on the weather of the preceding few days and on the resultant swell. For example, on January 19th, following days of severe N.E. gales, some 550 seals were packed in a dense mass on the west point of the Harcar. Similarly, on February 20th, when a strong northerly swell had been running for some days, there were 579 hauled out on the south side of the Big Harcar and only 90 on the north side. Again, at the end of February and the beginning of March there had been persistent S.E. winds and on March 3rd the resultant southerly swell had obviously affected the position of the seals. Most of those on the Crumstone were on the north side of the island; Longstone End (normally a very popular spot), which is completely exposed to the south, was deserted, while there were 62 seals on the more sheltered Northern Hares. None was on the south or east of the Harcars, but the biggest concentration of the day (450-500) was on the north-west side. The north cove of the Brownsman was packed with seals—220 or so in a very small

area. It was the first time I had ever seen the seals hauled out in this cove, although I had been told, a few days before, when the weather conditions were similar, that there was a large gathering here.

6. There appears to be little division into age or sex groups and in nearly every case the animals are mixed indiscriminately. Generally speaking, however, most of the seals on the Blue Caps are immatures, although there may be an occasional cow. On September 26th there were several huge bulls on the Knivestone and not far away, on the east face of the Longstone, was an isolated group of twelve mature bulls. On October 9th comparatively few mature bulls were to be seen, although one was in Brownsman's Gut and another was hauled out on the east beach of the Brownsman—incidentally, he was in the same place on the 11th. Most of the 56 animals on the Scarcars were cows. On December 20th, nearly the end of the breeding season, practically all the 80+ animals on the Little Harcar were bulls, both young and old. On the other hand, the Big Harcar's total of 413 was made up of a mixture of all ages and sexes, including at least 50 calves of the year.
7. Very few calves of the year appear to remain with the colony at the end of the breeding season. On January 19th, with the exception of one rather isolated animal on the Harcar, there was none. On February 10th there were two, on February 19th six and on March 3rd only one or two. This is borne out by the recoveries of marked animals at some considerable distance from the islands.

Seals in Embleton Bay. Early in August a colony of about fourteen seals became established on a small island, just east of the Emblestone. They were still there at the end of September, when F. Gregory examined them through binoculars and reported that there appeared to be one medium-sized bull and a few immatures, while the remainder were either cows or young bulls. This island, which is some 7 miles south of the Farnes, is awash at high spring tides and it is, therefore, unlikely that seals will ever breed on it.

Colony size prior to 1939. In view of Major Anstruther-Gray's statement that the Farne seal population has increased eight times in the last twenty years it will be useful, not only to to try to arrive at some estimate of size prior to 1939, but also to give a short account of the history of the colony.

The Farne colony is an ancient one and it is probable that, for many hundreds of years, the seals have been killed for the sake of the oil which their carcasses yield. The earliest known evidence of this is a twelfth century charter which regulates the killing of the seals in the neighbourhood of the Farnes by the fishermen of Bamburgh. This exploitation was continued during the period of the monastic House of Farne (1255 A.D. to 1536 A.D.) and in the Account Rolls of the House there occur frequent entries such as " Received 12s. for celys caught and sold " (in 1373-74), " For celys and their skins 13s. 4d." (in 1375-76), " Received 4s. 6d. for celys celys (seal calves) " (in 1378-79) and " Paid to Duncan Blayre, 9 Nov. for carriage of a seaylcalff from the Master of Fayrne, sent to the Earl of Westmorland by the Prior, 2s. ; another 23rd. Nov. 10s." (from the Bursar's Book at Durham for 1533).

The dissolution of the House, and the transfer of the islands to the Dean and Chapter of Durham, did little to preserve the seals, for the islands were let to a succession of tenants whose main object was to exploit the wild life. Among the most notorious of these tenants were the Blackets, father and son, who, during the latter half of the eighteenth, and the early years of the nineteenth century, regularly killed the seals. We are told that in 1772 alone the younger Blacket took 72 young seals. This is the first indication of the size of the colony and if these were, as seems probable, all calves of the year, the colony must have numbered at least 288. This wholesale killing undoubtedly had a very serious effect and Selby (1841) says that the younger Blacket (then nearly eighty) told him that the seals were much more numerous forty or fifty years previously, a fact which he attributed in part to the great destruction which he himself had committed.

From 1841 to 1920 the colony is said to have consisted of about 100 individuals.

G. W. Temperley (*in litt.*) states that in his early summer visits to the islands it was a most unusual thing to see a grey seal. He visited the islands in June 1906, June 1909, June 1910 and September 1911, and it was not until June 22nd, 1912, that he ever saw a seal and even then there were only two, both adults. In the following years he noticed an increasing number each summer and in June 1933 he wrote that there were " a large number—more than I have ever seen before in summer."

In 1931, in the course of one of the periodical protests made by the River Tweed Commissioners about the damage done to salmon, it

was stated that there were " 70 odd " grey seals at the Farnes, but this is obviously an under-estimate.

By the early nineteen-thirties Goddard who was, during his life time, the acknowledged expert on the Farne seals, noted that there had been a slight increase. At a conference held in the Hancock Museum on April 12th, 1938, to discuss allegations of damage done to salmon fishing by seals, he gave the figure as 150, although other speakers put the number at 200 (Watt, 1951). Darling (1947) states that there are about 300 seals in the Farne colony.

So much for published statements and now to review other evidence. Dealing with the 1938 conference we find that, while Goddard insisted that the figure was not more than 150, A. D. Darling, a member of the Northumberland Sea Fisheries Committee, gave the figure as 200, saying in support that " a friend of his was out on the Isles and counted 125 on one day on the rocks, and they would not all be out of the water." This is a valuable statement, for if we compare it with the figures given in Table 1, we see that the minimum size of the colony was probably at least 312, not 200, and may well have been considerably larger.

It is greatly to be regretted that Goddard left only scanty field notes on his work. Nevertheless, I have re-read these notes, together with the much more detailed accounts of his other Farne visits, and they provide some useful information.

On December 2nd, 1928, he landed on the Brownsman and counted 10 calves. He mentions that there was one calf on the Harcar, but as this was simply a sight record, made from the Brownsman, it gives no indication of the real number on this island. On the other hand, at the end of his account of a visit to the Farnes on May 25th, 1929, there occur these words : " Fawcus (one of the Seahouses fishermen) told me that after my visit to the grey seals on the Brownsman last December they all went off to the Big Harcar and that there must have been at least 150 young ones there."

Again, on December 14th, 1929, he writes (of the Harcar) " Fawcus said that he had heard that there were 80 young ones. . . . . I did not count them, but should think I saw 50 . . . . and one or two were lying dead." On November 25th, 1934, he counted 18 live and one dead calf on the Brownsman and estimated that there were over 66 on the Big Harcar ; from the boat he saw one calf on the South Wamses but did not land on this island, or on the North Wamses or Staple Island. In the following year, on December 8th, he found

only three calves on the Brownsman while he could see that there was another, across the Gut, on Staple Island. He landed on the Harcar, but did not count the calves, although he remarked that there must have been at least 50 or 60 as well as one or two dead.

It will be seen that Goddard's figures are scanty and it is unfortunate that he apparently landed only on the Brownsman and the Big Harcar and never set foot on either Staple Island or the North and South Wamses—islands on which it is impossible to assess the number of calves without a careful search. This omission means that there is no real evidence as to whether calves were, in fact, born on these islands.

Goddard was probably unaware of the fact that the sex ratio of grey seal calves is equal at birth, but it is, nevertheless, extraordinary that he can admit to having counted at least 86 calves in 1934 and yet maintain, four years later, that the colony was only 150 strong. If we apply Lockley's method of calculating colony size (Lockley, 1954), i.e., if we multiply the number of calves by four, we obtain a minimum colony size of 344, and the true figure is obviously considerably larger. Again, if we accept Fawcus' statement for the number of calves in 1928 we find that the colony must, in that year, have been at least 600. Similarly, if we compare the count for December 14th, 1929 (a late date) with some of our own counts, we arrive at a population figure of between 600 and 800.

All this indicates that there was a gradual build-up from the obviously very small colony of the early 1900s to the relatively fair-sized colony of the late 1930s.

Post-war size of colony. There are no figures for the ten years from 1939 to 1948 and, unfortunately, only one count for 1949. In that year, on November 12th, I visited the islands and found a minimum of 114 calves. Figures for individual islands were as follows :—Brownsman, 27-29 and 2 dead ; Staple Island, 30 ; North Wamses, 25 ; Big Harcar, 30. We landed on Brownsman and the figures are, accordingly, accurate ; the other counts were made, with binoculars, from the boat and, at least in the case of Staple Island and North Wamses, are much too small.

The 1950 figures (Watt, 1951) give a probable minimum colony size of 2,270. In 1951 only one visit could be made : on December 16th there were at least 170 live and 10 dead calves on Staple Island—a figure which, if compared with the 1956 counts, suggests that the numbers of calves on that island were virtually the same in the two

years. None of the other breeding islands was visited. Figures for 1952, 1953 and 1955 have already been published in these *Transactions*. Again, they are very approximate, but give the following results :—

	Minimum number of calves born		
Year	*Live*	*Dead*	*Total*
1952	476	20	496
1953	—	—	550-650
1955	465	27	492

The 1955 figure does not include any calves born subsequent to November 6th on the North and South Wamses, or subsequent to December 4th on Brownsman and Staple Island, so is obviously very much too small.

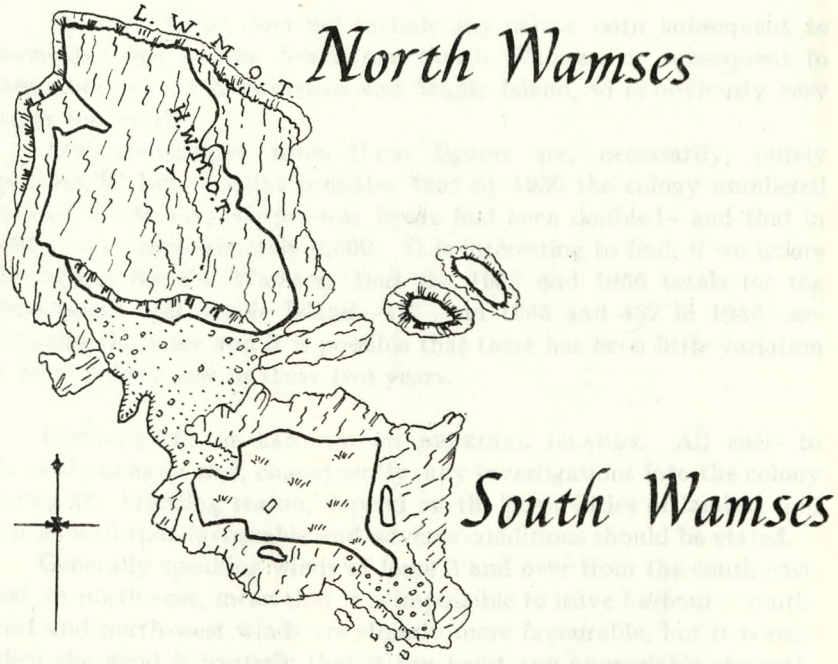
Any conclusions from these figures are, necessarily, purely speculative, but it seems probable that by 1950 the colony numbered at least 2,000, i.e., the pre-war figure had been doubled—and that in 1953 it was approximately 2,600. It is interesting to find, if we ignore the figures for the Wamses, that the 1955 and 1956 totals for the Brownsman and Staple Island—417+ in 1955 and 432 in 1956—are virtually the same and it is possible that there has been little variation in total colony size in these two years.

Difficulties of landing on breeding islands. All visits to the seal nurseries and, consequently, any investigations into the colony during the breeding season, depend on the possibilities of landing and it is as well that favourable and adverse conditions should be stated.

Generally speaking winds of force 3 and over from the south-east, east, or north-east, mean that it is impossible to leave harbour ; south-west and north-west winds are slightly more favourable, but it is only when the wind is westerly that it can be of any appreciable strength. Added to this is the difficulty of a swell, that from the south-east being particularly bad. It should be remembered that a swell, coming as it often does from many miles away, may be running even if the wind is favourable.

At present the main breeding islands are the Brownsman, the North and South Wamses and Staple Island. If wind and sea conditions are favourable it is possible to land on the Brownsman at any state of the tide. Landing on the Wamses, however, is a very different matter. The actual landing is made on rocks on the South Wamses and access to the North Wamses is across a stretch of pebbles and small boulders which is completely covered by the sea at high water. Even under optimum conditions the landing rocks are accessible only

MAP 1



for one hour before and one hour after high water and this means, at least in winter, that landing is only possible on about six days in each fortnight. Staple Island is slightly better, for it is usually possible, if one has been able to land at all, to remain for at least two hours after low water. In addition, there is a wider variety of landing places, including direct landing on to the rocky beach adjoining Brownsman's Gut.

COLOUR-MARKING. One of the most important parts of our work was to try to obtain accurate counts of the numbers of calves born on the different islands and in order to do this we decided to colour-mark the calves as they were born.

We had made an initial attempt at colour-marking in 1952, using for this purpose Rhodamine B 500, dissolved in a mixture of spirit and water, and very kindly supplied to us, without charge, by Imperial Chemical Industries Ltd. Unfortunately, a month elapsed between the original marking, and our next visit to the islands, and there were no results from this experiment, which was not repeated.

In 1956 we planned to use at least three different colours. We felt that landing on the Wamses (Map 1) was too uncertain to attempt colour-marking on these islands, but it was hoped to mark all animals on Staple Island and the Brownsman, the position of the mark, and the colour, indicating not only the date, but also the island of marking. We hoped, by this means, to obtain quick information about the numbers of calves which had been born in definite periods and also discover if there was any interchange of calves between Staple Island and the Brownsman. At the same time Dr. A. G. Ogilvie planned to mark sick or ailing calves with coloured plastic, so providing a ready method of recognising these animals.

Professor H. R. Hewer has had satisfactory results with a coloured grease, such as it used for marking sheep, and he very kindly provided us with a supply. Unfortunately, we found that only one colour—green—was obtainable and we accordingly decided to give another trial to our original red dye.

The results were interesting. Green dye was used on the shoulders, and red dye on the tails, of eight calves on Staple Island on October 27th. They were seen again on November 11th, when it was noticed that both colours had lasted well, but that the red was probably slightly better than the green. On that day twelve calves on the Brownsman, and 137 more on Staple Island, were marked with green. Unfortunately, this marking takes time, as the grease has to be rubbed well in

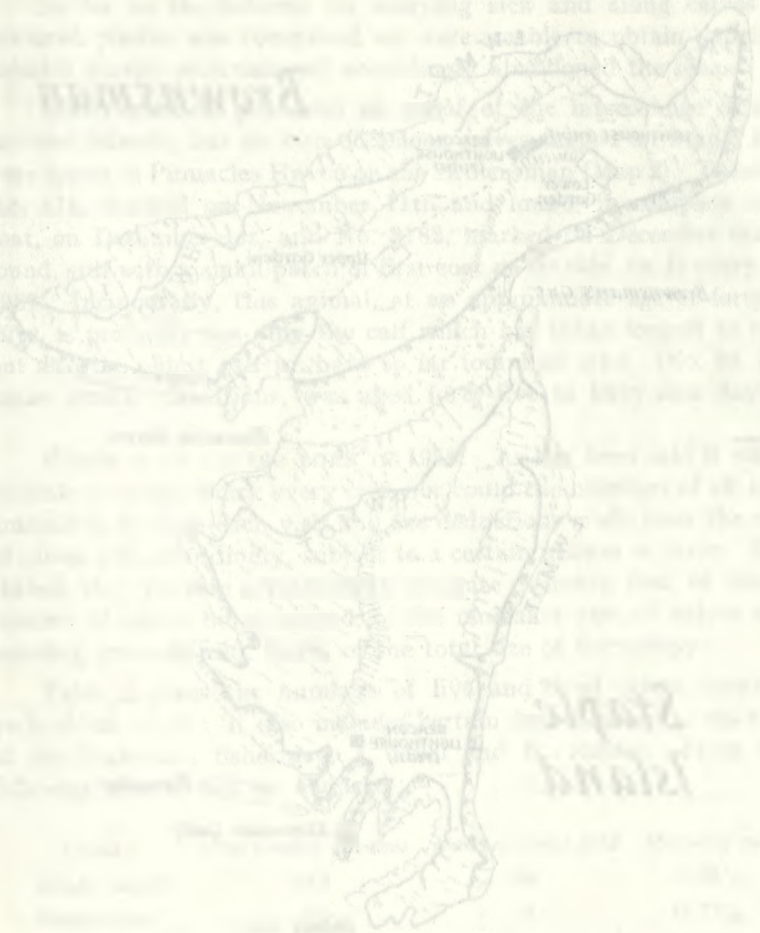
so that it can penetrate the roots of the hair, and the result was that some 30 calves remained unmarked. Another difficulty is that the animals have to be held firmly and, in consequence, at least three people are required to carry out the work.

On November 16th W. Shiel and I worked alone on the Brownsman and we accordingly decided to use the red dye, for, being liquid, it could be applied comparatively easily. We marked twelve calves, but noticed that if the dye was applied when the calf was wet, or if it went into the sea immediately after marking, the red colour soon came off. We also saw some of the November 11th animals and noticed that on a few the green was very faint, while on others it was perfectly distinct.

On future visits it became obvious that it was not worthwhile to continue this marking. This was partly because of the incompleteness of the marking in the early part of the season and partly because of the smallness of the sealing parties and the consequent necessity of concentrating on other aspects of the work. We continued, however, to use the green grease on certain of the dead calves, so providing a method of recording the mortality rate. We also kept a careful watch for marked animals in order to discover the merits of the two types of dye.

Our observations produced interesting results. We found several animals which retained the green dye on the first coat throughout the moult, and also noticed occasional patches of shed hair which was green in colour. In no case, however, was there the slightest sign of green on the second coat which was revealed under the moulting hair. On the other hand, on December 6th I found calves Nos. 575 and 3151 on the Brownsman, both in the complete second coat, and both still showing vivid patches of red, including the irregular series of spots where the marking brush had dribbled ! They were two of the calves marked on November 16th, when three and four days old respectively. C. E. Marshall examined one of these calves on December 8th and noticed that the dye stretched downwards from the tips of the fur for approximately half-an-inch, the depth being equal over the whole stain.

We have done too little marking to draw definite conclusions about the merits of the two types of dyes, but I think that the I.C.I. dyes are the more satisfactory, partly because they appear to penetrate the second coat, and partly because they are much easier to apply. I hope that next season it may be possible to use this type of dye in a wider selection of colours.



MAP 2


Brownsman
L.W.M.O.T.
LIGHTHOUSE (ruin)
BEACON LIGHTHOUSE (ruin)
Lower Garden
Upper Garden
H.W.M.O.T.
Brownsman's Gut
N
Pinnacles Haven
H.W.M.O.T.
L.W.M.O.T.
Staple Island
BEACON LIGHTHOUSE (ruin)
Pinnacles
Kittiwake Gully
Skeney Scar

It is evident that colour-marking is a very valuable method of estimating the number of calves born, but it can only be used successfully if it is possible to make frequent visits during the early part of the season.

So far as the scheme for marking sick and ailing calves with coloured plastic was concerned we were unable to obtain supplies of suitable plastic material and accordingly abandoned the idea.

Colour-marking produced no proof of the interchange of calves between islands, but on two occasions calves tagged on Staple Island were found in Pinnacles Haven on the Brownsman (Map 2). These were No. 814, marked on November 11th and found, in complete second coat, on December 1st, and No. 3182, marked on December 6th and found, still with a small patch of first coat on its side, on January 19th, 1957. Incidentally, this animal, at an approximate age of forty-nine days, is probably not only the calf which has taken longest to moult, but also the oldest calf we have so far found on land. (No. 30, found under similar conditions, was aged forty-five to forty-nine days.)

NUMBERS OF CALVES BORN IN 1956. As has been said it was not possible to colour-mark every calf, nor could the numbers of all tagged animals be read on each visit and the deductions made from the counts of calves are, accordingly, subject to a certain margin of error. Nevertheless, they provide a reasonably accurate estimate, first, of the total number of calves born, second, of the mortality rate of calves on the breeding grounds and, third, of the total size of the colony.

Table 2 gives the numbers of live and dead calves counted on each of our visits : it also includes certain figures given to me by two of the Seahouses fishermen, J. Shiel and R. Rutter. From it the following results can be deduced :—

Island	*Total number of calves*	*Number found dead*	*Mortality rate*
Staple Island ...	348	35	10.06%
Brownsman ...	84	9	10.71%
South Wamses ...	62	7	11.29%
North Wamses ...	250	28	11.20%
Inner Farne ...	1	—	0.00%
West Wideopens ...	1	—	0.00%
Big Harcar ...	1	—	0.00%
Total	747	79	10.57%

COLONY SIZE IN 1956. By applying Lockley's method to the figure of 747 given on page 105 we arrive at a colony size of 2,988 and this can best be expressed by saying that the Farne seals now number roughly 3,000.

Turning for the last time to Major Anstruther-Gray's statement I think we may conclude that, while he is perfectly correct in saying that the colony has increased in the last twenty years, he is wrong in his assessment of the amount of this increase. In fact, the numbers seem to have increased from 600 or 800 to 3,000, i.e., by either five or three and three-quarter times, not by eight times.*

BUILD-UP OF CALVES ON THE BROWNSMAN. As usual more visits were paid to the Brownsman than to any other island and, as a result, it is possible to give quite a accurate picture of the build-up in numbers in this island. This is shown below. It should be remembered that names such as "Pinnacles Haven," etc., represent the main areas in which calves are found and the term "Campion" includes the whole of the top of the island. These terms can best be understood by reference to Map 2.

(*Figures represent the number of calves born between visits*)

Date	*Pinnacles Haven*	*East Beach*	*North Cove*	*Flat below lighthouse*	*Campion*	*Dead*
5.11.56	—	1	—	—	—	—
11.11.56	—	8	4	—	—	1
16.11.56	—	5	6	—	—	1*
17.11.56	—	1	—	—	—	—
18.11.56	—	1	1	—	—	—
1.12.56	3	18	12	5	1	3
6.12.56	—	—	—	—	1	—
8.12.56	—	2	1	—	1	3*
20.12.56	—	2	4	—	—	—
19.1.57	—	—	—	—	1	1
Totals ...	3	38	38	5	4	9

* Indicates some or all previously marked. These were Nos. 781 (November 16th) and 3290 and 3020 (December 8th).

* Since this report was prepared H. R. Hewer has published his paper "A Hebridean Breeding Colony of Grey Seals *Halichoerus grypus* (Fab.) with Comparative Notes on the Grey Seals of Ramsey Island, Pembrokeshire" (*Proc. Zool. Soc. Lond.*, Vol. 128, Part 1, pp. 23-66). In it he shows that for Shillay, where approximately 160 calves were born in 1955, the total population of grey seals based on the island was probably about 600. If, therefore, we compare these figures with those for the Farnes we arrive at a pre-war figure of between 560 and 750 and a 1956 figure of about 2,800.

In addition to the calves given above ten other animals were seen on the Brownsman. Two of them are known definitely to have come from Staple Island, while three second coaters seen on December 1st, and one second coater seen on December 8th, as well as three moulters, all over a fortnight old, which were marked on December 1st, may possibly, to judge from their ages, also have come from Staple Island.

Breeding season. It will be seen that the first calf was born on October 25th, while the last one, born not earlier than January 5th, was still on land on February 10th. This means that the season lasted for at least 109 days, or nearly sixteen weeks, an extraordinarily long period. It would appear that the main peak of births occurred in mid-November, but that on the Brownsman, and to a lesser extent on the South Wamses, this peak was delayed until the second half of November.

Extension of breeding grounds. Table 2 shows that the main breeding islands were, as in the past few years, Staple Island, the Brownsman and the North and South Wamses, but, in addition, there were single calves on the Big Harcar, West Wideopens and Inner Farne. Although in recent years there have been no calves on the Harcar it was in regular use prior to 1951 and was, indeed, for many years one of the favourite islands. We did not land here, and the single calf recorded was seen from the boat on December 9th, when it appeared to be about seven days old.

The most significant fact which emerges from the Table is that the seals are now spreading to the Inner Group. The calves on the Inner Farne and the West Wideopens were only isolated births. Nevertheless, they were the first recorded from the Inner Group and, as such, are pointers to the fact that seals will use these islands and, in consequence, have large areas of potential nurseries available if they should, for any reason, be turned off the Outer Group.

Distribution of calves on main breeding islands. The distribution of calves on the Brownsman has already been given and this is the only island where it is possible to draw definite demarcation areas for breeding. Even here the areas tend to become upset, for as the calves grow older some of them leave their birth-places and move to other parts of the island.

As will be seen from Map 2 Staple Island consists essentially of a bare rocky flat bordering Brownsman's Gut, a further area of bare rock, with cliffs which increase gradually in height, along the east side of

the island, and a campion covered top. Of these the rocky flat, and the top of the island, are the areas chiefly used by the seals, and calves are seldom born on the rocks to the east. The top of the island is cut up by a long gully, running roughly N.N.W. downwards to the sea: this provides a very useful means of access for the adults and the sides are thickly covered with calves. Towards the end of the season the distribution of calves alters and it is noticeable that quite a number of second coaters move south to the beacon lighthouse (I have seen two actually inside the lighthouse) and to the rocks adjoining Kittiwake Gully.

On the South Wamses (Map 1) the majority of calves are born on the shingle beach facing the Brownsman, but others are scattered on the rocks to the west and north-west and there are a few on the top of the island. The top of the North Wamses appears to be colonised first, but quite a number are born on the shingle to the south of the island. The North Wamses, incidentally, is an extremely difficult place on which to make a count and it is impossible to divide it into easily recognisable areas. With the exception of the shingle beach it is nearly all bare rock, much cut up by gullies and pools, with one quite large pool—a favourite haunt of adults—in the centre.

TAGGING. During the season 313 calves were tagged and full details of all marked animals are given in Table 4. The year's total has again been a record for any British colony and is 113 more than our own 1955 record total of 200.

Unfortunately, the hopes expressed in the last report about the efficacy of the present form of pliers and standardised tags were not realised, and we had a high proportion of failures. These failures were not confined to individuals, nor to certain series of tags, for our most efficient markers on some occasions achieved 100% success, while on others had a number of failures. The same uncertainty characterised the tags themselves, part of a series going on perfectly easily, whereas a short time later not one tag closed successfully. On November 16th, when twelve calves were marked—none, incidentally, over four days old—all the tags were put on without difficulty. Few of the other visits were, however, trouble-free and on November 11th, out of 100 tags, 39 were failures, while on December 1st, 19 out of 65 did not close correctly and a second attempt at marking had to be made.

Three main factors seem to affect success or failure. First, the condition of the calf itself. Normally the younger the animal the more likely is the tagging to be successful. Nevertheless, even a two or three day old calf may become excited, and work itself into a state of

hysteria, and if this happens the only thing is to leave it until it is quiet and then try again. We found, in nearly every case, that calves which struggled unduly, or became excited, were females.

Second, the human element. If the calves are lying quietly, and can be approached without disturbance (one we marked slept through the whole operation while another, which had its head down a rabbit hole and therefore could not see us, also kept perfectly still) the tag will usually go on without trouble. On the other hand, if a calf starts to struggle, it is essential for the other members of the team to hold it steady, for only by so doing can the marker work successfully. It was noticeable that calves born on the top of Staple Island—often a sea of churned-up mud—became extremely slippery and, in consequence, were much more difficult to handle than those on dry rock. Similarly, calves which had been in rock pools, or in the sea, were far from easy to hold. A further aspect of the human factor is undoubtedly the presence of spectators. The Farne seals are becoming increasingly popular and, especially during November, considerable numbers of people now visit the breeding islands. The presence of these visitors has comparatively little effect on the Brownsman, where the breeding groups are small and well isolated, but it is a very different matter on Staple Island and here both adults and young become unduly excited and, in some cases, aggressive. Fortunately, owing to the difficulty of landing, this problem does not arise on the Wamses.

Third, and last, the tags themselves. We found, on taking some of them from the boxes, that they showed a definite twist which, though slight, was sufficient to prevent the point going through the opposite slot. We finally decided to re-gauge all tags, but even that did not ensure complete success.

Recoveries. The following recoveries have been reported since the last report was published :—

No. 518. Marked November 4th, 1955, on Staple Island, when four to five weeks old. Found dead on beach at St. Cyrus, Kincardineshire, on July 19th, 1956.

No. 558. Marked October 27th, 1956, on Staple Island when under two days old. Found floating in the sea off the Brownsman, minus head, on November 15th, 1956.

No. 567. Marked November 18th, 1956, on Staple Island when about a fortnight old. Caught in salmon nets at Salmon Fishing Station, Cove Bay, Kincardineshire, *c.* February 14th, 1957.

No. 577. Marked November 16th, 1956, on Brownsman when less than one day old. Drowned in fishing nets on Goswick beach, Northumberland, on February 28th, 1957.

No. 768. Marked November 11th, 1956, on Staple Island. Age not noted, but probably less than seven days. Seen resting outside door of Longstone lighthouse on November 29th and 30th, 1956. Had septic wound on right side.

No. 781. Marked November 11th, 1956, on Brownsman when four to seven days old. Found dead on this island on November 16th, 1956.

No. 3020. Marked December 1st, 1956, on Brownsman when about seven days old. Found dead on this island on December 8th, 1956.

No. 3030. Marked December 1st, 1956, on Brownsman when two to four days old. (1) Seen, on December 6th, 1956, about seven miles from the Longstone, attempting to climb one of the otterboards when the trawl was being shot on the Aberdeen trawler *Viking Hope*. Had wound on neck. Taken by trawler to Aberdeen and later put back into sea a little south of this port. (2) Found dead on beach at Findon Bay, seven miles south of Aberdeen, on December 12th, 1956.

No. 3034. Marked November 18th, 1956, on Staple Island when about seven days old. Found dead on beach at Thorntonloch, near Dunbar, E. Lothian, on December 26th, 1956.

No. 3038. Marked November 18th, 1956, on Staple Island when about three days old. Found dead on beach at Montrose, Angus, on December 31st, 1956.

No. 3050. Marked December 1st, 1956, on Brownsman when two days old. Found dead on beach at Borooyavik, by Klaksvig, Faeroe Islands, on January 26th,1957.

No. 3080. Marked November 18th, 1956, on Staple Island when three to four days old. Skeleton found on this island on April 20th, 1957.

No. 3083. Marked November 18th, 1956, on Staple Island when about seven days old. Seen on beach at Alnmouth, Northumberland, on January 9th, 1957. Later returned to sea.

No. 3094. Marked November 11th, 1956, on North Wamses when four days old. Found dead on this island on December 6th, 1956.

No. 3116. Marked November 18th, 1956, on Staple Island when approximately a fortnight old. Caught in salmon nets on Kincardineshire coast, *c.* March 4th, 1957.

No. 3137. Marked December 8th, 1956, on South Wamses when about five weeks old. Found dead on Stiffkey Sands, near Wells-next-the-Sea, Norfolk, on February 5th, 1957.

No. 3198. Marked December 8th, 1956, on South Wamses when ten to fourteen days old. Found dead on beach at Whitehills, Banffshire, *c.* March 9th, 1957.

No. 3240. Marked December 8th, 1956, on South Wamses when about a fortnight old. Found dead on rocks at Usan, two miles south of Montrose, Angus, on January 3rd, 1957.

No. 3290. Marked December 1st, 1956, on Brownsman when about four days old. Found dead on this island on December 8th, 1956.

Perhaps the most surprising thing about these recoveries is that, with the exception of the animal found dead at Bamburgh on January 8th, 1956, nothing had been heard, for over six months, of the 200 calves marked in 1955. The St. Cyrus recovery was, accordingly, most welcome, more especially as the animal concerned was about eight and a half months old. In no previous recovery had the calf been more than fifteen weeks old when found.

In contrast with 1955 eight of the 1956 marked calves have already been found at some considerable distance from the Farnes, while three others were seen, or found dead, a few miles away. Of the distant recoveries six were from the east coast of Scotland, bringing the total so far recorded from that area up to nine, while one was from East Anglia. This is the second recovery from the east coast of England. Undoubtedly the most interesting recovery is, however, the one from the Faeroes, more especially as there is a native colony of grey seals in these islands. It is difficult to estimate the distance travelled by this calf, but it is probably in the region of 550 miles—a remarkable feat for an animal which was less than nine weeks old when found.

Despite a very careful scrutiny of all observable hind flippers there appeared to be little trace of marked animals on the islands. Only three have been seen: one on Longstone End on April 2nd and September 9th and a third on the Scarcars, also on September 9th.

All three animals were either one or two-year olds. This apparent absence of marked animals may be due to one of two causes. Either these marked seals are not present round the islands or, and this is a disconcerting possibility, the present type of tag will not remain in place for more than a few months.

Weighing and measuring. We made no systematic attempt at weighing or measuring, but on November 18th, having tagged the two unmarked calves on the Brownsman, we weighed all the calves on this island. The results are given in Table 3.

Proportion of males to females. Out of 312 calves sexed 155 were males and 157 females : this gives a sex ratio of 1 : 1.01.

Observations on calves.

(*a*) Pre-natal moult. I saw what appeared to be pre-natal moult on sixteen calves. In the majority of cases this took the form of greyish hair on the muzzle, but in three instances the calves, although new-born, had very dark, almost black hair on their faces.

(*b*) Types of calves. Once again we noticed the two types of calves—those which are born near the water and go into the sea at an early age and those which are born on the tops of the islands, and while sometimes having preliminary swims in rock pools, do not normally go into the sea until five or six weeks old. There are, however, differences even within these two main types. I have already referred to the fact that some second coaters wander about the tops of the islands—on the North Wamses I saw them in packs of six or eight or more—but, on the other hand, on February 10th, 1957, I found No. 3262, then in the complete second coat and about five weeks old, in exactly the same spot on the Brownsman where it had first been seen on January 19th.

There were a number of examples of the first type. Several new-born calves were close to the edge of the sea, a small white-coated calf was swimming strongly in the sea off the Pinnacles on December 1st, and on November 16th at least two calves, obviously less than a week old, were swimming well out in the North Cove of the Brownsman. An interesting contrast was the behaviour of No. 576. This was born on a rocky shelf, just above a gut running up into the east beach of the Brownsman, and therefore quite close to the sea. I first saw it on November 16th, when it was less than two days, and 22 days later, on December 8th, it was still on the ledge and did not seem to have moved at all.

COWS AND CALVES ON STAPLE ISLAND

Photograph by G. Hickling

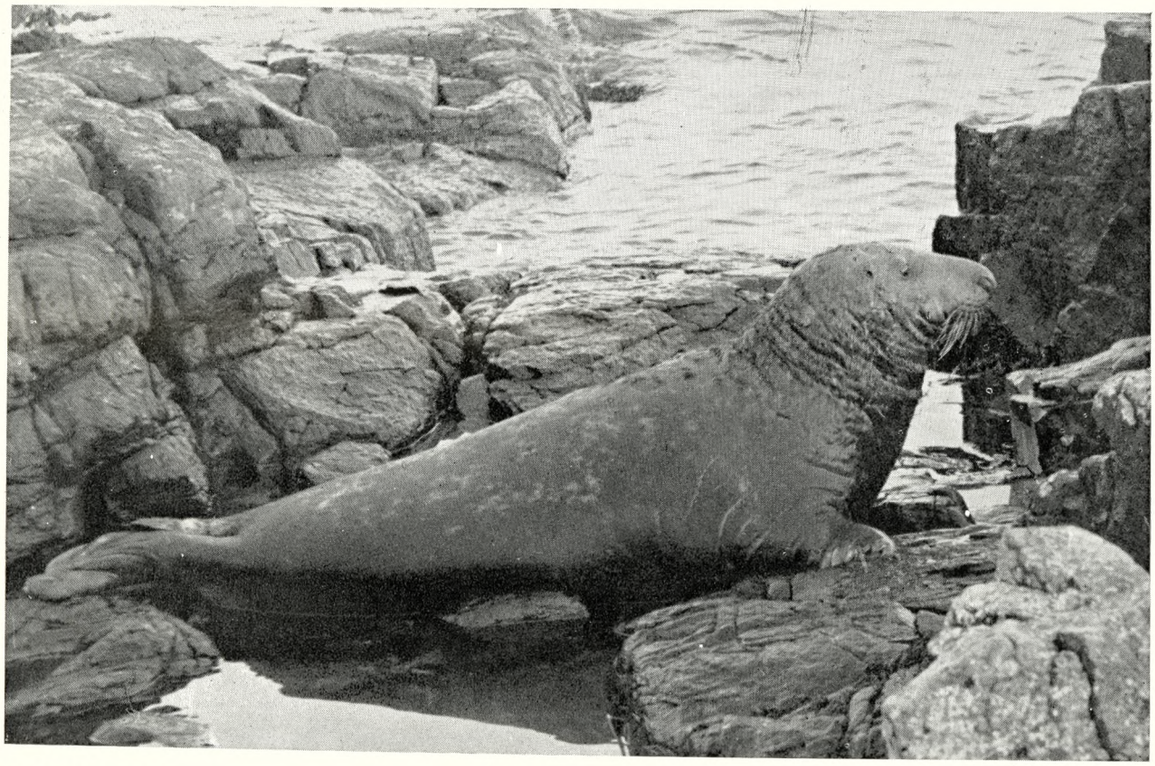


PLATE 3

MATURE BULL

Photograph by G. Hickling

PLATE 4

TAGGING A YOUNG SEAL

Photograph by G. Hickling

SEAL CALF No. 3262 (February 10th, 1957)

Photograph by G. Hickling

PLATE 5

(*c*) Absence of placenta. We found at least four new-born calves, as well as others which were obviously less than 24 hours old, but, although we looked carefully, in no case did we find a placenta. On November 17th, however, we saw the membrane from No. 3063 (new-born) floating in the sea, noticing at the same time that the calf had an unusually long umbilical cord. On December 20th we found, lying on the top of Staple Island, a cord which was over six feet in length ; this must have been there for some days for the youngest calf was at least four days old.

OBSERVATIONS ON ADULTS.

(*a*) Reaction to human beings. Once again we noticed that the adults seem to be becoming increasingly accustomed to human beings. A few bulls always hold their ground, while quite a number of cows remain with their calves and it is amusing, if one is on the top of Staple Island, to see the fringe of heads bobbing up over the west cliff as the seals pluck up courage to return. Some of these adults, especially the cows, are extremely aggressive and on November 11th fifteen of the calves on Staple Island could not be approached because of the behaviour of their mothers. One or two on the beach practically charged us, and under these conditions they become a real menace. On the other hand, on December 6th, when I was reading a ring number in the North Cove of the Brownsman (by myself), I suddenly discovered a cow only a yard away from me and she, fortunately, was quite unconcerned.

On November 16th I sat on the east beach of the Brownsman and watched a cow and bull swimming in the near-by gut. The cow's calf was No. 576 which, as already mentioned, was born on a rocky shelf close to the gut, and she was obviously most anxious to get to it. Nevertheless, she was very timid, for although I was some considerable distance from the calf, and she would come quite close to me, at the last moment her courage would fail and she would turn back. On several occasions she collided with the bull and promptly went for him, obviously venting her temper on the nearest object. He, for his part, made no effort at retaliation.

(*b*) Mating. We again saw several matings on land ; two of them were high up on Staple Island and another was on the rocky top of the North Wamses.

(*c*) Recognition of calf by smell. I had an interesting example of the fact that a cow recognises her calf by scent, not by sight

when, on November 16th, I was surprised to notice a cow on the Brownsman with a distinctly red nose. Calves colour-dyed on this island on November 11th had been marked green, but on the 16th we had used the liquid red dye and it was obvious that the cow on coming ashore had smelt the first calf she came to—newly-marked with red—and had thereby acquired her extraordinary nasal colouration ! In fact, her own calf was a green-marked animal.

(*d*) Numbers of bulls. We were unable to make any estimate of the number of bulls, but were able to observe their fluctations. On October 27th only one had territory on Staple Island and there was none on the Brownsman. Considerable numbers were present on the breeding islands on November 11th and we counted at least twenty-one on the North Wamses, although one or two of these were young animals. By December 8th they had definitely thinned out and on December 20th their absence was most striking. We only saw four on land—one on the North Wamses, one (mating with a cow) on Staple Island, and two in the north cove of the Brownsman.

Marked Seals on the Longstone

Since the main seal report was written news has been received of the appearance on the Longstone of some of the calves marked in 1956. Despite difficulties, the head lightkeeper, Mr. G. W. Phillips, managed to read the tag numbers on eight calves and details are given below.

This is the first time that tags have been examined on the islands after the end of the breeding season, and Mr. Phillips's work is of great value. It proves that some calves of the year remain near the islands, and it suggests that these animals may be more numerous than had been thought. It is reassuring to learn that all the tags were in good condition.

No.	*Date and place marked*		*Date seen on Longstone*	*Approximate age when seen*
3234	Brownsman ...	8.12.56	16.1.57	7½ weeks
3214	,, ...	1.12.56	9.2.57	11½ ,,
3067	Staple Is.	18.11.56	10.2.57	13 ,,
560	,, ...	27.10.56	10.2.57	15 ,,
3149	South Wamses ...	8.12.56	18.2.57	15½ ,,
3236	Brownsman ...	8.12.56	19.2.57	11 ,,
3180	Staple Is.	6.12.56	28.2.57	13½ ,,
3182	,, ...	6.12.56	8.4.57	18 ,,

TABLE 1

COUNTS OF SEALS PRESENT THROUGHOUT THE YEAR

Island	1956 April 2nd	April 14th	April 29th	June 27th	July 12th	Aug. 25th	Sept. 9th	Sept. 13th	Sept. 26th
Megstone ...	15	41	36	*	20	147+	50	121	73
I. Farne	1	2	2	—	—	—	—	—	2
Wideopens ...	—	3	—	—	—	1	3	5	2
Scarcars	17	37	50+	8	20	22	59	30	27
Staple Is. ...	31	—	—	—	—	1	—	—	—
Brownsman ...	12	3	—	—	—	2	—	1	1
S. Wamses ...	48	130	—	—	—	—	3	—	—
N. Wamses ...	—	3	—	—	—	22	—	—	33
Big Harcar ...	—	1	—	—	—	2	1	21	6
Little Harcar ...	14	—	—	—	—	15	4	2	—
Gun Rock ...	—	—	—	—	—	—	2	—	11
South Goldstone ...	—	—	—	—	32	*	3	—	—
Blue Caps ...	9	6	11	—	29	45+	30	37	49
Roddam and Green	19	6	—	—	—	—	2	—	7
Sandbags ...	—	—	4	—	25	3	7	2	5
Longstone End ...	325	395	500	50+	55+	5	124+	85	176+
Northern Hares ...	—	—	—	—	—	—	—	—	—
Longstone (east side)	—	—	—	—	—	—	89	48	93
Knivestone ...	1	25	85	14	150	*	250+	12	200
Crumstone ...	165	136	200+	60	45+	100+	121+	220+	155+
Callers	—	16	30	—	4	20+	15	—	3
Total (approx.) ...	657	804	918	132	380	385	763	584	843
Wind	W.	Light NE	NE 1-2	Light	Light	0	Light NE	Light WNW	Light S
Swell	—	East (considerable)	—	North (considerable)	—	NE (considerable)	—	—	—

TABLE 1—*continued*

Island	1956 Oct. 9th	Oct. 11th	Oct. 27th	Nov. 11th	Dec. 20th	1957 Jan. 19th	Feb. 10th	Feb. 20th	Mar. 3rd
Megstone ...	81	73	22	*	*	9	—	—	30
I. Farne ...	1	1	1	*	*	1	1	—	—
Wideopens ...	1	10	—	*	*	—	—	—	—
Scarcars ...	56	32	2	*	*	—	—	—	—
Staple Is. ...	—	—	44	*	*	—	—	—	—
Brownsman ...	4+	10	11	50	*	2	5	3	303+
S. Wamses ...	—	—	32	20	*	—	12	2	—
N. Wamses ...	31	5	25	100+	*	3	—	3	—
Big Harcar ...	86	20	319+	150	413+	680+	388+	669+	450+
Little Harcar ...	33	122	190+	—	80+	120	90	—	—
Gun Rock ...	—	—	—	*	*	—	—	—	—
South Goldstone ...	—	—	—	*	*	—	—	—	—
Blue Caps ...	16	59	15	150	78	33	152	29	—
Roddam and Green	4	43	3	17	*	—	—	—	—
Sandbags ...	—	10	—	—	*	—	—	—	—
Longstone End ...	180+	169	95	*	*	—	7	—	—
Northern Hares ...	—	—	—	*	*	—	108	—	62
Longstone (east side)	24	169	—	*	*	6	—	5	—
Knivestone ...	34	9	—	*	*	5	—	—	2
Crumstone ...	106+	200+	17	*	*	320	350	188+	305+
Callers	3	—	1	*	*	6	—	—	—
Total (approx.) ...	660	932	777	487	571	1185	1113	899	1152
Wind	Variable 0-1	WSW 2-3	Light N-NW		0	Light variable	Light N	WNW 3-5	Light variable
Swell	—	—	N-NW (considerable)	S	—	NE (slight)	S (slight)	N (considerable)	S (considerable)

NOTES.—1. * Indicates no count made.

2. Nov. 11th count made from boat and therefore no accurate figures available for breeding islands.

3. Harcar figures for Jan. 19th and March 3rd may be 50 short owing to difficulty of counting.

TABLE 2

COUNTS OF CALVES ON THE VARIOUS BREEDING ISLANDS

Date	*Brownsman*	*Staple Is.*	*S. Wamses*	*N. Wamses*	*Other islands*
27.10.56	0	8	1*	2*	—
5.11.56	1*	80*	—	—	—
6.11.56	2*	—	—	—	—
10.11.56	6*	—	—	—	—
11.11.56	13+1 d.	175+4 d.	20	169+7 d.	—
13.11.56	—	—	—	—	1 Inner Farne
15.11.56	—	1 d.	—	—	—
16.11.56	22+1 d.	—	—	—	—
17.11.56	23+1 d.	259+9 d.	33*	—	—
18.11.56	25+1 d.	253+12 d.	—	—	—
1.12.56	72+3 d.	—	40*	—	—
6.12.56	65+3 d.	216+20 d.	52+4 d.	222+18 d.	1 W. Wideopens
8.12.56	66+6 d.	—	54+6 d.	216+21 d.	—
9.12.56	—	—	—	—	1 Big Harcar 1 West Wideopens 1 In'r Farne
20.12.56	49+3 d.	100+11 d.	31+6 d.	115+14 d.	—
19.1.57	5+1 d.	0*	0*	0*	0*
10.2.57	1+1 d.	—	—	—	—

NOTES.—1. d. = dead.
2. * Indicates either a figure given by fishermen or an estimate made with binoculars.

TABLE 3

WEIGHTS OF CALVES ON BROWNSMAN ON NOVEMBER 18TH, 1957

Number	*Sex*	*Approximate age in days*	*Weight in lbs.*
574	♂	4-5	58
575	♀	5	50
576	♀	3-4	45
577	♂	2-3	37
578	♂	4	51
579	♀	3	43
580	♂	2	28
775	♀	8	74
776	♀	7	42
777	♀	14	94
778	♂	9	61
780	♂	8-9	71
782	♂	11	75
783	♀	9	74
784	♀	8-9	52
785	♂	11	51
786	♂	8-9	61
787	♀	9	63
3063	♀	1	38
3105	♂	5	41
3111	♂	new born	34
3151	♀	6	39
3154	♀	6	41
3155	♂	2	23
3296	♀	4	48

TABLE 4

PARTICULARS OF SEALS MARKED ON FARNE ISLANDS — 1956

ALL ZOO. SOCIETY TAGS

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
557	Staple Is.	27.10.56	♂	First	Less than 2
(1) 558	,,	,,	♀	First	Less than 2
(2) ,,	Brownsman	20.12.56	♀	First	7
559	Staple Is.	27.10.56	♀	First	2-3
560	,,	,,	♀	First	Less than 1
561	,,	,,	♂	First	2
562	,,	,,	♂	First	2
563	,,	,,	♂	First	2
564	,,	,,	♂	First	2
565	,,	18.11.56	♀	First	7
566	,,	11.11.56	♀	—	—
567	,,	18.11.56	♂	First	14
571	,,	,,	♂	First	7
574	Brownsman	16.11.56	♂	First	2-3
575	,,	,,	♀	First	3
576	,,	,,	♀	First	Less than 2
577	,,	,,	♂	First	Less than 1
578	,,	,,	♂	First	2
579	,,	,,	♀	First	1
580	,,	,,	♂	First	New born

ALL ZOO. SOCIETY TAGS—*continued.*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
752	Staple Is.	11.11.56	♂	—	—
755	Brownsman	1.12.56	♂	First	2
761	Staple Is.	18.11.56	♀	—	21
763	,,	11.11.56	♂	—	—
765	,,	18.11.56	♂	First	12
766	,,	,,	♂	First	4
767	,,	11.11.56	♀	—	—
768	,,	,,	♀	—	—
769	,,	,,	♀	—	—
771	,,	,,	♀	—	—
772	,,	,,	♀	—	—
775	Brownsman	,,	♀	First	1
776	,,	,,	♀	First	New born
777	,,	,,	♀	First	7
778	,,	,,	♂	First	2
780	,,	,,	♂	First	Less than 2
781	,,	,,	♂	First	4-7
782	,,	,,	♂	First	4
783	,,	,,	♀	First	2
784	,,	,,	♀	First	Less than 2
785	,,	,,	♂	First	4
786	,,	,,	♂	First	Less than 2

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
787	Brownsman	11.11.56	♀	First	2
788	N. Wamses	,,	♀	First	2
789	,,	,,	♂	First	7-10
790	,,	,,	♂	First	3-4
791	,,	,,	♂	First	2-4
792	,,	,,	♀	First	2
793	,,	,,	♀	First	4-7
794	,,	,,	♀	First	7
795	,,	,,	♀	First	4
796	,,	,,	♀	First	3-4
797	,,	,,	♂	First	10-14
798	,,	,,	♂	First	7
799	Staple Is.	,,	♂	—	—
800	,,	,,	♂	—	—
802	,,	,,	♂	—	—
803	,,	,,	♂	—	—
804	,,	,,	♀	—	—
805	,,	,,	♂	—	—
806	,,	,,	♀	—	—
807	,,	,,	♀	—	—
808	,,	,,	♀	—	—
809	,,	,,	♂	—	—

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
810	Staple Is.	11.11.56	♀	—	—
811	,,	,,	♀	—	—
813	,,	,,	♀	—	—
815	,,	,,	♀	—	—
817	,,	,,	♂	—	—
818	,,	,,	♀	—	—
820	,,	,,	♀	—	—
821	,,	,,	♀	—	—
823	,,	,,	♂	—	—
825	,,	,,	♀	—	—
826	,,	,,	—	—	—
828	,,	,,	♀	First	14+
829	,,	,,	♂	—	—
830	,,	,,	♂	—	—
831	,,	,,	♀	—	—
832	,,	,,	♀	—	—
833	,,	,,	♂	—	—
834	,,	,,	♂	—	—
835	,,	,,	♂	—	—
836	,,	,,	♂	—	—
837	,,	,,	♂	—	—
838	,,	,,	♀	—	—

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
840	Staple Is.	11.11.56	♂	—	—
841	,,	,,	♂	—	—
844	,,	,,	♂	—	—
845	,,	,,	♂	—	—
846	,,	,,	♂	—	—
3002	,,	,,	♂	—	—
3005	,,	,,	♀	—	—
3006	,,	,,	♀	—	—
3011	,,	,,	♀	—	—
3012	,,	,,	♂	—	—
3013	,,	,,	♂	—	—
3015	,,	,,	♂	—	—
3016	,,	,,	♂	—	—
3017	,,	,,	♀	—	—
3018	,,	,,	♀	—	—
3020	Brownsman	1.12.56	♂	First	7
3021	Staple Is.	11.11.56	♂	—	—
3022	,,	,,	♂	—	—
3023	,,	,,	♂	—	—
3024	,,	,,	♂	—	—
3025	,,	,,	♂	—	—
3026	,,	18.11.56	♀	First	2-4

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3027	Staple Is.	18.11.56	♀	First	4
3029	,,	,,	♀	First	7-10
3030	Brownsman	1.12.56	♀	First	2+
3031	Staple Is.	18.11.56	♀	First	2
3032	,,	,,	♂	First	14
3033	Brownsman	1.12.56	♀	First	4
3034	Staple Is.	18.11.56	♀	First	7
3035	Brownsman	1.12.56	♀	First	4+
3036 (782)	,,	,,	Re-ringed animal		
3037	Staple Is.	18.11.56	♀	First	4-7
3038	,,	,,	♀	First	3
3039	Brownsman	1.12.56	♂	Moult on hind flippers	14+
3040	Staple Is.	18.11.56	♀	First	4
3041	,,	,,	♀	First	3
3042	Brownsman	1.12.56	♀	First	2
3043	Staple Is.	18.11.56	♀	First	10
3044	,,	,,	♀	Moult practically complete	21-28
3045	,,	,,	♀	First	4
3046	,,	,,	♂	First	7
3047	,,	,,	♀	First	10
3048	,,	,,	♂	Moult starting on back	17+
3049	,,	,,	♀	First	7-10

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3050	Brownsman	1.12.56	♀	First	2
3052	Staple Is.	18.11.56	♂	First	4-7
3053	,,	,,	♀	Moult starting	14+
3054	,,	,,	♀	First	7+
3055	Brownsman	1.12.56	♂	First	7-10
3056	Staple Is.	18.11.56	♀	First	7
3057	,,	,,	♂	Moult starting	14+
3058	Brownsman	1.12.56	♂	First	4-7
3059	Staple Is.	18.11.56	♀	First	10
3060	,,	,,	♂	First	12
3061	,,	,,	♂	Well moulted	—
3062	,,	,,	♂	First	3-4
3063	Brownsman	17.11.56	♀	First	New born
3064	,,	1.12.56	♂	Moult on hind flippers	10-14
3065	Staple Is.	18.11.56	♀	First	10
3067	,,	,,	♂	First	7
3068	,,	,,	♀	First	7
3069	,,	,,	♀	First	7
3070	,,	,,	♂	First	7
3071	Brownsman	1.12.56	♀	First	4
3072	Staple Is.	18.11.56	♂	First	4-7
3073	Brownsman	1.12.56	♂	First	4

ALL ZOO. SOCIETY TAGS—*continued.*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3074	Staple Is.	18.11.56	♀	First	7
3076	N. Wamses	11.11.56	♂	First	4-7
3077	,,	,,	♀	First	2
3078	Staple Is.	18.11.56	♀	First	7
3080	,,	,,	♀	First	3-4
3081	,,	,,	♀	First	4-7
3082	,,	,,	♀	First	10
3083	,,	,,	♀	First	7
3084	,,	,,	♀	First	7
3085	,,	,,	♂	Moult just starting	14
3086	Brownsman	1.12.56	♀	First	4
3087	Staple Is.	18.11.56	♀	Second	28-35
3088	N. Wamses	11.11.56	♀	First	3-4
3089	,,	,,	♂	First	3-4
3090	,,	,,	♂	First	2
3091	,,	,,	♀	First	2-3
3093	,,	,,	♀	First	7
3094	,,	,,	♂	First	4
3095	,,	,,	♀	First	7
3096	,,	,,	♂	First	4
3097	,,	,,	♂	First	4-7
3098	,,	,,	♀	First	4

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3099	N. Wamses	11.11.56	♀	First	7
3100	,,	,,	♂	First	1
3103	Staple Is.	18.11.56	♀	Moult starting	17+
3104	,,	,,	♀	First	4-7
3105 (3153)	Brownsman	,,	Re-ringed animal		
3107	Staple Is.	,,	♀	Moult on face and flippers	14+
3108	,,	,,	♀	First	Less than 2
3110	,,	,,	♂	First	2
3111	Brownsman	,,	♂	First	New born
3112	Staple Is.	,,	♀	First	10-14
3113	,,	,,	♂	First	10
3114	,,	,,	♀	First	7-10
3115	Brownsman	1.12.56	♂	First	New born
3116	Staple Is.	18.11.56	♂	Moult just starting	14+
3118	Brownsman	1.12.56	♂	Moult on flippers; patches on body	17+
3119	,,	,,	♀	Moulting	14-21
3120	Staple Is.	18.11.56	♂	First	7
3121	Brownsman	1.12.56	♀	First	4-7
3122	Staple Is.	18.11.56	♂	Moult starting	14-21
3123	Brownsman	1.12.56	♀	First	4-7
3124	Staple Is.	18.11.56	♀	First	3
3125	,,	,,	♂	First	7

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3126	Staple Is.	17.11.56	♀	First	7-10
3128	,,	,,	♀	First	4-7
3130	,,	,,	♂	First	4
3133	,,	20.12.56	♂	First	14
3134	S. Wamses	8.12.56	♂	First	14+
3135	,,	,,	♂	Second	28+
3136	,,	,,	♂	Second	28+
3137	,,	,,	♂	Second	35+
3138	,,	,,	♂	Half moulted	21
3139	,,	,,	♂	First	14
3140	Staple Is.	20.12.56	♀	First	7
3141	S. Wamses	8.12.56	♂	Second	28+
3142	,,	,,	♀	First	4
3143	,,	,,	♂	First	14
3144	,,	,,	♂	Moult on face and flippers	17-21
3145	,,	,,	♂	Half moulted	21+
3146	,,	,,	♀	First	7
3147	,,	,,	♂	First	14
3148	,,	,,	♀	First	10-14
3149	,,	,,	♀	Second	35+
3150	,,	,,	♂	Second	35+
3151	Brownsman	16.11.56	♀	First	4

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3153	Brownsman	16.11.56	♂	First	3
3154	,,	,,	♀	First	4
3155	,,	,,	♂	First	New born
3156	,,	,,	♀	First	2
3157	Staple Is.	17.11.56	♂	First	7
3158	,,	,,	♀	First	10-14
3160	,,	,,	♀	Moult starting	14+
3161	,,	,,	♂	First	2
3163	,,	,,	♀	First	7
3164	,,	,,	♀	First	7
3166	,,	,,	♀	First	10
3167	,,	6.12.56	♀	First	10
3168	,,	,,	♂	First	Less than 2
3169	,,	,,	♀	First	4
3170	,,	,,	♂	First	10
3172	,,	,,	♀	First	4
3173	,,	,,	♀	First	14+
3174	,,	,,	♂	Moulting	14-21
3178	,,	,,	♂	First	14
3180	,,	,,	♀	First	7-10
3181	,,	,,	♂	First	2
3182	,,	,,	♂	First	4

ALL ZOO. SOCIETY TAGS—*continued.*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3183	Staple Is.	6.12.56	♂	First	7
3184	,,	,,	♂	First	7
3185	,,	,,	♀	First	4
3186	S. Wamses	8.12.56	♂	Second	28+
3187	,,	,,	♂	First	14
3188	,,	,,	♂	First	14
3189	,,	,,	♀	Moult on flippers	14+
3190	,,	,,	♂	Second	28+
3191	,,	,,	♀	Second	28-35
3192	,,	,,	♀	Second	28+
3193	Staple Is.	20.12.56	♀	First	4
3194	S. Wamses	8.12.56	♂	Second	28+
3195	,,	,,	♂	First	7-10
3197	,,	,,	♀	First	10-14
3198	,,	,,	♀	First	10-14
3199	,,	,,	♀	First	10-14
3200	,,	,,	♀	Second	28+
3202	Brownsman	1.12.56	♂	First	14
3203	,,	,,	♀	First	4-7
3205	,,	,,	♀	First	2
3206	,,	,,	♀	First	—
3209	,,	,,	♀	First	2

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3210	Brownsman	1.12.56	♂	Moulting	14-21
3211	,,	,,	♀	First	4
3212	,,	,,	♂	First	4
3213	,,	,,	♂	First	7
3214	,,	,,	♀	First	10
3215	,,	,,	♂	First	7
3218	,,	,,	♀	First	10-14
3219	,,	,,	♂	First	7-10
3221	,,	,,	♂	First	2
3224	,,	,,	♀	First	14
3226	,,	8.12.56	♂	Second	28+
3227	,,	,,	♀	Second	28+
3228	,,	,,	♀	Second	35+
3229	,,	,,	♂	First	7
3230	,,	,,	♀	First	Less than 1
3231	Staple Is.	20.12.56	♀	First	14
3232	Brownsman	8.12.56	♀	First	Less than 1
3233	S. Wamses	,,	♀	Moult on face and flippers	14-21
3234	Brownsman	,,	♂	First	5-6
3235	S. Wamses	,,	♀	Moult almost complete	21-28
3236	Brownsman	,,	♂	First	2
3237	S. Wamses	,,	♂	First	10-14

ALL ZOO. SOCIETY TAGS—*continued*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3239	S. Wamses	8.12.56	♂	Second	28+
3240	,,	,,	♂	First	14
3241	,,	,,	♂	First	7
3242	,,	,,	♂	First	10-14
3245	,,	,,	♂	Second	28+
3247	,,	,,	♂	Second	28+
3248	,,	,,	♀	Second	28+
3251	Brownsman	20.12.56	♀	First	4
3252	,,	,,	♀	Moult on flippers	10-14
3256	,,	,,	♀	First	3
3257	,,	,,	♂	First	10
3258	,,	,,	♂	First	7
3262	,,	19.1.57	♀	First	14
3276	,,	1.12.56	♂	First	7
3277 (783)	,,	,,	Re-ringed animal		
3278	,,	,,	♀	First	7-9
3279	,,	,,	♀	First	10-14
3282	,,	,,	♂	First	7-10
3283	,,	,,	♀	Second	—
3284	,,	,,	♂	Second	—
3285	,,	,,	♀	Moulting	14-21
3286	,,	,,	♂	First	14

All Zoo. Society Tags—*continued.*

Number	Where marked	Date marked	Sex	State of Coat	Approximate age in days
3288	Staple Is.	18.11.56	♂	First	14
3289	,,	,,	♂	First	4
3290	Brownsman	1.12.56	♂	First	4
3292	,,	,,	♂	First	7
3294	Staple Is.	18.11.56	♂	First	2
3295	,,	,,	♂	Second	28+
3296	Brownsman	,,	♀	First	4
3297	Staple Is.	,,	♀	First	10
3298	,,	,,	♂	First	14
3299	,,	,,	♂	First	12

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THE INITIATION OF A STUDY OF MORTALITY AND MORBIDITY IN THE FARNE ISLANDS GREY SEAL NURSERIES

by

A. G. OGILVIE, M.D., F.R.C.P.

The studies which have been made over the past years, and which have been reported in the *Transactions*, have shown that the colony is increasing. From what we know of herd and colony life in the animal kingdom, it is to be anticipated that this increase will eventually flatten out, and will then be replaced by a decline in numbers. When and how this will occur in a colony of seals left to itself with the minimum of interference, is not known. No really close study of the problem has been made under natural conditions.

It has been our object to initiate such a study, and this was done last autumn. The word " initiate " must be emphasised, and indeed it can only be by a long-term project that any worth-while knowledge will be obtained.

The plan which was made included the examination and marking of all sick and injured calves during the nursery season, with the object of following their progress : and the examination, both externally and internally, of all dead calves, at the same time. Maps were prepared on which the situation of dead and sick calves could be set down, and in time this method may prove fruitful.

We were lucky with regard to access to the islands last autumn, and I personally was able to pay three visits, and yet the achievement fell short of the project. We were unable to obtain supplies of an adequate colour-marker : but the real handicap was the lack of sufficient time on the islands to carry out the work.

The examinations were necessarily hurried, and it cannot be claimed that all dead or injured calves were even seen, much less adequately studied. The experience has, however, been valuable, and methods of overcoming these difficulties are being considered.

The examination of sick calves was designed to give early information of any infection, or other disorder, which might be consequent upon overcrowding or associated environmental factors. The season was not one with a really high incidence of infection, although it was

the general impression that sepsis was more widespread than on previous years. During my three visits there were some 520 calves on the nurseries; not all the septic or sick animals were seen, but the total number cannot have been high, and in few of those observed was the condition at all serious. I examined 14 sick calves: ten had septic wounds and four severe ophthalmia.

There is nothing here to indicate an imminent epidemic of disease, although as stated, the records are incomplete.

The study of mortality was rather more rewarding, although the information gained was of a negative nature. It has been thought hitherto that deaths among seal calves are often due to injury by older seals in the crowded state of the nursery. The confirmation or refutation of this idea, and the discovery of the cause or causes of death, was the object of the work.

Of the 79 dead calves, 47 were examined externally, and of these 33 were examined internally also. In twelve cases destruction of the bodies by the gulls had proceeded too far for an adequate examination. The efficiency of nature's scavengers was well shown by the fate of those dead calves opened on November 17th on Staple Island, for on December 8th a brief visit was paid to this island and no trace of these bodies could be found.

The cause of death was determined in only two cases, both in moult, and both probably three weeks old. Of these one died of severe external septic lacerations, and the other of portal pyaemia, which is a kind of septic blood poisoning in the drainage area of the liver and bowels. The remaining 31 were all in white coat, and appeared to be aged one week or less. In none was there any evidence of injury. It may be said with some confidence that in any animal which has been crushed to death, gross damage to liver and lungs would be present and readily determined. In five cases the head was examined with equally negative results.

In one case dying in convulsions, lack of time prevented any examination. This calf may have sustained a head injury, and another calf found dead in a gully seemed to have died of a fall. These two, then, were the only ones in which there was any likelihood of death by violence, although no internal examination was made.

Injury as an important cause of death seems, therefore, to be ruled out. No facilities for any more detailed study of the bodies were available, and the possibility of death by neglect or death of the mother was considered. This was suggested by the fact that 31 were young calves in white coat, and that there were no deaths in older calves (except for the two cases already described).

The thickness of blubber was taken as an indication of nutrition, though it was realised that lack of fluid would kill more quickly than lack of food in a young animal. It was, however, the sole criterion available, and it was of interest that out of 18 cases in white coat, in which the blubber was measured, 10 had no blubber at all. This proves nothing, of course, though it is perhaps a little suggestive; and the investigation will be continued.

The actual figures for the blubber in the 21 cases in which this was measured were as follows:

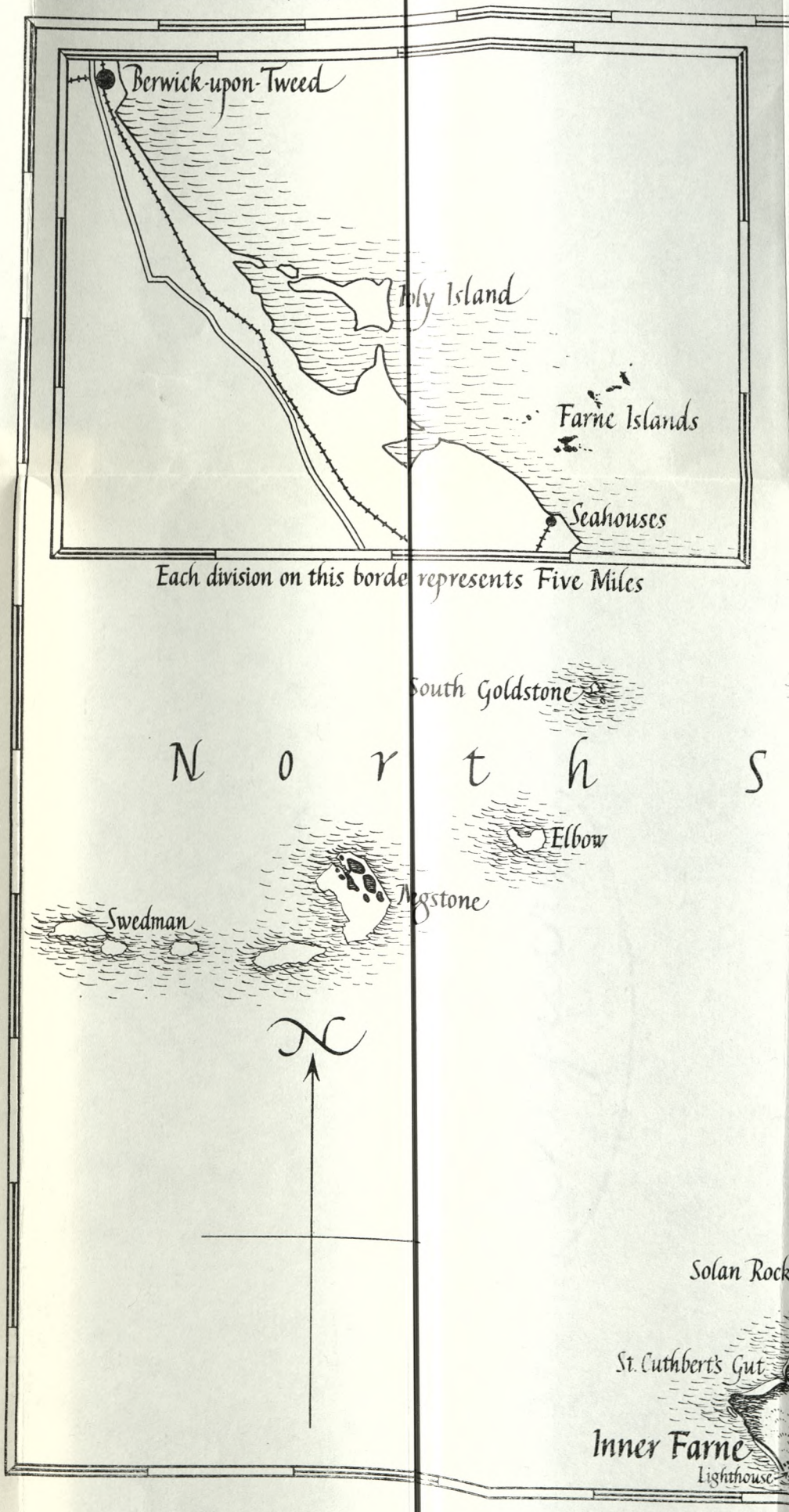
In White Coat	No blubber	...	10
	$\frac{1}{4}''$ to $\frac{1}{3}''$	...	6
	$\frac{1}{2}''$ ...	...	2
In Moult	$\frac{3}{4}''$ to $1''$	...	2
1 Adult Cow (parturient)	$1\frac{1}{2}''$		

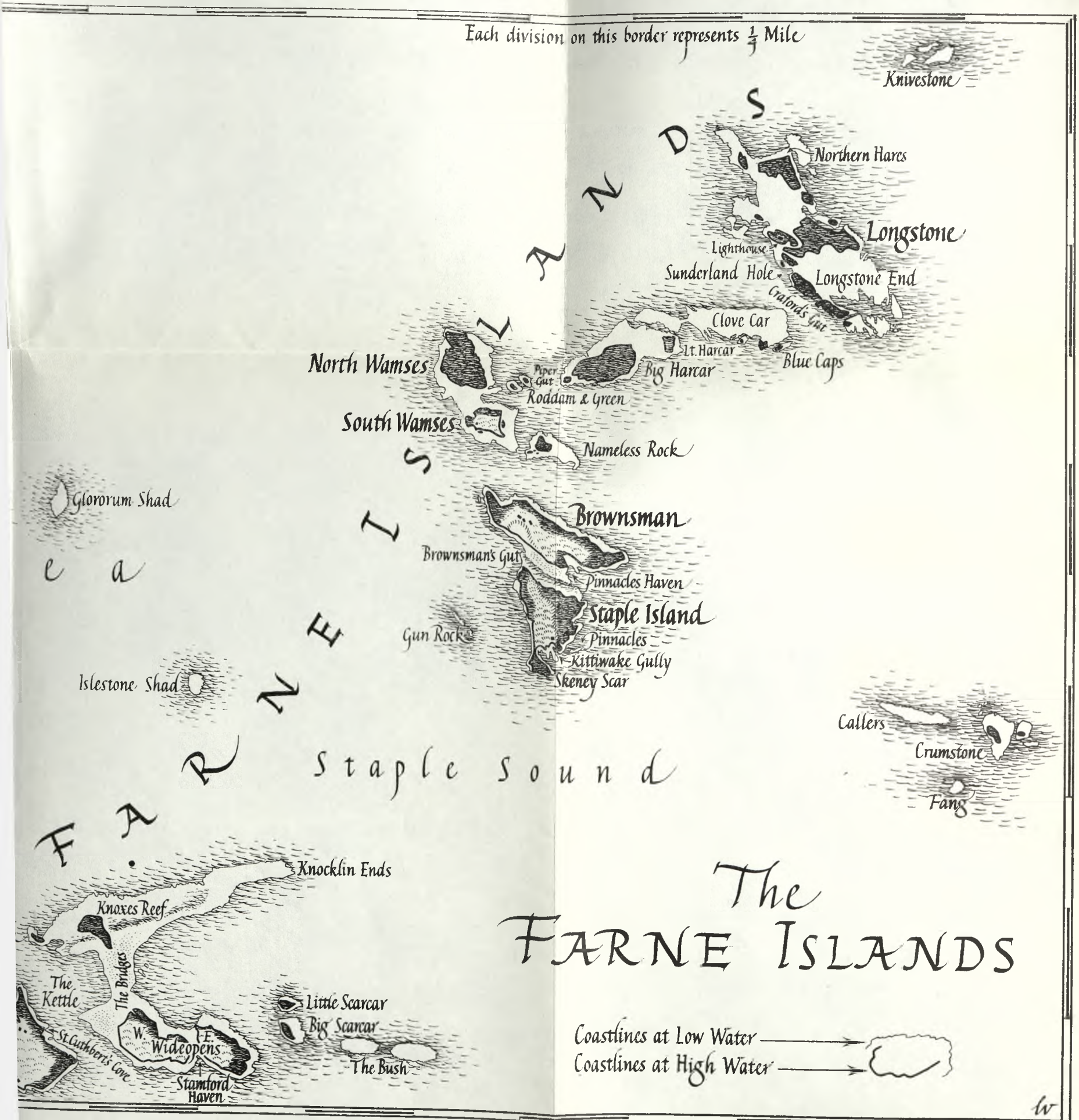
The possibility of parasitic infestation is the next obvious matter for consideration, but so far this has not been possible.

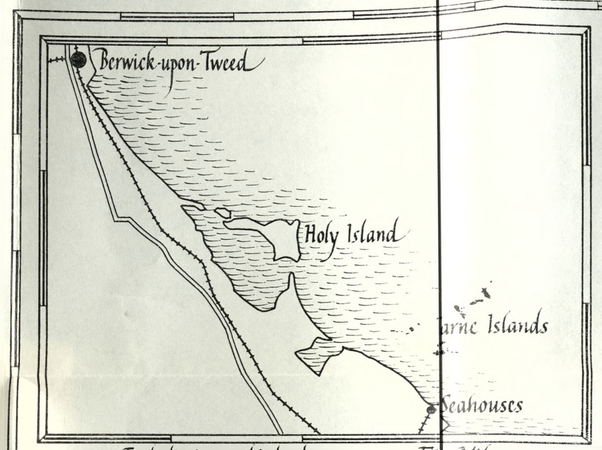
The figures so far given in the text are set down here for convenience:

Total sick calves examined ...	...	14
Total dead calves examined ...	...	45
Total dead calves examined internally		33
Total calves born on the islands visited		744

The work of last autumn may be briefly summed up as a starting point, although experience was gained which will enable us to extend the scope of the investigation next year.


Berwick-upon-Tweed
Holy Island
Farne Islands
Seahouses
Each division on this borde represents Five Miles
South Goldstone
North
Elbow
Megstone
Swedman
Solan Rock
St. Cuthbert's Gut
Inner Farne
Lighthouse





Each division on this border represents Five Miles

Each division on this border represents ¼ Mile

South Goldston

North Sea

Glororum Shad

Bow

Megstone

Swedman

Islestone Shad

Knivestone

Northern Hares

Longstone

Lighthouse

Sunderland Hole

Longstone End

Crawdad's Gut

Clove Car

Lt. Harcar

Blue Caps

Big Harcar

Piper Gut

North Wamses

Roddam & Green

South Wamses

Nameless Rock

Brownsman

Brownsman's Gut

Pinnacles Haven

Staple Island

Pinnacles

Kittiwake Gully

Skeney Scar

Gun Rock

ISLANDS

FARNE

Staple Sound

Callers

Crumstone

Fang

Knocklin Ends

Knoxes Reef

Solan Rock

The Bridges

The Kettle

St Cuthbert's Gut

St Cuthbert's Cave

Inner Farne

Lighthouse

W. Wideopens

E.

Stamford Haven

Little Scarcar

Big Scarcar

The Bush

The FARNE ISLANDS

Coastlines at Low Water

Coastlines at High Water


THE
NINE ISLANDS

THE CHILLINGHAM HERD OF WILD CATTLE

by

LESLIE BILTON, M.Sc., F.L.S., M.I.Biol.

(City Museum and Art Gallery, Birmingham)

Introduction

Chillingham Park in Northumberland, the seat of the Earls of Tankerville, contains one of the few herds of "wild" white cattle remaining in Great Britain still within its original enclosure. The Chillingham herd is of particular importance in having been pure bred, as far as is known, for some seven hundred years. Many opinions have been expressed upon its alleged wildness, its origin and relationships with the ancient cattle of Europe, namely the Urus, and the so-called Celtic Shorthorn.

Following a short history of the herd and its habits, the question of whether Chillingham cattle are truly wild or feral is discussed. The various opinions concerning their origin are stated and examined in the light of evidence available from distribution in space and time, and from body form and colour. This evidence is shown to be inadequate so that further information is obtained from a comparative study of the osteology of the skull, and on this evidence is based a fresh opinion.

My thanks are due to Professor H. Graham Cannon, Sc.D., F.R.S., who suggested this work, and under whose supervision it has been done; to the Earl of Tankerville, F.Z.S., and Professor J. B. Cragg for the loan of material and literature; to the British Museum (N.H.); the Harris Museum, Preston; and the Hancock Museum, Newcastle upon Tyne, for permission to examine specimens in their care.

Since this paper was written, originally as part of a thesis submitted to the University of Manchester, a comprehensive survey of the ancient white cattle of Britain has been published by G. K. Whitehead (Whitehead, 1953). This excellent work gives additional facts and references pertaining to the discussion in this paper.

History of the Herd

Information concerning the beginnings of the herd is lost in the mists of antiquity, so that opinions on its origin must depend on conjecture and the lack of evidence that the breed is other than ancient.

Probably the earliest record, which does not refer specifically to cattle, is in the endowment of the Vicarage of Chillingham, *c.* 1220 A.D. A part of the Castle was built about this time, and probably the Park enclosed. In 1225 A.D. Henry the Third had relaxed the very severe forest laws of William the Conqueror, whereby all wild beasts including cattle were protected, and in consequence great enclosures of land were made by the barons. A former Lord Tankerville in a letter dated June 8th, 1838, pointed out that Chillingham, the principal seat of the Greys, had the powerful Hebburnes and Percies as neighbours, hence, " in order to secure their cattle, wild and tame, they had recourse to an enclosure probably at an early period." (Hindmarsh, 1838). The first direct mention of the herd is in a steward's account book, where under the date December 5th, 1689, is entered the sum of ten shillings paid for a white calf. (Storer, 1880). The subsequent history has been traced by Gulley (*Live Stock*, 1786), Pennant, Bewick and others presently referred to, covering the period from 1770 to the present day.

Chillingham cattle are of graceful, slender build, rather small and short-legged in comparison with modern domestic breeds. They are invariably white with so fine a covering of hair that the skin may appear cream. Only the hooves, eyelashes and tips of the upturned, finely textured horns are black. Above the dark brown muzzle is a thin pencil of reddish-brown hair, occurring also on the insides and tips of the pinnae. Older bulls may develop a mane, and, as noted by Landseer, there is a tendency to black or blue spots on the neck. How they came to be white, or whether they were always so, is not known. Bewick, 1811, remarks that " about 20 years ago (i.e. *c.* 1770) there were a few at Chillingham with black ears, but the present park-keeper destroyed them, since which period there has not been one with black ears." The present Lord Tankerville, 1948, states that they are the only herd of white park cattle which invariably breed true to type, and that they have never been known to drop even a partly coloured calf.

It is generally agreed that the herd has been consistently inbred for some hundreds of years, though Storer, 1880, seems doubtful and remarks that the customs of eighteenth century husbandry together with the existence of neighbouring herds gave ample opportunity for cross breeding. He states : " The only safe conclusion at which we can arrive is this : that while there is no proof that the Chillingham cattle have been closely interbred without any admixture for several hundred years, nor on the other hand that they have not been so in-and-in bred, yet all the presumptive evidence, and that very strong,

leads to the supposition that they have at least occasionally been crossed." Storer's evidence shows that other herds of white park cattle have been maintained by crossing, but nowhere does he produce any factual evidence of crossing in the Chillingham herd. Bewick, 1811, states that " Tame cows in season are frequently turned out amongst wild cattle at Chillingham and admit the bull," but he makes no mention of offspring remaining with the herd. As will later be shown, the habits of the herd tend strongly to preclude the presence of other than pure-bred calves, and especially of any handled by man. Bidwell, *et al*. 1887, remark that from 1876 to 1878 attempts were made to improve domestic stock by crossing with wild cattle, but that in every case the cattle so employed were segregated from and had no further contact with the herd. Lord Tankerville, 1948, states that the herd remained pure bred for the past seven hundred years, with no other result as far as is known than a diminution in size.

The constitution of the herd is an absolute monarchy. The " King " bull is the one to mate with the cows, which, being subject to " rush," a disease common amongst inbred animals, are bad breeders. Cows start calving when three years old, going away from the herd and hiding their young amongst undergrowth for some seven to fourteen days, suckling them two or three times daily. As in domestic cattle, the periods of gestation and lactation are about nine months, but suckling may go on much longer, to the detriment of increasing the size of the herd. A calf may be suckled even after the birth of a second ; hence the latter starves. Winter-born calves often die because of milk failure in their dams.

Bidwell *et al*. report that the herd averaged sixty head over the period 1864 to 1887, during which 113 bull and 105 heifer calves were born. The annual death rate was ten, from such causes as senility, shooting, falling, drowning, fighting, rupture, cancer and starvation. Cattle rarely die from disease, as noted by a former keeper and by Lord Tankerville, but they are generally shot when eight or nine years old. Deaths often occur in labour, since should a cow be in difficulty, it is generally impossible to render timely aid.

For the thirty years ending 1947, the herd averaged thirty-five to forty head. The winter of 1947 was very severe, and resulted in the deaths by accident and starvation of twenty cattle, the herd being thus decreased to thirteen. Although the size of the herd has since increased to seventeen, none of the breeding cows is less than ten years old, and considerable anxiety is felt for the future. Statistics of the herd are given in Table 1.

The King bull reigns supreme for perhaps two or three years until successfully challenged by another. A contender will come out some distance from the herd to paw the ground and hoot defiance. Presently, and in similar fashion, the King will accept the challenge. Suddenly one will attack and a brief encounter ensues, after which both will start grazing, each watching warily to catch the other off-guard. Another and other short clashes occur until one seems to accept defeat and moves off into temporary exile within sight of the herd. During this period he is irritable and dangerous to approach. Cows seldom clash, but are very fierce in defence of their young. Bewick remarks that the very young calves lie still in the bracken, and on being observed, " clap their heads to the ground like a hare in form." One such calf staggered to its feet and charged him, but missed and fell, and being too weak to rise, lay hooting until the herd speedily came to its aid. In due course a calf is led by its mother to the herd, the two being met and escorted by the King. The other cows sniff the newcomer awhile, and if satisfied, will pay no further attention. A very different fate awaits the calf handled by man, or an old or sickly beast. Lord Tankerville related that one calf, accidentally trapped and later released, ran back to its mother who immediately killed it. On several occasions infirm members of the herd or those having a foreign odour about them have been gored to death.

The cattle feed during the evening, basking and sleeping by day. When moving they do so in file, the King leading, cows and calves to the centre, and the other bulls bringing up the rear. They are hard to find in summer, roaming over some six hundred acres of hilly pasture, but when approached, particularly downwind, they flee in panic, making good use of cover. On such occasions calves may be trampled to death. Their sense of smell is acute. This has been amply demonstrated on more than one occasion when an unfortunate keeper, in danger of being run down, has had perforce to take to the nearest tree. In winter the herd may come for food into the inner park, and may then be approached, particularly on horseback. Generally they are timorous but can be very fierce when pressed, and are never to be relied upon. They seek no shelter other than the lee side of the wood, and will eat nothing but grass, hay or straw, and never anything from boxes. During the blizzards of 1947, oats and cattle nuts were put out for them, but were never touched. Hay must be well spread out in the open in a different spot each day, or it will not be eaten.

The herd appears to live amicably with red deer, but will not tolerate fallow deer or sheep. Bewick gives a graphic account of their reaction to the presence of man—" At first appearance of any person

they set off at full gallop and at a distance of two or three hundred yards make a wheel round, and come boldly up again, tossing their heads in a menacing manner. On a sudden they make a full stop at a distance of forty to fifty yards, looking wildly on the object of their surprise, but on the least motion being made they all turn round and fly off with equal speed, but not to the same distance, forming a shorter circle, and returning with a bolder and more threatening aspect than before. They approach much nearer, probably within thirty yards, then they again make another stand, and again fly off. This they do several times, shortening their distance and advancing nearer until they have come within ten yards, when most people think it prudent to leave them."

Alleged Wildness of the Herd

Whether the Chillingham herd is truly wild or feral is bound up with the question of their ancestry, which is discussed later. Practically nothing is known of the habits of either alleged ancestor, the wild Urus on the one hand or the " Celtic shorthorn " on the other, so that no direct comparison is possible. Various writers (Bewick, Darwin, Johnston) regard such features as keen scent, feeding during the evening, hiding newly-born calves, making common cause in defence, and goring to death the old and infirm as essentially those of wild animals. Smith, 1873, states that these habits are shared by the freely roaming but domesticated Kyloes of the Western Highlands. Nor can a monarchal constitution be regarded as evidence of true wildness, since a tendency towards " Kingship " may sometimes be observed in domestic herds.

The dislike of and the absence of fear of man, coupled with the refusal of food handled by him, were noted by Boethius in his much copied and elaborated account of the Caledonian Wild Bull, *c.* 1527. This account appears to be the root from which later stories of fierce forest-dwelling herds of wild cattle have sprung. The wild forest bull was reputedly untameable and is said to have pined and died in captivity. This cannot be said for Chillingham cattle. Young Chillingham bulls have been tamed without difficulty and have lived amicably within domestic herds. Chillingham cattle readily interbreed with domestic cattle and, like them, calve in all seasons and run with their offspring for the same length of time. For centuries past the herd has had contact, however fleeting, with man, and this cannot have failed to have left some impression. Caton, 1881, from a study of cattle intro-

duced into Hawaii as a domestic breed, which had become feral, observes no appreciable change in colour or form, but notes that their habits have become " wild and wary, fleeing from man in alarm, though bold and aggressive when pressed." So much may be said of the semi-wild herds of the Argentine, and almost exactly these words were used by Bewick in his description of Chillingham cattle.

Feral animals tend to revert to the habits and colouration of their wild ancestors, and generally such colours are uniform, affording some protection by merging with the natural background. Darwin, 1875, remarks that the feral herds of the Texan pampas, where the cattle have natural enemies, are an almost uniform reddish-brown. On the other hand those of the Ladrone Islands were in 1741 white with black ears. This colouration would make the cattle conspicuous, so that it is interesting to note that no natural enemies of the cattle were reported from the Ladrones. Darwin further points out that herds maintained under such conditions of enclosure as in Chillingham Park do not keep as uniform a colour as do wild or feral animals, unless there is artificial selection. That this has been long and consistently practised at Chillingham has been generally agreed, so that it would now seem that the genes concerned with whiteness have become dominant in expression.

Herds of white cattle have been known in Great Britain from very early times. Reference to them is made in the Laws of Howel Dha, A.D. 940, and in the Forest Laws of King Canute 1014-1035. There is ample evidence that such herds were selected and bred in segregation because of the considerably higher value set upon them in comparison with the common herds of the times. Enclosures of land and cattle were made by the Barons all over the country during the reign of King Stephen ; hence it does not seem unreasonable to suppose that one such selected and segregated herd should have been enclosed by the Greys of Chillingham. If this were true, it would appear that the Chillingham herd, originally tame, may now be regarded as feral. This supposition would account for the habits already mentioned, as well as the disinclination to seek shelter other than the woods, and their not suffering from contagious disease. (The herd was not affected by the severe outbreak of Rinderpest in 1865). In comparison with the relatively close confinement of domestic herds, the six hundred acres available to the few Chillingham cattle provides sufficient space for reversion to a state of semi-wildness, and militates against the spread of disease.

Dawkins, 1898, considers that the term " wild " is to be applied only in relation to the absence of such close confinement as makes

domestic cattle so tame, and that the " wildness " of a breed stands in direct relation to the conditions of its environment at the time of its enclosure. Thus the traits of Chillingham cattle are no more than a consequence of their mode of life, with which view Alston, 1880, agrees.

Opinions on the Origin of the Chillingham Herd

Many contradictory opinions have been expressed concerning the origin of the Chillingham cattle. These fall under three headings :—

1. Direct descent from the wild Urus.
2. Descent from Urus through imported domestic breeds.
3. Derivation from the domesticated Celtic Shorthorn.

Hamilton-Smith, 1827, from consideration of habits, body-form and horn-shape believes they are directly descended from the Urus. Dawkins, 1866, writes, " The half-wild cattle of Chillingham Park . . . . are probably the last remaining representatives of the gigantic Urus . . . . . modified in every respect by their small range and contact with man." This view is later (1898) modified.

From osteological comparison, Rutimeyer, 1867, forms the opinion, shared by Darwin, 1875, that Chillingham cattle are less altered from the true Urus type than any other breed. Harting, 1880, thinks the weight of opinion favours descent, directly or indirectly, from the Urus.

Owen, 1846, 1858, believes that Park cattle are derived from a domestic breed imported by the Roman invaders. Dawkins, 1867, criticises this view, pointing out that the Romano-British herds must have been composed of Celtic Shorthorns, large herds of which were established in the British Isles at this time, and which is the only ox ever associated with the sites of Roman habitation. Amongst the remains of human habitation in the post-Roman period, the " Celtic Shorthorn " is replaced by a somewhat larger ox. A study of these leads Dawkins, 1872, 1898, to the view that white park cattle never existed in Great Britain in either a wild or a feral state, but that they were introduced as a domesticated breed by the Anglo-Saxon or Danish invaders. Hughes, 1894, 1896, agrees in part with both Owen and Dawkins. He believes that park cattle were never derived from any wild breed, but from the Celtic Shorthorn modified by crossing first with imported Roman cattle and later with longhorn stock introduced by the Anglo-Saxons. Evidence drawn from a contemporary study of Roman art and coinage leads him to the conclusion that Chillingham

cattle are descendants of a cross between the native shorthorn and an imported larger breed, the common draught ox of Italy. This ox he considers as exactly the one required to produce the observed modifications in colour, size and shape of horns. Wallace, 1898, shares this opinion.

Smith, J. A., 1853, 1873, considers white park cattle to be descended purely from the Celtic Shorthorn. Lydekker, 1898, thinks them derived from a small dark breed, probably a domesticated form of degenerate Urus, not necessarily imported. Duerst, 1900, and Ritchie, 1920, express opinions involving a dual origin for domestic and park cattle from both Urus and Shorthorn. Johnston, 1903, thinks park cattle may be descended partly from a degenerate Urus and partly from feral cattle of mixed breeds. Forrest, 1908, suggests that some wild herds are derived from the Urus, but that Chillingham cattle are descended from the Celtic Shorthorn.

This considerable diversity of opinion makes necessary an examination of the evidence derived from the distribution in space and time, and from the body-form and colour of the alleged ancestors, together with an enquiry into any possible relationships amongst them.

Distribution of Ancestors in Space and Time

The Urus, *Bos taurus primigenius* (Boj.) probably originated in Asia and may have been related to certain Pliocene Bovidae discovered in the Siwalik Hills (Pilgrim, 1947) whence it spread eastwards to China (Boule *et al.* 1928) and westwards to Europe and North Africa (Romer, 1928), appearing in Northern Europe and Great Britain during the Pleistocene (Stehlin, 1933). Its remains in peat bogs on the continent show that it roamed widely in large herds during the most of the Pleistocene, Prehistoric and early Historic periods. Its survival in Lithuanian forests during the fifteenth century is noted by Baron von Herberstain writing in 1549. Werner, 1892, states that the last specimen was killed in 1627. By the end of the Ice Age it had spread from Northern Scandinavia to Sicily and from the Siberian Steppes to the West of Scotland (Ritchie, 1920). Subsequently it spread southwards over Great Britain; thus Matheson, 1932, notes its existence in Prehistoric Wales. Remains such as those described by Carter, 1874, Rutimeyer, 1866, Ritchie, 1920, and others show clearly that it was hunted by Neolithic man, though there is no evidence of its domestication. It would appear that in the restricted area of Great Britain, the Urus did not survive for so long as on the continent. In Scotland it survived until the Bronze Age, but was gradually driven

north by man, and the herds much reduced in size. Ritchie, 1920, thinks that in the mountain fastnesses, it may have lingered on until perhaps the tenth century, but that in lowland areas it was generally extinct before the advent of the Romans. The absence of Urus bones from the sites of Romano-British habitation is accepted as evidence of extinction, or at least of extreme scarcity, by most writers (Smith, 1873, Hughes, 1896, Matheson, 1932, Reynolds, 1939, and others).

The origin of the long-fronted ox, the so-called Celtic Shorthorn, *Bos taurus longifrons* (Owen) is something of a mystery. The consensus of opinion is that it did not occur in the Pleistocene (Reynolds, 1939) but that it appeared in the early Neolithic period before the extinction of Urus. There is nowhere greater evidence of age than this. (Dawkins, 1867.) Its remains are associated in abundance with those of human habitation throughout the Bronze and Iron Ages and Roman period. (Rutimeyer, 1866, Smith, 1873, Harting, 1880.) These suggest that it formed the domestic herds of the times and was a staple article of food. It is the only ox ever found in great quantity amongst the remains of Romano-British camp-sites. In the unsettled post-Roman period in Great Britain, when husbandry would be very difficult, it would seem that the vast herds of Celtic shorthorn decreased and finally disappeared except in the mountainous areas of Scotland and Wales. In these places they may have become the progenitors of the modern small dark breeds, but elsewhere their remains were no longer associated with man. After the Anglo-Saxon invasions the remains of a much larger breed of cattle came to be associated with sites of human dwelling, to the exclusion of all others. Dawkins, 1898, suggests that this larger breed, marked by white colour and red ears, was descended from the Urus and spread over Europe in Prehistoric and Historic times, finally to be introduced into Great Britain by the Anglo-Saxons. Historical evidence would appear to support this suggestion. Nilsson, 1849, states that a race of cattle smaller than the Urus, with smaller horns and sometimes polled, was associated with Neolithic man in Germany and Scandinavia, and Rutimeyer, 1866, shows that such a race was domesticated by the inhabitants of the Swiss Lake Dwellings.

From the evidence available it would therefore appear that in the temperate zones of North-West Europe and Great Britain, the Urus, first appearing in the Pleistocene, was co-existent with the Celtic Shorthorn during Neolithic times, after which it became generally extinct in Great Britain, leaving only the latter breed at

the time of the Roman invasions. The Romans may have imported some domesticated Italian cattle, as Hughes, 1894, 1896, suggests, but presumably not on any large scale, or the fact would doubtless have been remarked by Caesar and others, who, however, make no mention of it. It seems unlikely that small-scale importations would have exerted any profound influence on the mass of Shorthorn stock. During the post-Roman period the herds of Celtic Shorthorn in turn became generally extinct in Great Britain and were replaced by a much larger breed. This breed, it is considered, would be derived in part from the ancient Shorthorn stock, and in part from longhorns introduced by the Anglo-Saxon and the later Danish invaders from the German lowlands. These longhorns may well have descended from the Urus.

Ritchie, 1920, remarks on the absence of white park cattle remains from the Scottish bone deposits, and that, however numerous they may once have been according to local legend, contemporary accounts show that they were scarce in the sixteenth century, and must since have been increased by protected breeding. Forrest, 1908, states that there is no evidence of their existence in pre-Roman times, nor in the records of the many excavated sites of pre-Saxon occupation can the present writer find any reference to them. Indeed, the earliest reference, as has been remarked earlier, is in the tenth century. The available evidence thus suggests that the Chillingham herd may well have originated at about the time of the Anglo-Saxon invasions.

Body-form and Colour

There is little reliable evidence regarding the body-form and colour of the Urus. Nilsson, 1849, from a study of the skeleton, considers that it resembled the tame ox in shape and proportions, though it was much bulkier. He estimates the length from muzzle to the root of tail at twelve feet, and the height over the mane at six feet. Reynolds, 1939, and others, point out the considerable range of size shown by Urus remains from the Pleistocene, and that this form was larger than that of the Neolithic age. Ritchie, 1920, appeals to an oil painting of mediaeval origin discovered by Hamilton-Smith in a shop in Augsburg, and which is considered a genuine representation by both. (This painting is shown in Griffith's 1827 edition of Cuvier's *Animal Kingdom*, and is copied in Plate 6.) Hamilton-Smith describes the bull as " without mane but rather rugged, with large head, thick neck, and entirely sooty black, the chin alone white, and the horns turning forward and then upward . . . . pale in colour and with black tips." A horn of this description was found associated with a Urus skull in

a Pomeranian peat bog. Ritchie thinks that the primitive colouring was a very dark reddish brown, and that the Urus would have had smooth, short hair except for a long and curled patch on the forehead.

Equally scarce is information about the Celtic Shorthorn. Amongst others Owen, 1832, and Nilsson, 1849, refer to its small size and dark colour. Nilsson estimates the length from muzzle to root of tail at six feet eight inches, which is smaller than the average domestic ox. Ritchie considers that the skeleton indicates a light agile beast with deer-like legs, slender in proportion to their length when compared with modern oxen. Smith, 1873, discovered in an Irish bog a portion of dark reddish-brown skin attached to the skull of a Celtic Shorthorn, and Ritchie confirms that such hairs often occur in " bog butter," presumably made from Celtic Shorthorn milk, found in the peat bogs of Ireland and Scotland. Wilson, 1909, remarks on the ancient black cattle that at one time inhabited the whole of Great Britain.

Smith, 1873, considers the reddish-brown ears of otherwise white park cattle to be a reminder of their pristine colouration. In herds other than the Chillingham, the tendency towards dropping coloured calves, generally reddish-brown, is remarked by Storer, 1880, and many others. In the case of the Chillingham herd there is ample evidence that the white colour has been long and consistently selected by man. There is no evidence that the Chillingham cattle were originally white, and as coloured domestic herds frequently produce white calves with reddish-brown ears, so it is suggested that somewhere about the time of the early Anglo-Saxons, the Chillingham herd originated in the white calves dropped by a coloured domestic herd. Dawkins, 1898, thinks the Celtic Shorthorn differed in size, colour and proportions from park cattle, whilst Johnston, 1903, considers the latter differ from Urus in their smaller size, proportionately shorter limbs and smaller horns in the male. Both domestic cattle and the Chillingham breed are intermediate in size between the Urus and Shorthorns, the Chillingham cattle being smaller and somewhat more slender in build than comparable domestic oxen. By reference to old skulls found in the Park, Lord Tankerville, 1948, shows that over the centuries the Chillingham cattle have slightly decreased in size, which may well be a consequence of prolonged in-breeding.

Inter-relationships of the Urus, Shorthorn and Domestic Ox

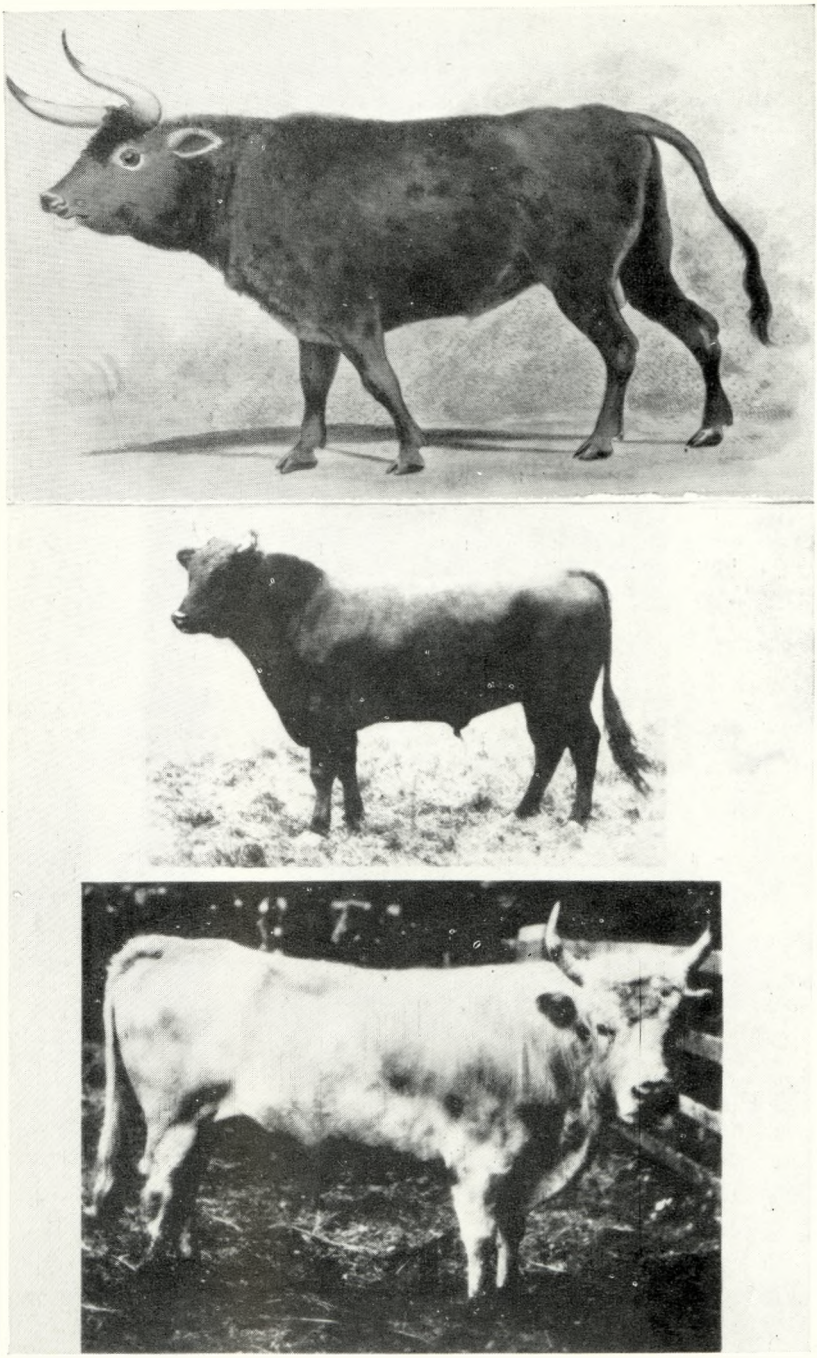
Dawkins, 1866, agrees with Cuvier that the features of the Urus are the same as those of the Domestic Ox. " A careful comparison of

the skulls of Bos urus in Britain with those of the various varieties of B. taurus . . . . . compels me to believe that there is no difference of specific value between them." He further points out that the differences noted by Rutimeyer and Nilsson are individual differences due to age and sex. Similarly Lydekker, 1898, considers the Celtic Shorthorn (*B. longifrons*) to be a variety of *B. taurus*.

Johnston, 1903, suggests that in some restricted mountainous areas the wild Urus may have degenerated into a form much like the Celtic Shorthorn, and was then domesticated. Support for this view is given by Duerst, 1909. From a study of cattle remains at Anau in Turkestan, he shows that the huge wild ox of the Pleistocene was superseded about 8000 B.C. by a domesticated but still large-bodied and long-horned ox much resembling the Neolithic Urus, and that this in later strata became much reduced in size to form, about 6000 B.C., a small short-horned race of the *longifrons* type. Duerst further remarks that the Babylonian long-horned breeds were similarly replaced in Assyrian times by a short-horned race, and that at the present time their descendants tend to be polled. He argues that if *Bos nomadicus* (= the Urus, *B. primigenius*) were the only wild ox of the Pleistocene, then the short-horned breed must be its direct descendant, *via* an ox of intermediate size (= the Neolithic Urus), and that the evidence shows both the intermediate form and the short-horn were domesticated and crossed by Neolithic man. Further support is given by Rutimeyer, 1862, 1866, who found in the remains of the Swiss Lake Dwellings evidence of the domestication by Neolithic man which existed in the Pleistocene. It would seem therefore that a repetition of the Anau story occurred also in Europe.

If this evidence be valid it then follows that all European domestic cattle, including the Chillingham herd, must be derived from the wild Urus, but indirectly through either or both of the diminished forms. A modern view of the inter-relationships of the Urus, Celtic Shorthorn and domestic oxen is expressed by Reynolds, 1939. " No valid specific distinction can be drawn between *Bos taurus*, *B. primigenius* and *B. longifrons*. If this be the case, the Urus may be termed *Bos taurus* sub-species *primigenius*, and the Celtic Shorthorn *B. taurus* sub-species *longifrons*." The evidence so far adduced is conflicting and inadequate for the formation of any opinion on the origin and relationships of the Chillingham herd. Additional information is needed, and is obtained from a comparative study of a series of skulls representing Chillingham cattle, and, presumably, *Bos primigenius* and *B. longifrons*.

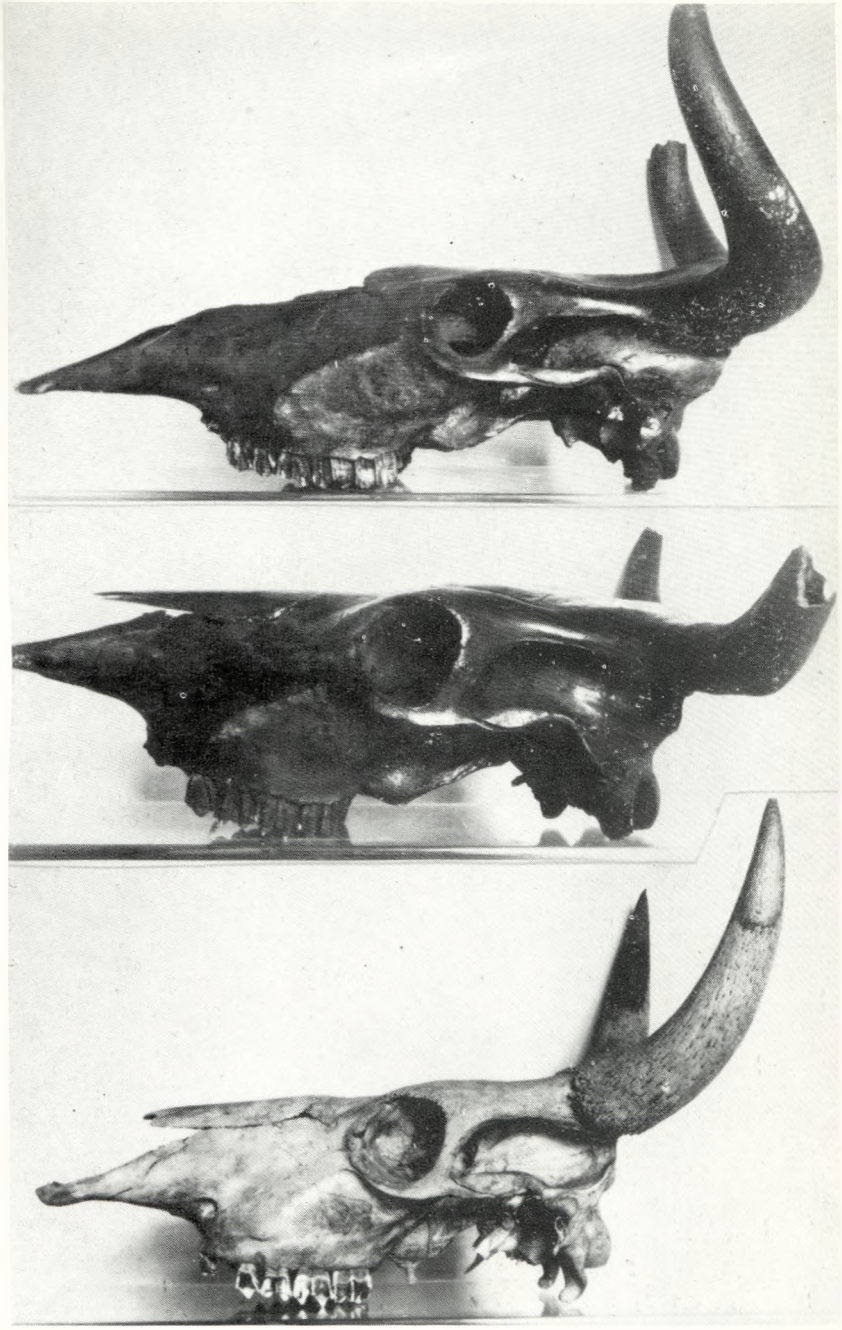
PLATE 6



Top—THE AUGSBERG URUS *Centre*—SHORTHORN BULL

Bottom—CHILLINGHAM BULL

PLATE 7

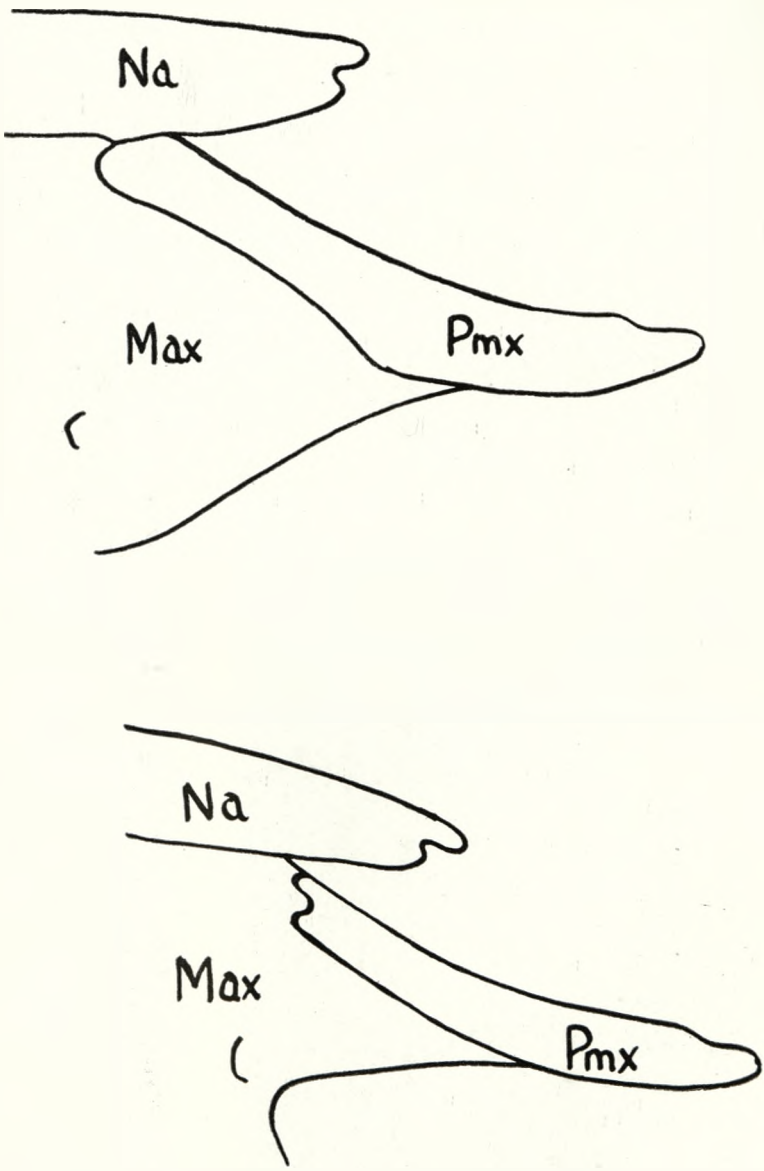


Top—EUROPEAN URUS *Centre*—MEDIAEVAL SHORTHORN

Bottom—CHILLINGHAM BULL

(*All in the Manchester Museum*)

FIG. 2



RELATIONS OF THE NASAL AND PREMAXILLA

The upper diagram shows the condition of skulls of large size where the premaxilla, with rounded edge, abuts the nasal. The lower shows the forked premaxilla not reaching the nasal in skulls of smaller size.

Comparative Craniometry

The problem can be reduced to two questions: (1) Can the skulls presumed to be those of the Urus and "Celtic Shorthorn" be distinguished, and (2) what relationship do Chillingham skulls bear to them? The answers involve comparison of both quantitative and qualitative factors, and differences among these may be due to age, sex, race, habits of life, and size, or they may be purely individual. Information on the first four factors is scanty: for example, wear of teeth is a good guide to relative age, but teeth are lacking in most of the skulls available for study. Lydekker, 1885, remarks that the size of horns differs but little between the sexes in the genus *Bos*; hence this factor is of doubtful use in sex determination. Some 56 skulls, many of them fragmentary, were available for study, and this amount of material is not enough to correlate the several factors with geological age; so only the effects of size and individual variation can profitably be considered, and the conclusions reached can at best be tentative.

Irrespective of their labelling, the skulls representing the Urus and "Celtic Shorthorn" are divided into two size-groups. This is done in such a way as to minimise any weighting due to individual variation. Measurements are taken by a standard technique based on that used by Osborn, 1912. The bones and cavities chosen are those from which the most information about related organs can be extracted, and the significance of their measurements is examined in relation to the relative growth of the parts of the skull, using a method modified from Huxley, 1932. By these means each skull can be given a size-index and placed accurately into one of two groups of larger or smaller skulls. It is found that each group contains almost the same number of skulls, and that the ranges of measurements are comparable. It is interesting to note that, although nearly all the "Urus" skulls (as identified by their labels) fall into the large-size group, two become included with the "shorthorns" in the small-size groups.

Comparison of Qualitative Characters

Attempts have previously been made to distinguish by their qualitative characters the skulls of *Bos taurus* from *B. primigenius* (Bojanus, 1826, Nilsson, 1849, Rutimeyer, 1866) and from *B. longifrons* (Owen, 1846, Nilsson, 1849). Cuvier, 1808, and Dawkins, 1866, can find no points of specific difference between the two first-named. Rutimeyer claims that specific differences do exist in the atlas and axis, but this is not upheld by Nehring, 1892. Dawkins considers the differences remarked by Nilsson and Rutimeyer to be purely individual.

He further (1867) can assign no points of specific value to *B. longifrons* and shows that those features described by Owen in his type specimen must vanish on comparison with the smaller breeds of domestic oxen.

Many of the characters listed by Nilsson and others as distinctive of *Bos primigenius* are shared by all the skulls now under examination, and so are of no diagnostic value. These include the long flat forehead with an inter-orbital concavity ; the shape of the frontals and their extent beyond the orbits ; the shape and extent of the nasals (supposed by Owen to extend furthest towards the orbit in *B. longifrons*) ; the circular non-tubular orbits with complete post-orbital bar ; the conspicuous occipital crest in line with which arise the horn-cores on short pedicles ; the parietals which form no part of the cranial roof and appear only as an indistinct wedge in the centre of the occipital crest ; the shapes of the foramen magnum and occipital condyles ; and the well-developed para-occipital processes.

Other characters not shared by all the skulls are now considered. Within the large-skull group four specimens show a median ridge along the post-orbital part of the frontal suture, and fifteen do not. Within the small-skull group the ridge is present in eighteen specimens and absent in three. The prominence of the ridge varies greatly among individuals. Its presence is associated with skulls of small general size, but the correlation is not very close.

Smith, 1873, states that the orbits are relatively larger in *Bos longifrons* than in *B. primigenius*. This is borne out by measurement but the fact is of no specific importance since absolute eye-size is little larger in large skulls than in small ones. Bojanus, 1826, in his short description of the type specimen of *B. primigenius* remarks the prominence of the orbits. Within the large-skull group fourteen of nineteen skulls have prominent orbits, but within the small-skull group the considerable variety among individuals prevents any correlation between prominence of the orbits and skull-size.

Nilsson, 1849, states that in *B. primigenius* the lacrimals are widest at their lower parts whereas in *B. longifrons* they are widest centrally. This cannot be substantiated as the lacrimals have very much the same shape in all the skulls examined. He further remarks that the premaxilla reaches the nasals in *B. primigenius*. In eight out of the thirteen large skulls the premaxilla is wedged between the nasal and maxilla to varying degrees, and is rounded along its upper edge. The same condition occurs in three skulls of the small-size group but in eleven others the premaxilla does not reach the nasals, and in these cases it is always forked on the upper edge. (Fig. 2). Relative to the

biorbital width the growth in length of the premaxilla is positively heterogonic (k = 1.27), so that a relation may exist between general skull-size and the degree of wedging of the premaxilla, but this cannot be established owing to the fragmentary nature and paucity of the skulls available. Ewart, 1911, by reference to a series of skulls of wild and domestic oxen, shows that the relations of the nasal and premaxilla are very variable and concludes that they are of no diagnostic value.

The shape of the occipital crest is also very variable and bears no relation to the size of either skull or horn-cores. Independently of grouping by size or by provenance the cristal outline as seen from behind may be flat, smoothly convex between the bases of the horn-cores, convex with a median concavity, or arcuate to a greater or less degree. No variety occurs more frequently than any other.

Although the precise limits of the muscle-scar on the occipital surface are difficult to determine in many of the fossil skulls, it seems that the extent of the scar is proportionately greater in those skulls bearing heavy horn-cores, all of which occur in the large-size group. This is to be expected since the heavier the head, the greater the bulk of muscle required for its support and movement. The shield-shaped projection for the attachment of the ligamentum nuchae is stated by Ewart to be in contact with the upper edge of the muscle scar in *B. primigenius* but to be much lower down the occipital surface in *B. longifrons*. This cannot be substantiated. The scar occupies the same relative position in all the skulls examined.

The distance from the upper edge of the scar to the summit of the occipital crest is proportionately greater among large skulls and appears related to the degree of backward extension of the frontals. This latter affects the size of the concavity on the occipital surface immediately below the crest, and also the angle made by the occipital surface with the frontal plane. These features may be associated with the size of base area required for the origin of the horn-cores, a point examined later. With increasing size of skull there is a marked tendency towards greater acuity of the occipito-frontal angle, associated with a greater backward projection of the occipital crest. There is, however, a noticeable variation among individuals. The existence of any correlation between general size of the skull, the length of the outer curvature of the horn-cores, their basal circumference, or the size of the angle between frontal and occipital planes is next investigated. It is found that in skulls up to 240 mm. in size, there is a rapid narrowing of the angle to a value around 53°, and that the angle decreases further, but at a slower rate, with increasing skull-size.

The basal circumference of the horn-cores increases steadily with the increasing size of the skull, but the relation of skull-size to length of horn-core is not so obvious. Among skulls up to 240 mm. in size there is a steady increase in horn-core length. Among skulls in size greater than 296 mm. the length of horn-core remains fairly constant around 730 $\pm$ 50 mm. This result may possibly be due to the effect of a genetic change which may have occurred at some point in the history of reduction in skull-size.

The relations between the occipito-frontal angle and the dimensions of the horn-cores are more clearly seen. In both cases there is an inverse correlation, which is closer for the basal circumference than for the length of the outer curvature. These results are of use in distinguishing two populations: a population represented by skulls of large size (upwards of 300 mm.) having large horn-cores of size greater than 680 mm. in length along the outer curvature, and 296 mm. basal circumference, associated with an occipito-frontal angle ranging from 52—90°.

The shape of the temporal fossa is similar in all the skulls examined, being obliquely pointed anteriorly and widely open to the occiput posteriorly. Ewart, 1911, remarks that in very heavily-horned skulls of *B. primigenius* there is a bony bar extending downwards from beneath the base of the horn-core cutting off the fossa from the occiput. This is a feature of the genus *Bison* rather than of *Bos*, and is not observed in any skull examined. No relation between the shape and depth of the infra-cornual notches and either skull or horn-core size is apparent. All degrees of variation from deep and narrow to shallow and wide notches are seen, no one variety being more frequent than any other. The shape of the infra-cornual notches seems to be a purely individual character.

In all the skulls the horn-cores arise from the extremes of the occiptal crests on short pedicles. All have the same coarse pitted appearance with some degree of longitudinal grooving. The cores are mirror-images and bear bony ridges around the base, these being most marked in very large cores. As remarked by several authors, the size and curvature of the horn-cores is widely variable, even among skulls of the same general size. Bojanus, 1826, and others describe the cores of *B. primigenius* as having a double curvature, outward and forward from the base, and then upward and inward distally. Owen, 1846, and others describe the cores of *B. longifrons* with a single outward and forward curvature, generally above or in the plane of the forehead. It is suggested that both forms of curvature are essentially the same and are based on a logarithmic spiral. D'Arcy Thompson, 1942,

points out that the growth of the bovine horn is from a basal annular zone within which cellular proliferation generates a logarithmic spiral. If the growth rates are equal at all points arong the ring, the horns will grow straight out, but if the rate is greater at any point, a spiral will result. If the regions of the maximum and minimum rates are at opposite ends of a diameter, the spiral will be plane, but if they are not, the spiral will be a helix. This latter is the figure typically developed within the genus *Bos*. Generally, the greater the basal circumference of the horn-core, the greater will be the curvature of the core as a whole.

The large-skull group contains specimens whose horn-cores not only have the greatest basal circumference, but are the most curved, and these clearly show the development of a logarithmic spiral. All but one of these skulls bears horn-cores conforming to the helical pattern described by Bojanus. The exception has the cores growing straight out with only the tips curving upward and inward. Variation in the direction of curvature is most marked among the small-sized skulls. The cores tend to arise at a wide range of angles above the frontal and occipital planes, and at first sight appear to curve in all manner of directions. On closer inspection the longer cores are seen to have an incipient double-curvature, which becomes more apparent when they are referred to a common direction of origin. It seems therefore that such cores are developed on basically the same plan as those of larger skulls, but that the angle of origin is individually and widely variable.

Curvature and direction of the horn-cores, hitherto much used in the distinction of *B. primigenius*, are of limited and doubtful diagnostic value. A double curvature outward and forward from the base and then inward and upward distally may generally be associated with the skulls of large size, shown later to be most probably those of *B. taurus* var. *primigenius* (Boj.). Any other condition is associated with skulls of smaller size, and these may represent any of the races, wild or domestic, of *B. taurus*. A wide range of size and curvature of the horns is to be seen in almost any domestic herd of cattle.

The distance between the tips of the cores, so often given by authors, depends solely on the mathematical properties of a helix, and can have no particular taxonomic significance.

Review of the qualitative characters proposed to differentiate *Bos primigenius* from *Bos longifrons* shows that the majority are either shared by all the skulls examined, or exhibit a considerable degree of variation among individuals. Such features are of no diag-

nostic value for the distinction of categories below the genus. Some characters seem related to skull-size, and may have confirmatory value for diagnoses made on other evidence. These include the prominence of the orbits, the greater extent of the muscle-scar on the occipital surface, and possibly the degree of wedging of the premaxilla between nasal and frontal, all of which are associated with skulls of a large size. Characters that may be of diagnostic value are the occurrence of the median frontal suture between orbits and occipital crest, present typically in small skulls but absent in large, and the relations of the horn-cores and occipital-crest region. Horn-cores showing a logarithmic spiral curvature, of length greater than 680 mm. and basal circumference greater than 296 mm., associated with an occipito-frontal angle within the range 40-52° and with a marked backwards extension of the frontal, are indicative of a large-skulled population of cattle. Horn-cores of smaller size, not clearly helical in pattern and associated with an occipito-frontal angle within this range 52-90° and no obvious backward extension of the frontal, are indicative of smaller-skulled populations of cattle such as are found in domestic herds from Neolithic to modern times. By these means the two populations may provisionally be distinguished.

Comparison of Skull Proportions

It is now necessary to discover whether or not the two groups of skulls are in a serial order regarding their proportions, and, for each bone or cavity measured, a ratio to the size-index of the skull is determined. From these results the real ranges of the proportions are calculated, using the methods of Simpson and Roe, 1939, for small samples. Comparison of these real ranges again indicates two distinct populations of oxen. That represented by skulls of the larger size group appears to be fairly homogeneous, and, in view of the evidence adduced from the provenance and qualitative characters of the skulls, can reasonably be distinguished as a population of *Bos taurus* var. *primigenius* (Boj.). Skulls of the smaller size-group represent a much less homogeneous population within which no separate sub-species can be distinguished. This population, ranging in age from Neolithic to modern times, seems to be one of the domestic ox, *Bos taurus taurus* (L.).

Relationships of the Chillingham Skulls

The qualitative characters of the Chillingham skulls indicate a much closer relationship with skulls of the small-size group than with

the others. Features shared by all the skulls so far studied are shared also by the Chillingham skulls, but in the other features, Chillingham skulls clearly resemble those of the small-size group. Thus a median ridge occurs along the post-orbital part of the frontal suture and the orbits are not markedly prominent. The premaxilla never reaches the nasal, and has a forked upper edge. The occipital crest seen laterally approximates to that of a " shorthorn," and from behind is arcuate with a small median depression. The muscle-scar has the same extent as in skulls of similar size.

The size-index of the Chillingham skull is very low, and with this is associated a foreshortened appearance peculiar to themselves. Relations of the occipito-frontal angle with the sizes of skull and horn-cores place the Chillingham specimens within the limits associated with the population of domestic oxen. Four specimens have deep and narrow infracornual notches, but a fifth has them shallow and wide. All cores have the same pitted appearance with a measure of longitudinal grooving, and arise on short pedicles from the extremes of the occipital crests. They all show the development of a logarithmic spiral.

Calculation of the coefficients of relative growth for each group of skulls suggests that all belong to a single species, and this is supported by the fact that the coefficients for skulls of other species of the genus *Bos*, and for *Bison* are markedly different. These calculations, corrected as far as possible for errors due to smallness of the samples, are based on Huxley, 1932, and Simpson and Roe, 1939. A diagram showing the distribution of the rates of relative growth in the skull (Butler, 1941) gives the following picture : as the skull increases in size there is a backward rotation of the foramen magnum and a heightening and broadening of the occiput. This is associated with lengthening of the post-orbital region, due primarily to the backward extension of the frontal. This picture is valid for all the skulls examined.

Investigation of the relative growth of the horn-cores as represented by the length of their outer curvature suggests that two coefficients may be involved. If this is so, it may mean that, as well as the shortening consequent upon decrease in skull size, there is among skulls of small size a further shortening, and this may possibly be the effect of some genetic change which occurred during the history of the decrease in the size of cattle as a whole. Against this is the fact that Chillingham cattle have larger horns than would be expected for skulls of their size.

Conclusions

Owing to the relatively small numbers of skulls available for study, conclusions drawn from the evidence adduced cannot be other than tentative. They seem to show the presence of two populations of oxen. One is a fairly homogeneous race with large skulls identified as the European Urus, *Bos taurus primigenius* (Boj.). The other is a heterogeneous race with smaller skulls within which no separate sub-species can be distinguished, and this is identified with the common domestic ox, *Bos taurus taurus* (L.). In consequence the distinction of the " Celtic Shorthorn " as *Bos longifrons* Owen is invalid.

Comparative craniometry shows that the Chillingham oxen are more closely related to the common ox than to *B. primigenius*, and it is suggested that the herd probably had its origin in a domestic stock, perhaps imported by the Anglo-Saxon or later Danish invaders. This stock may well have been derived from the European Urus by reduction in size, and may have contained white-skinned individuals which were deliberately segregated and consistently inbred. One such selected herd was probably enclosed at Chillingham about 1220 A.D., by which time it had become, and has since remained feral.

Summary

1. Nothing is known definitely of the origin of the Chillingham herd, nor of how it came to be white. Opinions on these points must rest solely on circumstantial evidence. The herd, first recorded in 1689 A.D., was probably in existence at the time of the enclosure of Chillingham Park, *c.* 1220 A.D., where it has since remained, and, as far as is known, been consistently in-bred with the minimum of human contact.

2. There is no evidence of any contact with the so-called Celtic Shorthorn which formed the domestic herds of Neolithic times, nor with the Urus which by then could be found only in the remoter parts of the Scottish Highlands.

3. Archaeological evidence suggests that the Chillingham herd may owe its origin to a race of domestic cattle brought over by the Anglo-Saxon or maybe later Danish invaders, which contained white-skinned individuals. These were deliberately selected and bred in segregated herds. During the troubled times that followed the invasions, some of these herds may have escaped from domestication and reverted to a feral habit. One such feral herd of white cattle may well have been enclosed at the building of Chillingham Park.

4. Contradictory opinions alleging direct descent from the wild Urus have been strongly held, but if the evidence of Duerst, 1909, and others is to be believed, then all domestic cattle must be descended from the Urus. The problem is thus resolved into a determination of whether the Chillingham cattle most resemble the Urus or the races of domestic oxen, represented by the so-called Celtic Shorthorn.

5. This implies an attempt to distinguish the Urus and the Celtic Shorthorn. Comparison of a series of skulls representing both varieties of oxen, grouped according to size, and irrespective of provenance, shows that two populations of cattle may be distinguished. One population is represented by skulls of a large size, and consideration of their provenance and qualitative features makes possible their identification as *Bos taurus* var. *primigenius* (Boj.), i.e., the European Urus. The other population is represented by smaller-size skulls, and the evidence suggests that these are of the common domestic ox, *Bos taurus taurus* (L.). Within this population, ranging from Neolithic to modern times, no sub-species can be distinguished; hence the designation of the Celtic Shorthorn as *Bos longifrons* (Owen) is invalid.

6. Comparison of the skulls of Chillingham cattle with those of the Urus and domestic oxen shows that the relationships are closest with the latter. This is supported by evidence drawn from a study of the distribution within the bovine skull of the rates of relative growth.

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TABLE 1

STATISTICS OF THE CHILLINGHAM HERD

	Bulls	*Bull Calves*	*Cows*	*Heifer Calves*	*Total*
1931 ...	19	—	25	—	44
1932 ...	17	—	27	—	44
1933 ...	(not recorded)				
1934 ...	14	1	24	1	40
1935 ...	14	2	22	2	40
1936 ...	16	2	20	2	40
1937 ...	17	—	21	2	40
1938 ...	15	2	23	3	43
1939 ...	14	1	24	1	40
1940 ...	15	1	23	1	40
1941 ...	9	1	18	1	29
1942 ...	10	3	19	4	36
1943 ...	13	4	22	3	42
1944 ...	15	3	22	2	42
1945 ...	16	—	24	—	40
1946 ...	13	—	18	3	34
1947 ...	5	—	8	—	13
1948 ...	5	2	8	—	15
1949 ...	5	1	7	2	15
1950 ...	5	—	9	2	16
1951 ...	4	1	10	1	16
1952 ...	4	1	9	1	15
1953 ...	4	2	9	1	16
1954 ...	4	1	9	—	14
1955 ...	4	2	9	1	16
1956 ...	5	1	10	3	19

Table 2

COEFFICIENTS OF RELATIVE GROWTH IN SKULLS OF OXEN

Length of orbit	0.25
Depth of temporal fossa	0.35
Height of orbit	0.35
Height of temporal fossa	0.45
Depth of orbit...	0.53
Width palate at first upper molar	0.58
Width of foramen magnum	0.64
Height of maxilla at lacrimal suture	0.66
Length of maxilla	0.70
Length f. magnum to f. ovale	0.70
Width of zygomatic arch	0.71
Height of maxilla at first upper molar	0.73
Length of temporal fossa	0.77
Depth internal nares	0.77
Width across upper tips of occiptal condyles ...	0.81
Length of nasal	0.95
Width of internal nares	0.97
Length of frontal	0.98
Max. biorbital width	1.00
Height of occiput	1.02
Width across mastoids	1.07
Width between core centres	1.14
Length of premaxilla	1.27
Width of infracornual notches	1.51
Basal circumference of cores	1.90

THE DAILY BEHAVIOUR OF BIRDS ON THE FARNES
(Part I)

By Noble Rollin, M.B.O.U., A.A.O.U., M.R.A.O.U.

The following observations have been made at the Natural History Society Field Study Centre on the Inner Farne during four separate "weeks": (a) September 26th–October 3rd, 1953; (b) April 5th–April 10th, 1954 (this "week" was shortened by two days by heavy seas); (c) October 16th–October 23rd, 1954; (d) December 29th, 1954–January 7th, 1955 (this "week" was lengthened by two days by a storm). Those who took part were W. Harison (c), D. M. Muir (c), J. K. Muir (c), Professor F. J. Nattrass (a), M. Robertson (a), B. A. Rollin (b), D. C. N. Rollin (a), L. Rollin (a), Noble Rollin (a), (b) and (d), H. W. Wright (b).

The work done is part of a comparative study of sea bird, wading bird and land bird behaviour which is being made along the coasts of Northumberland and Durham and inland. It has particular reference to daily habits and all-day watches are being made at different points. In this connection the first of a series of all-day watches on the Farnes was made on the Inner Farne on September 30th, 1953. Others were made subsequently and the first results from some of these watches are given below. Sound recordings are being made in these studies and the first of a series of these sound recordings was made on the Farnes on December 29th, 1954, and during an all-day watch on December 30th, 1954. These recordings included Curlew *Numenius arquata* (L.), Redshank *Tringa totanus* (L.), Oyster catcher *Haematopus ostralegus* L., Ringed Plover *Charadrius hiaticula* L., and Starling *Sturnus vulgaris* L. It is hoped, in time, to made a comprehensive sound record of the voices of all the main species on the Farnes.

SHAG

Diurnal Rest

During week September 26th—October 3rd it was noticed that it was normal in the morning for Shags *Phalacrocorax aristotelis* (L.), to fly out in various directions from their roosts to different feeding grounds; that flying about in various directions continued to a varying

extent during the day; and that after the initial activity some of the Shags began to come and rest on the North West Point of the Inner Farne. These resting birds were only part of the larger community, whose members were seen flying and which no doubt had several other diurnal resting places.

It was thought that an all-day watch on the numbers resting on the North West Point would give an index to the rise and fall in the amount of diurnal resting and that this might be related to the activity of the birds by counting the number of birds flying. An all-day watch (Ref. No. 101) was made on September 30th. The result is given in Tables I and II and shown in Figure 3(*a*). The darker part of the figure shows the total number of birds flying in any direction during a given hour. The maximum number of Shags resting each hour on the North West Point is shown by hatching. The results show that the main activity period was first thing in the morning, after which it became considerably less. The amount of resting gradually rose through the morning into early afternoon, reaching a peak in hours 14 and 15. After this it declined rapidly and this decline was associated with a slight rise in flying activity. Both the decline in resting and increase in activity were connected with the birds going off to their roosting places.

Weather. The weather on September 30th was relatively even throughout the day, being mild, fair, with sky nearly completely overcast and a strong wind blowing. The minimum temperature during the period of observation was 53°F., the maximum 62°F. The strong wind blew throughout the day, from the south-west up to 14.00 and by 16.00 from the west. White-caps began to appear at 06.45 and continued throughout the day until about 17.00, after which the sea remained considerably disturbed. The sky was completely overcast at 06.00, at 08.00 there was eight-tenths cloud, after which there was always more than nine-tenths cloud.

PUFFIN

Spring Arrival

During "week" April 5th—10th the behaviour of the Puffins, *Fratercula arctica* (L.), was at the stage of "spring arrival." There were not many about on April 5th when we arrived on the Inner Farne, nor on 6th, but on 7th large numbers came in. They arrived again in large numbers on 9th, and were present again on 10th when we left. Grace Watt (*The Farne Islands*, Country Life, 1951, p. 168) states "the assembly date for the main body varies from the end of March

(an early date) to the middle of April. The latter is the more usual time."

At the time of our stay the normal behaviour of the birds was to arrive during the day and then leave in the evening. An all-day watch was made on April 7th (Ref. No. 102) on this behaviour. On this day the birds came pouring down from the north, passing between the Inner Farne and the mainland and then sweeping round to the left (east) and alighting on the water. In this way great rafts of birds began to collect on the water close by the Farnes. Later, part of the birds began to alight on the Islands.

In the all-day watch the birds were counted as they passed between the Inner Farne and the mainland. The result is given in Tables I and II and illustrated in Figure 3(*b*). From this it will be seen that the first substantial numbers were seen arriving from the north in hour 9, and that nearly all the birds (99%) arrived in hours 9, 10, 11 and 12. During hour 10 more than half the total population arrived. The total number seen arriving was 10,026. Mrs. Hickling informs me that Professor G. J. van Oordt estimated on general grounds that the total Puffin population of the whole of the Farnes was 10,000. Much more data are required on the subject, but if these figures are approximately correct, somewhere near the whole Puffin population of the Farnes (not just the Inner Islands population) must have passed round the Inner Farne on April 7th.

Observations on the assembly of the Puffins were also made on April 9th. As on 7th, the birds came in from the north, rounding the Inner Farne on the south side. As before, birds collected on the sea on the south side of the Wideopens and in the area of water between the Wideopens, the Scarcars and the Knocklin Ends. It was towards 08.00 that birds were seen assembling on the water (although present, they were not in noticeable numbers at 07.30). The first Puffin was seen on land, on the Wideopens, at 09.12. Five had landed by 09.20; as time went on large rafts of birds collected on the water and the numbers landing on the Wideopens increased. There was a continuous passage of birds between the water and the Wideopens; in consequence there was always a number of birds in the air as well as on the water and on the land.

The observations on 9th were made from beside St. Cuthbert's Chapel. The totals given in the Tables under the heading " On Water " represent the average number of birds seen hour by hour, on the water north and south of the Wideopens, from this point. In the same tables, under the heading " On Land " is given the average number of birds visible on the Wideopens from the same place. From this

position the far sides of the Wideopens and the sea behind are not visible. The counts therefore give part of the Wideopens group but not the whole of the group. There is, however, every reason to suppose that the behaviour of the part seen was representative of the whole.

In Figure 3(*b*) are combined the results of the observations on the arrival of the Puffins on 7th, and their relative numbers on the water (broken line) and on land (continuous line) on 9th. The mean tide for the two days is also included. Figure 3(*b*) shows that many more birds were on the water than on land during the period of the main arrival of birds. After the main arrival there is a change over, and the number on the water decreased whilst the number on land increased.

At 15.10 the last of the arriving Puffins were seen coming down the coast. The last ones were seen on the water at 19.08 when it was already dusk. Further into dusk, at 19.17, 71 Puffins were still visible on the Wideopens. After this it became too dark to see through the telescope being used for counting. By the fall in numbers, it was estimated that the last bird would leave the Wideopens at about 19.40, deep in the dusk.

In these preliminary visits to the breeding grounds it will be seen that the Puffins arrived relatively late in the morning and lingered on into the dusk. This staying on into dusk was also found in parallel observations made on preliminary visits of Fulmars *Fulmarus glacialis* (L.), at Marsden on December 13th, 1953 (Ref. No. 109). Nearly half the Fulmars (25 out of 56) stayed on until it was almost too dark to see them with 10 x 50 glasses. The last two left when it was so dark that it was only possible to see them by knowing where they were and noting the gleam of white against the darker cliff. The Fulmars, however, were not late in the morning like the Puffins ; some arrived before sunrise. This early arrival of the Fulmars was confirmed in an all-day watch on Fulmars on the Inner Farne on January 2nd, 1955 (Ref. No. 111).

As the Puffins arrived down the coast from the north in the morning a watch was also made (on the 7th) to see if they returned in the evening whence they came. Surprisingly they did not. Instead they sped away in a down-coast direction towards the south. They left in pairs, or singles or less often in groups of three to five or more. This leaving in a southerly direction may explain the late arrival in the morning, as the birds must make a considerable detour to descend on the Farnes in the morning from the north.

The arrival behaviour of these Farne Island Puffins was very different from that described by R. M. Lockley (*British Birds*, Vol. XXVII, pp. 215-216) for the birds at Skokholm. The Skokholm

Puffins at night " rest upon the sea below the cliffs " instead of leaving the islands as the Farne Island birds did. When the Puffins leave Skokholm they do not return for two to seven days, instead of returning the next morning as did the Farne birds.

Weather. On April 7th there were no great contrasts in the weather during the day. The day was mainly overcast, but there was some sunshine from about 05.40 to 09.00, at noon, and mostly rather weak sunshine between 15.00 and 18.00. The wind which blew from the west throughout the day, was stronger in the morning, but there was only once a slight tendency towards white-caps on the sea. The wind was decreasing from 11.00 and particularly so from 16.00 onwards. Maximum temperature during observations, 51°F., minimum, 40°F.

On April 9th there was bright sunshine from 05.36 to 06.25 with about four-tenths cloud; more bright sunshine from about 07.00 to 09.00. From this latter time onwards through the day it was overcast with nine-tenths cloud or more, but with some periods of veiled sunshine. In the morning it was calm until about 11.00, so calm that a train could be heard on the mainland. After about 11.00 there was probably never much more than a light breeze, and the sea was never more than just rippled. The wind backed from south-west to south-east during the afternoon. Maximum temperature during observations 54°F. minimum, 42°F. Maximum relative humidity, 93%, minimum, 69%.

EIDER

Diurnal Movements

In the week September 26th—October 3rd it was noted that it was normal for a small group of Eiders *Somateria mollissima* (L.), to come out in the morning from the Kettle, on the north-east side of the Inner Farne, and feed along the north shore of the Inner Farne. They then retired to the Kettle. This behaviour was also noted during the weeks April 5th—10th, October 16th—23rd and December 29th—January 7th. The number of birds varied but the behaviour itself was normal daily behaviour.

On September 30th an all-day watch (Ref. No. 104) was made on this movement. The results are given in Tables I and II and illustrated in Figure 3(*c*). It will be seen from Figure 3(*c*) that the results are quite straightforward. The birds arrived in the area in the latter part of dawn and were at their maximum number in this first full hour. The number gradually dropped during the day and the last birds left for the Kettle just after sunset.

Song-Display

As the birds described above proceeded from, and retired to the Kettle each day, observations were made on the Kettle during the April week. The Kettle is a stretch of water bordered to the north and east by the Knoxes Reef, the Bridges and the Western Wideopens. To the west it is bordered by the Inner Farne. Two wide channels lead out north-west (the Solan Passage*) and south (the Wideopens Gut) to the open sea. The Kettle, together with the Solan Passage and Wideopens Gut, as used by the Eiders is about 25 acres at low tide, and about 37 acres at high tide. Observation showed that it is normal for the Eiders to come in through the two channels, disport themselves on the water, feed and ultimately come out of the water for the night and sleep. In the morning they return to the water in the Kettle, where they give their song-display and feed, as well as disperse through the channels to feeding grounds beyond. Some go some distance, others go to nearby places, e.g., the north shore of the Inner Farne, as described above.

An all-day watch was made on this behaviour in the Kettle on April 9th, 1954 (Ref. No. 105). At this time the Eiders were in full song-display and a count was made of the number of songs given from the Kettle. The song-display has often been described. There are several variations but the characteristic part is the up-throw of the head and the uttering of the notes which might be described as " How-oo." Out of all bird songs, Lord Grey (*Charm of Birds*, Hodder and Stoughton, 1927, p. 31), who was familiar with the Eider in its Northumbrian haunts, described that of the Eider as one of the five he liked most. T. R. Goddard made special observations on the song-display when he stayed on the Inner Farne from May 1st to May 4th, 1931 (Grace Watt, *loc. cit.*, p. 78). Song in general can conveniently be divided into three groups: Group I, typical territorial song; Group II, specific types of song such as song-display, not covered by Group I; Group III, non-specific types of song. Eider song is Group II, and is given typically in the gamma phase, i.e., in the presence of females (Noble Rollin, *Dawn Song and All Day*, Vol. 1, p. 55). It is given in the form of an aggressive song-display and normally requires the stimulation of rival males. I have not investigated how great this dependence on rival males is in the Eider, but from an experiment conducted on the homologous song-display of the Mallard at the

* There does not seem to be a name for this wide entrance to the Kettle. For convenience it is called here the Solan Passage, being bounded on the north by the Solan Rock.

World Bird Research Station at Glanton, it appears that rival males are normally an essential part of such song-displays. A pair of Mallards was kept out of sight of other Mallards from February 14th (1950) to the end of the breeding season. Not once during this period was the song-display seen. On the other hand when this pair was brought together with other ducks and drakes the drake of the pair gave song-displays in the normal way. Absence of song-display did not prevent the pair breeding, the duck laying a total of 17 eggs (two clutches), of which 13 hatched.

In the all-day watch on the Eiders on April 9th the first song was heard at 04.34, by which time 16 of the Eiders had left their shore roosts and entered the Kettle. By 04.42, 20 had moved from their roosts into the Kettle, and at 04.47, the first birds left the Kettle (by the Wideopens Gut). The first birds moved out through the Solan Passage at 05.03. In spite of birds moving out, there were 80 in the Kettle at 05.07. It was about this time that song reached its highest rate for the day, 87 songs in one minute (at 05.12). The average rate for the first full hour was between 43 and 44 songs per minute. Although there were still 50 birds in the Kettle at 06.00 the song rate dropped very appreciably at this time and never came up to the full morning intensity again during the day. Feeding in the Kettle did not begin until 6.43. It is evident from this that the bulk of the day's singing was over before feeding began. Of the total of 6,592 songs heard during the day from the Kettle, 4,593 were heard before the first feeding.

Feeding continued throughout the day either inside or outside the Kettle. It stopped at 19.11, giving a feeding day (06.43—19.11) of 12 hours 28 minutes.

From about 09.00 to about 17.00 there were no Eiders at all on the ground surrounding the Kettle. None, that is, in the roost areas. All had either passed out through the Wideopens Gut or Solan Passage or were out on the water of the Kettle.

In the evening when the Eiders were coming back into the Kettle there was a recrudescence of the song-display; but at the most (in Hour 18) it only reached one-eighth of the intensity of the morning. Already at Hour 18 the Eiders were climbing out of the Kettle and settling in their roost areas. Between 19.40 and 19.50 the last of the Eiders in the Kettle, about six birds, were swimming slowly over to the Knoxes roost. At this time it became too dark to see the birds with 10 x 50 glasses.

Weather. A description of the weather on the 9th has already been given in connection with the observations on the Puffin.

From the foregoing it will be seen that the Eider uses the Kettle as a display arena (as defined by E. A. Armstrong in *Bird Display*, Cambridge, 1942, p. 207). In the marked crepuscular, early morning and evening timing of its display in the Kettle, the Eider has the characteristics of such lek birds as the Black Grouse *Lyrurus tetrix* (L.) and the Prairie Chicken *Tympanuchus cupido* (L.). Whilst the Black Grouse has a highly developed arena display, Armstrong has instanced the Red Grouse *Lagopus scoticus* (Lath.) as being in the first stages of developing an arena display. The stage of development of the arena display of the Eider, as seen in the Kettle, is much nearer to that of the Red Grouse, which is still monogomous, than to that of the Black Grouse, which has reached the stage of polygamy. There are, of course, very considerable differences between grouse and ducks in any case. The two grouse instanced both crow, which is Group I song given at its best in the beta (hens absent) phase. So far as I know, the Eiders and other ducks have no Group I song.

Eider song was heard quite frequently during the October 16th—23rd week but by the December 29th—January 7th " week " it had reached a very low ebb. An all-day watch (Ref. No. 108) was made on the Kettle on December 30th to measure this low rate of song for comparison with the spring behaviour on April 9th. During the whole day only 15 songs were heard from the Kettle and none from beyond the Kettle. This is about a four hundred and fortieth part of the spring output of song on April 9th. There was no song in dawn or dusk. Observations were also made at different times of the night but not a single song was heard. The first song heard in the all-day watch was at 10.56 and the last at 13.34, giving a singing day of 2 hours 38 minutes. This very short singing day is comparable with the short singing days with which many typical song birds (Group I) begin and end their singing season.

Weather. December 30th was overcast but fair. Calm in the morning, the wind rose to a gentle breeze (Beaufort Scale 3) in the afternoon. The temperature varied only 2°F., throughout the period of observation, being 44°F. in the morning, 46°F. in the early afternoon and 44°F. in the evening. The relative humidity ranged from 89% (in the morning) to 77% (in the afternoon).

Roosting

L. Lloyd has been quoted (*Handbook of British Birds*, Witherby, *et al*, Witherby, 1939, p. 335) as stating the Eider roosts on the rocks in summer (in Norway) but well out to sea in the winter. Such behaviour

suggests that the roosting on land has breeding significance, as there is no need for birds which can roost on the sea in winter, to come to land to roost in the summer. To check on birds in the lowest breeding condition three to four first-winter Eiders living on their own, unaccompanied by adults, were studied at Seaton Sluice. These were found, in November and December, to swim out to roost on the open sea each evening. In an all-day watch on December 12th, 1954 (Ref. No. 107) the birds arrived in from the sea in the morning very early when it was just getting light at 07.35. They appeared to be going out to their sea roost again at 15.30, but returned and began to feed once more. They stopped feeding at 16.17 and moved out again to their sea roost, where they settled down by 16.22. By this time the light was very poor.

During " week " December 29th—January 7th it was possible to make winter observations on adult birds beside a main breeding station (Inner Farne). It was found that the Eider population of the Inner Islands was split into three main groups. The largest group of about 140 birds fed round the area of the Knocklin Ends and roosted on the sea to the south-east of the Knocklin Ends. A much smaller group of about 20 birds fed just north of the western Knoxes and the Solan Rock and the reef connecting these two. A still smaller number, up to 10 birds, fed in the Kettle, the Solan Passage and the Wideopens Gut. At night these two smaller groups roosted together on the sea a little off shore of the Knoxes-Solan Rock feeding area. This makes a winter total for the Inner Islands of about 170 birds. This population of 170 birds is small considering that about 300 ducks nested on the Inner Farne in the summer of 1953. (*Farne Islands Report for* 1953, *Trans. Nat. Hist. Soc.*, Vol. XI, p. 44.)

This distribution into three groups was established as normal under normal weather conditions. However, by January 3rd a big storm had developed and conditions became far from usual. The storm reached its height on the 4th. This gave an opportunity of seeing how the Eiders reacted to the heavy seas in regard to roosting. According to the fishermen nobody had been out on the Inner Farne in such a storm since the lighthouse-keepers stayed there in 1906. The wind veered and backed but was in the main easterly ; the buffets were sufficiently strong to shake the Tower. The whole of Staple Sound and the water between the Knocklin Ends and the Scarcars was a seething mass of foam and breakers. Large breakers also ran up the Wideopens Gut and spray flew 12-15 ft. above the landing in the usually sheltered St. Cuthbert's Cove. On the 3rd it was noted that some of the Eiders from the main group had joined the Solan Rock-Knoxes group which was in the lee of the storm. On the 4th the whole

of the main group (i.e., 140 birds) joined the Solan Rock-Knoxes group, roosted with them, spent the whole of the 5th with them and roosted with them again. On the 6th, when the storm was subsiding the main group began to move back along the lee of the Knocklin Ends towards their normal quarters. The observation showed that the two groups were willing to join together under stress of weather, but retained their identity and began returning to their normal distribution as soon as the weather permitted.

BASIC DAILY PATTERN OF SEA BIRDS

In all the all-day observations instanced above the behaviour is strongly diurnal and also usually partly crepuscular. It is not nocturnal, nor is it to any great extent tidal. This is the outstanding feature of most of the results of all-day watches made so far in the studies on sea birds along the coasts of the two counties and the Farnes. The birds tend to have days surprisingly similar to land birds. To take two Farne Island examples: the Shag activity in Figure 3(*a*) is as neatly diurnal, together with normal intrusion into dawn and dusk, as that of many land birds; the song pattern of the Eider, in Figure 3(*d*), with a large morning peak well into dawn and a lesser peak in the evening, is typical of the behaviour of many true song birds (*Passeres*). It is, of course, well known that some sea birds have nocturnal activity phases in their daily (twenty-four hour) patterns, and most must be affected to varying degrees from time to time by tides. It is, however, suggested that the diurnal and crepuscular pattern of sea birds is the basic daily pattern and that nocturnal phases and tidal variations should be studied as variations of this basic pattern.

In similar watches on wading birds under tidal conditions, it has been found that they are also basically diurnal and crepuscular, although the tidal modifications are, of course, normally much more severe and nocturnal phases are more prominent.

NOTE.—All the times given above are in Local Apparent Time, i.e., time by the sun at the place of observation. The hours are given from the half-hour to the half-hour, e.g., Hour 7 represents activity taking place from 06.30 to 07.30. The tides shown in the Figures are calculated.

TABLE I

TIMES OF FIRST AND LAST DAILY ACTIVITIES AND AMOUNTS OF ACTIVITY IN THE FIRST, LAST AND NOON HOURS

	Date	*Ref. No.*	*Activity*	*First Activity*	*First Full Hour*	*Noon* 11.30-12.00	*Noon* 12.00-12.30	*Last Full Hour*	*Last Activity*
Shag ...	30.9.53	D.101a	Movement	06.11	42	10	15	12	18.01
Shag ...	30.9.53	D.101b	Resting	06.40	3	8	11	3	17.26
Puffin ...	7.4.54	D.102	Passing	07.12	4	1815	315	12	15.10
Puffin ...	9.4.54	D.103a	On Water	07.30	37	525	563	40	19.08
Puffin ...	9.4.54	D.103b	On Land	09.12	17	102	294	73	19.17
Eider ...	30.9.53	D.104	N. Shore	05.49	22	5	7	2	17.52
Eider ...	9.4.54	D.105a	Songs	04.34	2618	45	33	64	19.38
Eider ...	9.4.54	D.105b	In Kettle	04.34	41	13	13	8	19.38
Eider ...	30.12.54	D.108a	Songs	10.56	8	0	0	7	13.34
Eider ...	30.12.54	D.108b	In Kettle	07.57	3	7	9	3	16.19

TABLE II

HOUR BY HOUR TOTALS OF DAILY ACTIVITIES OF SHAG, PUFFIN AND EIDER

Hour ...	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ref. No.																
D.101a ...		8	41	34	18	20	18	25	15	15	18	21	14	5		
D.101b ...			3	4	2	9	9	11	11	16	16	7	3			
D.102 ...			1	3	811	5907	1050	2130	94	18	12					
D.103a ...				37	362	950	687	544	730	510	157	161	59	120	22	
D.103b ...						70	32	198	104	343	570	417	477	315	76	
D.104 ...		22	19	18	17	7	9	7	4	4	8	5	2	1		
D.105a ...	2498	1872	756	210	0	258	60	78	41	41	0	210	180	324	36	28
D.105b ...	38	55	42	20	15	20	13	13	3	3	10	6	12	18	11	6
D.108a ...							8	0	0	7						
D.108b ...				2	8	9	7	8	7	8	8	3				

Details of the activities will be found in Table I and in the text.

FIGURE 3(*a*).

SHAG. Total number of birds flying.
Diurnal rest is shown by hatching.

FIGURE 3(*b*).

PUFFIN. Total number of birds arriving.
Birds on the water are indicated by a broken line ; birds on the land by a continuous line.

FIGURE 3(*c*).

EIDER. Total number of birds along the north shore.

FIGURE 3(*d*).

EIDER. Total number of songs from the Kettle.
The number of birds in the Kettle is shown by a continuous line.

FIG. 3(*a*)

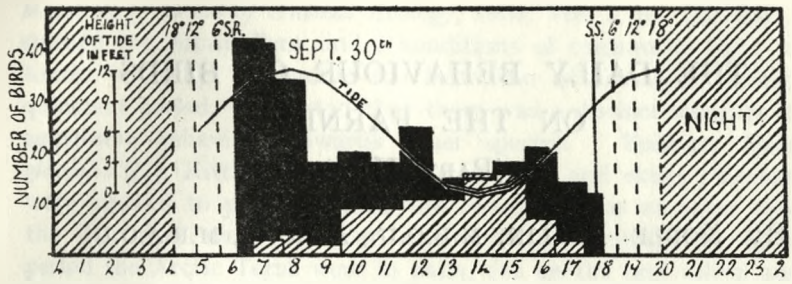


FIG. 3(*b*)

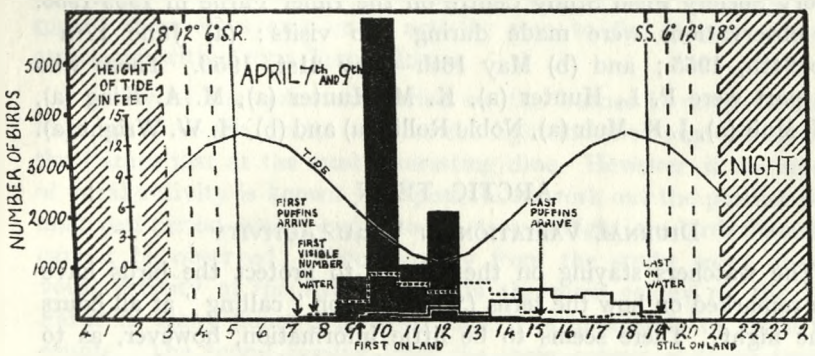


FIG. 3(*c*)

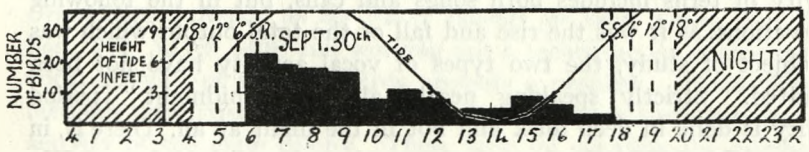
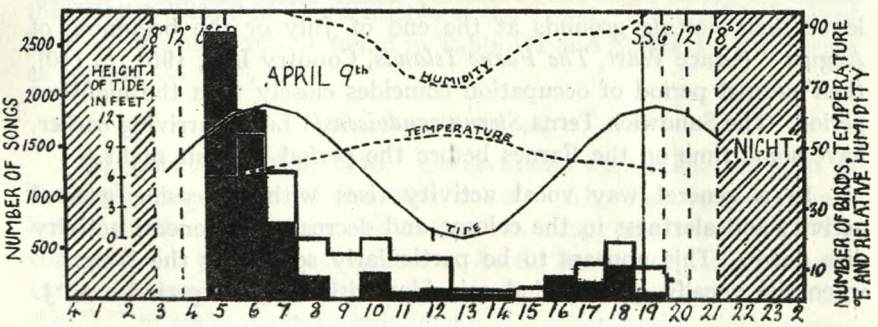


FIG. 3(*d*)



THE DAILY BEHAVIOUR OF BIRDS ON THE FARNES (PART II)

By NOBLE ROLLIN, M.B.O.U., A.A.O.U., M.R.A.O.U.

The following observations continue those made at the Natural History Society Field Study Centre on the Inner Farne in 1953-1955. The observations were made during two visits: (a) June 17th—June 24th, 1955; and (b) May 16th—May 21st, 1956. Those who took part were P. L. Hunter (a), K. M. Hunter (a), M. A. King (a), D. M. Muir (a), J. K. Muir (a), Noble Rollin (a) and (b), H. W. Wright (a).

ARCTIC TERN

DIURNAL VARIATION IN VOCAL ACTIVITY

The watchers staying on the Islands to protect the birds have often remarked on how the terns (*Sterna*) go on " calling " at all hours of the night. There seems to be little information, however, as to how much vocal activity there is over the midnight period and how the amount varies from hour to hour during the day. The vocal activity of terns includes both songs and calls, but in the following observations, as it was the rise and fall of the total output which was the object of study, the two types of vocal activity have not been separated. Strictly speaking nearly all the " midnight " period activity is done in deep dusk and not in the night at all. There is, in fact, no night at the latitude of the Farnes from May 6th to August 7th. As it is " usually the first, second, or even the third week of May " before the Arctic Terns *Sterna macrura* Naum. arrive and they " usually leave their nesting grounds at the end of July or the beginning of August " (Grace Watt, *The Farne Islands*, Country Life, 1951, p. 140), their normal period of occupation coincides closely with the nightless period. The Sandwich Terns *Sterna sandvicensis* Lath., arriving earlier, have some time on the Farnes before the period without night.

In a general way vocal activity rises with increasing general activity and alertness in the colony, and decreases as general activity dies down. This appears to be particularly so during the " night " when the vocally quiet period coincides with the rest period. A. J.

Marshall (*Journal of Animal Ecology*, 1938, Vol. 7, pp. 248-250), who studied the Arctic Tern under conditions of continuous light in the Arctic, was able to observe the behaviour of the birds during this quiescent period. He noted that there was a distinct decrease in the aggressive behaviour towards other species. Fulmars *Fulmarus glacialis* (L.), Kittiwakes *Rissa tridactyla* (L.) and skuas (*Stercorarius*) were allowed to pass low over the terns, whereas at other times of the day they were attacked unmercifully. During the quiescent period the Arctic Terns were in pairs, one on the nest asleep and the other, a few yards away, alternating dozing with more alert periods. It was not until a human intruder was sighted that the birds really roused themselves and vocal activity rose to the intensity usually associated with Arctic Tern colonies.

Study of the quiescent period on the Farnes is rather different from study in the Arctic because the light fades to near darkness on the Farnes just at the most interesting time. However, if the amount of vocal activity is known, it is possible to work out the position of the main rest period even if, owing to the deep twilight, the birds themselves cannot be observed. Unfortunately from the study point of view, vocal activity of the Arctic Terns in the main colony on the Inner Farne in many hours is so great that it is impossible to make total counts. The sound coming from the main colony at these times is somewhere between a high-pitched roar and a hiss. There are at least three thousand Arctic Terns on the Inner Farne (Grace Hickling, *Ornithological Report on the Farne Islands for* 1954, *Trans. Nat. Hist. Soc.*, Vol. XI, p. 140), and working out a technique for evaluating the vocal activity of so many birds presents a problem. Three different methods were tried out to assess the hour by hour variations in vocal activity of the main colony. These were (*a*) counting the number of some easily recognised phrases (selective count) ; (b) using a descriptive scale ; (c) using a sound recorder. A total count (d) was also made on the smaller colony on the west side of the Tower. The results obtained by these methods will be found in Table III and Figure 4. Details are as follows :—

Selective Count

(a) June 18th-19th, 1955. Observations were made on birds in the south-east corner of the main colony. The observers were in a hollow, in the main below the level of the colony and beyond it. The colony at this point was composed of Arctic Terns with a slight admixture of Common Terns *Sterna hirundo* L. As there were too many " calls " to make a total count, easily recognised phrases were chosen

and counted. The total number of these phrases was counted in samples of thirty seconds duration every five minutes, for twenty-four and a half hours. There is one exception to this. Noon on the 18th is based on five samples only, between 12.00 and 12.30.* The complete observation was from 12.00 on the 18th to 12.30 on the 19th. The hours were timed from the half-hour to the half-hour (e.g., Hour 15 represents the period 14.30—15.30). The results (see Table III) were calculated to the total number of selected phrases given per hour.

Weather. On the afternoon of the 18th there was brilliant hot sunshine from a cloudless sky, with the wind rising from a light to a moderate breeze. Over midnight the wind was never more than a light breeze, but in the morning, which was virtually sunless and overcast, it rose again to a moderate breeze. The maximum temperature was 61°F. at noon (19th) and 59°F. at noon (18th). The minimum 48°F. at 23.00. Maximum relative humidity 87% at 22.00, 23.00, 01.00, 02.00 and 03.00; minimum 64% at noon (18th). The sky was cloudless from noon (18th) to 22.00, one- to six-tenths cloud from 23.00—02.00 and overcast for the rest of the watch from 03.00 onwards.

Descriptive Scale

(b) May 18th, 1956. Observations were made on the Arctic Terns of the main colony as heard from the upper window on the south-east side of the Tower. The output of vocal activity never reached that heard in June (1955). A scale of values was prepared ranging from silence (0), through the normal for a day at this season (50) to the peak output for the day of observation (80). Whether the June level would equal 100 or much more in such a scale it would be difficult to say. The complete scale is given below :—

Silence	0
Phrases and single notes countable	10
Almost countable	20
Much less than normal	30
Less than normal	40
Normal	50
More than normal	60
Much more than normal ...	70
Peak for the day	80
(June level	100?)

* All the times given above are in Local Apparent Time, i.e., time by the sun at the place of observation.

An assessment from the scale was made at quarter to and quarter past each hour and the mean for the two readings was taken to represent the hour. This was continued for twenty-four hours on May 18th. These mean figures will be found in Table III under the heading Descriptive Scale. This watch was made from midnight to midnight, but for comparison with the other watches the figures are entered in the Table from noon to midnight and midnight to noon. The figures include the vocal activity of the Common Terns, which is not separable from that of the Arctic Terns when estimates of the total vocal activity are being made. The estimates do not include the activity of the Sandwich Terns which is easily separated. Estimates of the number of Common Terns vary but it is not high, possibly about five per cent. of the combined total of Common and Arctic species.

Weather. A day of varying sunshine and cloud, with the wind never more than a light breeze, except in Hour 7, when the breeze was light to moderate. The maximum temperature was 55°F. in Hours 11, 16, 17 and 18. The minimum was 46°F. in Hour 4. Maximum humidity 77% at 03.00 and 04.00; minimum 62% at 17.00. There was bright sunshine from sunrise to Hour 5 and in Hours 11 to 15, and Hour 17. In the other hours the sunshine was much less. The sky was clear or nearly so in Hours 3 to 5 and 11 to 14; on the other hand there was seven- to nine-tenths cloud in Hours 1, 2, 6, 8, 16, 18, 19 and 21 to 24. Hour 7 was overcast and the remaining hours had three- to five-tenths cloud.

Sound Recording

(c) May 18th-19th, 1956, May 19th-20th, 1956. Hourly samples were taken on a tape recorder of the total output of vocal activity. It was possible afterwards to make direct comparisons of one hour with another.

May 18th-19th. Observations were made on the small colony on the west of the Tower. The hourly samples were taken on the tape recorder in Hours 20 to 24. The largest output of vocal activity (Hour 20) was given a rating of 100 and the other Hours where the output was successively less were given approximate ratings according to the amount of output. The results will be found in Table III.

May 19th-20th. Observations were made on the main colony from the watcher's seat at the east end of St. Cuthbert's Chapel.

The samples were taken on the tape recorder at 18.00 on the 19th and each hour, at the hour, from 20.00 on the 19th to 06.00 on the 20th. A copy of this tape was made. This copy was cut into hourly sections

and recombined until, on playing the tape through, the order ranged successively from the greatest output to the smallest. As on the 18th, Hour 20 had the highest output and this was given a rating of 100 and the other hours were given approximate ratings according to the amount of output. These figures will be found in Table III.

In Figure 4 Hour 19 on May 19th-20th, which was missing on the tape recording, is shown as the mean of Hours 18 and 20. The small admixture of Common Tern vocal activity, mentioned under Descriptive Scale as not being separable from the Arctic Tern activity, was also included in these sound recordings.

Weather. The weather on the 18th has already been described. The weather on 19th-20th was as follows. In the evening and in the morning there was bright sunshine with, however, an overcast sky during the midnight period. It was calm in the evening with a light breeze in the morning. Maximum temperature during the watch was 48°F. at 19.00 and 06.00. Minimum 41°F. at 22.00 and 04.00. Maximum relative humidity 79% at 04.00; minimum 62% at 18.00. The overcast period was in Hours 23, 24 and 1. Prior to this period there was two- to five-tenths cloud and after Hour 1 the cloud dropped to one-tenth in Hour 2 and thereafter the sky was clear.

Total Count

(d) May 17th-18th, 1956. Observations were made on the small colony to the west of the Tower. Owing to its relatively small size it was possible to make a total count (i.e., all the phrases and single note utterances). Two samples of five minutes each were taken each hour in Hours 24 to 3, and the result calculated to the total number of phrases and single note utterances per hour. (See Table III).

Weather. The weather has already been described.

Discussion

In Table III and Figure 4 it will be seen that the observations by three different methods all agree in a decline in vocal activity towards midnight, from a peak in Hour 20. By comparison with Hour 20 the night rest period begins to show in Hour 21, although Hour 21 itself is a period of very considerable activity. Much more rest is indicated in Hour 22 and there is general agreement that in Hour 23 vocal activity is at a very low ebb. Midnight is also low but may be lower, equal or higher than Hour 23. The reading (by total count) for midnight on May 17th-18th on the small colony to the west of the Tower was rather high. The main colony to the east of the Tower was studied (by descriptive scale) during the same hour on the same date and the

activity was relatively much more reduced. The difference between the two colonies was very noticeable at this midnight hour and showed that two groups on the same island could vary even under identical conditions of weather and light.

In the morning in May, Hour 1 was low and the most notable rise in dawn activity was in Hour 2, the activity increasing further in Hour 3 on the 18th (small colony) and the 19th (main colony). Subsequently there was a decline in activity from Hours 4 or 5 (i.e., May 18th reads Hour 5, 70 ; Hour 6, 50 ; Hour 7, 15 ; and May 19th-20th reads Hour 4, 90 ; Hour 5, 75 ; Hour 6, 40). The mean figures for May (17th-20th) from Hour 20 to Hour 4 are shown below. Before calculating these, the total counts on May 17th-18th were reduced to percentages of the maximum hour (Hour 3).

Mean Figures for May

Hour	20	21	22	23	24	1	2	3	4
Relative amount of Vocal Activity	90	67	20	6	14	13	58	77	65

From the above it can be deduced that the main period of inactivity in May is in Hours 22, 23, 24 and 1 ; that, as already pointed out, Hour 23 is the period of least activity ; and that there are peaks of activity in Hours 20 and 3. It will be seen, also, that the activity period is not equally distributed on either side of midnight, there being a longer period of quiescence before midnight than after midnight. This is precisely what is found in land birds unaffected by tidal conditions, but subject to the influence of dusk and dawn. It is another instance of the basically diurnal and crepuscular, rather than tidal, behaviour of sea birds. This asymmetrical disposition of activity on either side of midnight, which is a widespread and typical reaction of birds to the conditions of dusk and dawn, has been discussed by J. M. Cullen (*Ibis*, 1954, Vol. 96, p. 42). He points out that J. Franz (*Zeitschrift fur Tierpsychologie*, 1948, Vol. 6, pp. 304-329) considered that the asymmetry was due to " sexual excitement of the breeding season lowering the light-intensity threshhold at which the day activities begin." It seems probable that there is some such basic reason for a habit of such wide distribution, but there is also advantage in the habit, which may operate selectively in its favour. Thus a bird returning to roost does so during decreasing light and it is advantageous to have a routine which brings it near to, or into, the roost relatively early. This allows time for (a) any delays which may occur ; (b) staking a claim to the roost, or in a communal bird, a place in the roost ; (c) for finding another roost or place in the event of the roost being

taken by another bird or being unavailable due to some other contingency. Similarly extra time is an advantage for birds, such as terns, returning to incubate or brood overnight. A bird which normally adopted a low light intensity return to the nest in the evening, if delayed, might not reach the nest at all. This could be fatal to the brood. In the morning the conditions are reversed. The bird is already in the roost or on the nest. It can leave at a low light intensity because in every succeeding minute conditions are becoming lighter and safer, and there is no need to have time in reserve, as there is in the evening. That the problem is a real one can be seen by the pre-roosting habit which several birds have adopted (e.g., the Starling *Sturnus vulgaris* L., see J. F. Jumber, *Auk*, 1956, Vol. 73, pp. 415-422). Pre-roosting is a device which brings birds near the roost in the evening and enables them to make a later retirement into the roost proper. It is significant that, as far as my observations have gone on two prominent pre-roosting species, the Starling, already mentioned, and the Rook *Corvus frugilegus* L., neither of these species has a post-roost in the morning.

The behaviour of the Terns in the morning in June was surprisingly quite different from that in May, except for a rise in activity in Hour 3. In the main the relatively inactive pre-midnight period in Hours 22 and 23 was prolonged in June into Hours 4 or 5 and then the vocal activity rose steadily to a peak in Hour 9. The difference between the May and June records may possibly be associated with the longer day in June and particularly with the difference in twilight, the sun never dropping to 12° below the horizon in June, whereas in May it was lower than 12° for a considerable period. A. J. Marshall (*loc. cit.*) states that Arctic Terns under conditions of continuous daylight have a rest period for two hours from about 01.00 onwards. It is possible that this rest period may have begun to show in June with the decrease in light over the midnight period being so much less than in May. The weather was less favourable in the morning of the June observation, there being more cloud and a stronger wind than in the May observations. This amount of difference in the weather, however, seems an unlikely cause for such different behaviour. The June morning pattern is so unusual, that further observations are called for.

In conclusion it may be said that out of the three different methods tried out for the study of the rise and fall of vocal activity in the main colony, that of sound recording appears to be the most satisfactory. It gives a sample of the actual vocal activity at the time of recording. In continuing studies on the daily behaviour of the birds on the Farnes, it is hoped to make further use of this recording method for total outputs of vocal activity.

Summary

Three methods were tried out for studying the hour by hour variation in vocal activity of the Arctic Tern in the main colony on the Inner Farne. These were (a) Selective Count ; (b) Descriptive Scale ; (c) Sound Recording. The sound recording method was found to be the most satisfactory.

All three methods gave results which agreed on a decline in vocal activity towards midnight from a peak in Hour 20. In May (descriptive scale and sound recording) vocal activity rose again in dawn and early morning. The period of lowest activity was in Hours 22, 23, 24 and 1. Hour 23 was the hour of least activity.

This May behaviour was very similar to the asymmetrical dusk-dawn pattern found in land birds away from tidal influence. It is suggested that this pattern is associated with the advantages of an early return to the nest or roost.

In the June (selective count) the less active period was protracted and activity did not reach the morning peak until Hour 9. This behaviour was thought to be unusual.

FIGURE 4.

ARCTIC TERN. Diurnal Variation in Vocal Activity.

The observations by Total Count (May 17th-18th) and by Sound Recording (May 18th-19th) were made on the small colony to the west of the Tower on the Inner Farne. The observations by Descriptive Scale (May 18th), Sound Recording (May 19th-20th) and Selective Count (June 18th-19th) were made on the main Inner Farne colony.

FIG. 4

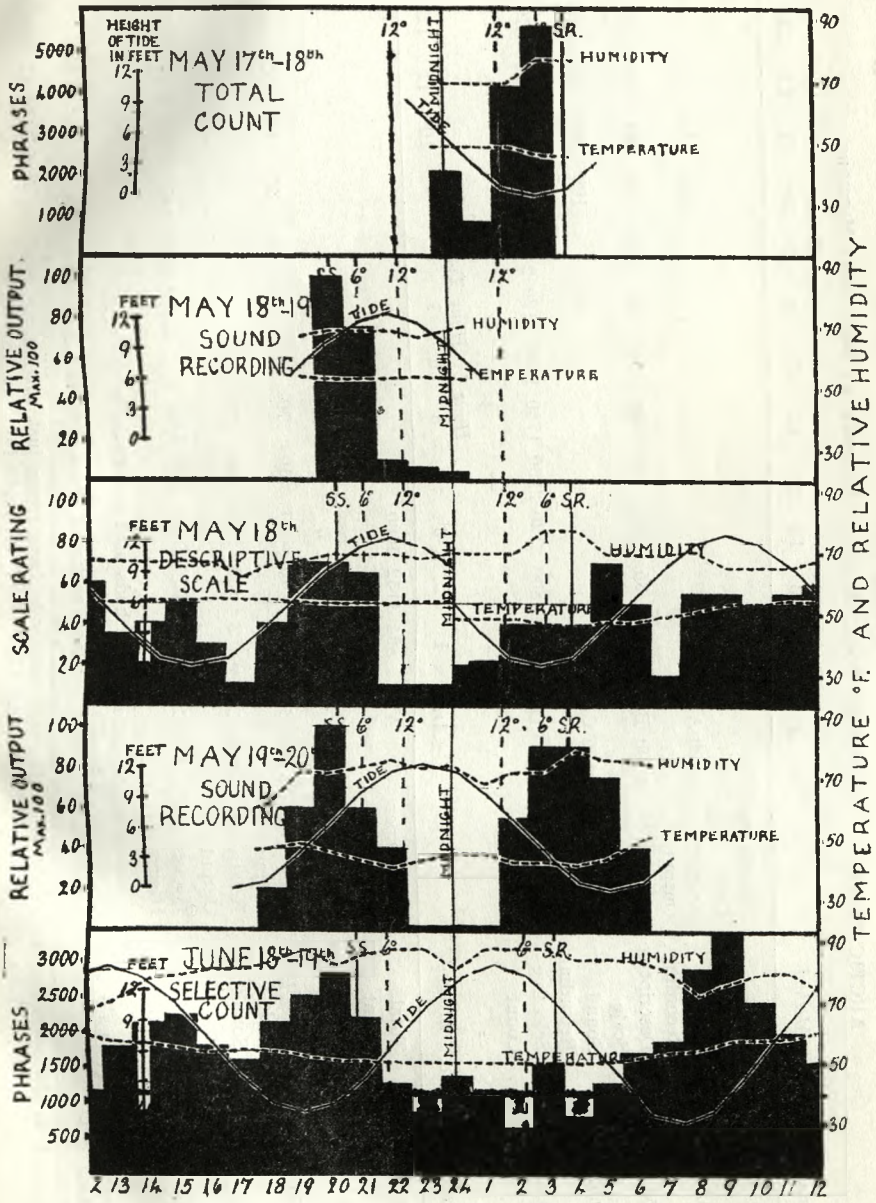

HEIGHT OF TIDE IN FEET
MAY 17th-18th
TOTAL COUNT
PHRASES
HUMIDITY
TEMPERATURE
MIDNIGHT
MAY 18th-19th
SOUND RECORDING
RELATIVE OUTPUT Max.100
TIDE
MAY 18th
DESCRIPTIVE SCALE
SCALE RATING
MAY 19th-20th
SOUND RECORDING
JUNE 13th-14th
SELECTIVE COUNT
TEMPERATURE °F. AND RELATIVE HUMIDITY
2 13 14 15 16 17 18 19 20 21 22 23 24 1 2 3 4 5 6 7 8 9 10 11 12

Table III

ARCTIC TERN. Amount of Vocal Activity Assessed by Different Methods

Date	Ref. No.	Method			Area	Hour by Hour Totals 12	13	14	15	16	17	18	19	20	21	22	23	24
17-18.5.56	—	Total Count	Phrases per Hour		A ...													2070
18-19.5.56	—	Sound Recording	Relative Output	0-100	A ...									100	75	10	7	4
18.5.56	D.159	Descriptive Scale	Scale Rating	0-100	B ...	60	35	40	50	30	10	40	70	70	65	10	10	10/20*
19-20.5.56	—	Sound Recording	Relative Output	0-100	C ...							20		100	60	40	1	1
18-19.6.55	D.157	Selective Count	Phrases per Hour		D ...	1150	1800	2120	2230	1780	1600	2120	2480	2810	2190	1270	870	135 0

Date	Ref. No.	Method			Area	Hour by Hour Totals 1	2	3	4	5	6	7	8	9	10	11	12
17-18.5.56	—	Total Count	Phrases per Hour		A ...	864	4152	5600									
18-19.5.56	—	Sound Recording	Relative Output	0-100	A ...												
18.5.56	D.159	Descriptive Scale	Scale Rating	0-100	B ...	22	40	40	40	70	50	15	55	55	50	55	—
19-20.5.56	—	Sound Recording	Relative Output	0-100	C ...	3	60	90	90	75	40						
18-19.6.55	D.157	Selective Count	Phrases per Hour		D ...	1050	630	1560	790	1270	1700	1860	2890	3450	2390	2000	1590

Details of the different methods used are given in the text.

Area A is the colony westward of Prior Castell's Tower.
Area B is the main colony on the east side of the Island as heard from the south-east side of the Tower.
Area C is the main colony as heard from the watcher's seat at the east end of St. Cuthbert's Chapel.
Area D is the south-east corner birds of the main colony as heard from just beyond the edge of the colony at this point.

* Scale Rating 20, midnight May 17th-18th ; 10, midnight May 18th-19th.

ORNITHOLOGICAL REPORT FOR NORTHUMBERLAND AND DURHAM FOR 1957

Compiled from the notes and records of members of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne and many other observers throughout the two Counties

by

FRED G. GREY, M.A.
(Hon. Sec. Ornithological Section)

FOREWORD

For twenty-three years, since its inception in 1933, the Ornithological Report has been compiled by Mr. G. W. Temperley, and it was with very great regret that the Committee of the Ornithological Section learnt, in 1956, that he had to relinquish this task.

The Committee has now assumed responsibility for the Report and for the acceptance of all records. Mrs. E. M. Lamb has assisted by filing the record cards, while the actual compilation has been carried out by the secretary of the Section, Mr. F. G. Grey. His task has been one of condensation from the mass of material submitted, and the many records which have perforce been omitted have nevertheless contributed to the general synthesis, for the Report is essentially the outcome of co-operation.

The names of those who have contributed records published in the Report are given at the end, and the Committee would like to thank them for their valuable assistance, making special mention of Mr. G. W. Temperley for his help both now and in the past. They would also like to express their thanks to Professor J. Boyes for his work on Operation Waterlog and to Mr. J. E. Ruxton for organising the Wildfowl Counts.

Abbreviations used :—N.=Northumberland ; D.=Durham ; *B.B.* =*British Birds* ; *O.R.*=*Ornithological Report* ; *F.I.O.R.*=*Farne Islands Ornithological Report.*

WEATHER CONDITIONS AND BIRD LIFE

Early Nesting

There were no prolonged spells of severe weather in the first quarter of 1957, and the generally mild conditions favoured early nesting by a few optimists amongst our resident birds. The most remarkable example was of a pair of Blackbirds feeding young in the nest at Gosforth during the first week of February. A nest of the same species at South Shields contained the first egg on March 6th. Mr. Philipson, of Haltwhistle, saw ten fully-grown juvenile Lapwings on the neighbouring hill-pastures on May 5th, indicating that eggs had been laid as early as the end of February or beginning of March.

Early Migrants

The mild, sunny weather of mid-March encouraged the early arrival of summer visitors :—Sand-martin : March 15th, two at Riding Mill, N. (G.W.T.) ; March 17th, one near Darlington, D. (A.Ba.). Wheatear : March 13th, one at South Shields, D. (L.J.K.), followed by several other occurrences of single birds until a notable passage on March 23rd. Garden-warbler : April 1st, three different birds singing near Horsley, N. (R.M.P.). Chiffchaff : March 14th to 16th, one in a garden at South Shields, D. (F.G.G. & P.H.), March 14th and 15th, one heard at Corbridge, N. (W.M.B., R.G. & E.M.L.). Tree-pipit : March 18th, two singing near St. Mary's Island, N. (J.D.P.).

Late Passage and Wintering of Summer Visitors

Migrants were also recorded on dates long after the usual times of departure. A Swallow, for instance, was seen at Seahouses, N., on November 24th (per G.W.T.). Most remarkable were the number of such records for *Phylloscopi*. (See Classified Notes 356, 360.)

Drift-migration in Autumn

From September 20th to 26th, weather conditions were such as to cause drift-migration from the Continent, probably from the region of Denmark, with anticyclonic weather over northern Norway and a series of Lows coming into the Channel area from the Atlantic. On the north-east coast, we experienced east and south-east winds accompanied by coastal fog and rain.

While the scale of the movement did not approach that of early September, 1956, there was a notable influx of birds, involving many

Wheatears, Redstarts, and Pied Flycatchers. Rare visitors were included, two Bluethroats, a Barred Warbler, and a Richard's Pipit. During the same period there was a marked increase in Bar-tailed Godwits and Ruffs at Teesmouth, and a concentration of the unusually large numbers of Little Stints recorded on autumn passage.

Unusual Numbers of Tits in Autumn

Apparently originating in south-east England about mid-September, remarkable movements of *Paridae,* particularly Blue Tits, were a feature of the autumn, evident in our district also. (See 288-294).

Sea-bird Movements

Several notable passages of sea-birds were recorded. Apart from movements of Manx Shearwaters (see 16), on January 16th (wind N.N.W.) off St. Mary's Island, a southerly passage included 186 auks (mostly Guillemots) and 24 divers within half-an-hour. When put up by a passing fishing boat, no fewer than 85 divers were in the air at once and at least as many auks (J.D.P.).

Northerly movements occurred in conjunction with easterly winds between May 22nd—24th, mainly of auks and Fulmars (F.G.G.), and on several dates in September, when Gannets, Fulmars, auks, divers, Kittiwakes, Manx Shearwaters and one Sooty Shearwater and skuas were observed, including 200 Pomatorhine Skuas off Teesmouth, D.

A spectacular passage occurred on November 9th and 10th in an easterly gale, involving Gannets, Teal, Golden-eye, Long-tailed Ducks, Scoters, Arctic, Great and Pomatorhine Skuas, many thousands of Kittiwakes and Little Auks.

BIRD-RINGING

Birds ringed in 1957 totalled 7,526 ; 4,560 of these were on the Farnes, and it is believed that this was the largest number recorded by any natural history society or bird observatory. Ringing was again carried out in the State Forests at Hamsterley, Kielder and Redesdale, as well as in other parts of Northumberland and Durham, and the thanks of the Society are extended to J. and T. H. Alder, A. Blackett, Miss D. N. Bell, Miss C. Greenwell, F. G. Grey, W. McCavish and J. Tait for their valuable assistance.

Among the many adults trapped were a Sparrow-hawk, a Wood-sandpiper, a Little Stint, 16 Dunlins, two Great Spotted Woodpeckers, 83 Great Tits, 251 Blue Tits, seven Dippers, two Redwings, 110 Blackbirds, 131 Hedge-sparrows, seven Waxwings, a Woodchat-shrike, 565 Starlings and ten Snow-buntings.

Full details of the Farne Islands ringing are given in the *F.I.O.R., 1957*. The numbers of the remaining individual species were as follows :—

Sparrow-hawk 1 ; Merlin 9 ; Kestrel 15 ; Lapwing 39 ; Ringed Plover 1 ; Golden Plover 4 ; Common Snipe 3 ; Curlew 3 ; Wood-sandpiper 1 ; Common Sandpiper 8 ; Redshank 7 ; Little Stint 1 ; Dunlin 16 ; Kittiwake 20 ; Arctic Tern 1 ; Wood-pigeon 7 ; Cuckoo 1 ; Little Owl 1 ; Tawny Owl 6 ; Great Spotted Woodpecker 6 ; Skylark 3 ; Swallow 53 ; House-martin 14 ; Sand-martin 4 ; Carrion-crow 5 ; Rook 2 ; Jackdaw 10 ; Great Tit 190 ; Blue Tit 333 ; Coal Tit 63 ; Marsh Tit 4 ; Long-tailed Tit 8 ; Tree-creeper 15 ; Wren 8 ; Dipper 32 ; Mistle-thrush 9 ; Song-thrush 86 ; Redwing 2 ; Blackbird 243 ; Wheatear 1 ; Redstart 126 ; Robin 77 ; Sedge-warbler 9 ; Blackcap 2 ; Garden-warbler 6 ; Whitethroat 56 ; Willow-warbler 52 ; Wood-warbler 11 ; Goldcrest 3 ; Spotted Flycatcher 13 ; Pied Flycatcher 74 ; Hedge-sparrow 181 ; Meadow-pipit 3 ; Tree-pipit 11 ; Rock-pipit 4 ; Pied Wagtail 31 ; Grey Wagtail 7 ; Waxwing 7 ; Woodchat-shrike 1 ; Starling 695 ; Greenfinch 52 ; Goldfinch 1 ; Linnet 55 ; Lesser Redpoll 9 ; Bullfinch 38 ; Crossbill 1 ; Chaffinch 66 ; Yellow Bunting 35 ; Reed-bunting 9 ; Snow-bunting 10 ; House-sparrow 25 ; Tree-sparrow 61.

A list of recoveries is given below : in addition, two Song-thrushes, three Blackbirds, a Wood-pigeon, a Yellow-bunting and 15 Starlings have been recovered within a short distance of the place of ringing. Two local recoveries are of special interest ; the first is a Great Tit, NC 0420, which was ringed in a nesting box in Hamsterley S.F. on May 30th, 1953, and was found nesting in another box on May 26th, 1957, while the second was a Willow-warbler, ringed by A. Blackett at Fenwick, near Beal, on August 10th, 1957, which flew into a house of one of our members at Ryton-on-Tyne exactly a month later.

Recoveries of ringed birds :—

Date and place ringed	*Place recovered*	*Date recovered*
SPARROW-HAWK		
30.3.57 *Fenwick, Northumberland	Holborn Moor, Northumberland (shot)	late August, 1957
SWALLOW		
30.6.57 Dinnington, Northumberland	Haydon Bridge, Northumberland (came into house, presumed released)	5.8.57
DIPPER		
17.9.56 Bywell, Northumberland	Woolsington, nr. Newcastle upon Tyne	3.3.57
WILLOW-WARBLER		
10.8.57 Fenwick, Northumberland	Ryton-on-Tyne, Co. Durham (flew into house, died)	10.9.57
STARLING		
1.2.56 *North Shields	Felton, Northumberland (shot)	*ca.* 1.2.57
31.1.57 *Newcastle upon Tyne	Witton Gilbert, Co. Durham (hit wires, being cared for)	10.2.57
23.12.56 * ,,	Thornton, nr. Bradford, Yorks.	3.3.57
31.12.56 * ,,	Ryton-on-Tyne, Co. Durham	18.3.57
3.2.56 *North Shields	Ventspils, Latvian S.S.R.	18.3.57
17.3.56 *Newcastle upon Tyne	Petkum, nr. Emden, Niedersachen, Germany	*ca.* 31.3.57
10.2.56 * ,,	Mustvee, Estonian S.S.R. (died, presumably due to cold weather)	14.4.57
27.12.57 * ,,	Sommersted, Jutland, Denmark (killed striking telephone wires)	17.5.57
3.12.56 (w) ,,	Steinkjer, Nord-Tröndelag, Norway	27.8.57

* Indicates bird ringed as adult

(w) Indicates bird ringed as 1st winter

Unless otherwise stated, all birds have been found dead

NESTING-BOX RETURNS. SEASON 1957

Hamsterley Forest

	Nests found		*Broods ringed*	*Broods missed*	*Deserted or destroyed*	*Birds ringed*	
Nesting species	*1957*	*1956*				*1957*	*1956*
Great Tit	24	(12)	20	3	1	100	(17)
Blue Tit	13	(9)	6	3	4	35	(0)
Coal-Tit	3	(9)	3	0	0	21	(40)
Tree-Creeper	1	(3)	1	0	0	3	(0)
Redstart	9	(16)	8	0	1	37	(35)
Pied Flycatcher	15	(17)	10	1	4	52	(47)
	65	(67)	48	7	10	248	(139)
			55 (52)				

The above analysis has been compiled from data supplied by Miss N. Bell and Miss C. Greenwell, who do invaluable work in this branch of the Society's activities.

RECORDS OF UNUSUAL INTEREST IN 1957

Details of the occurrences of the following rare species will be found in the Classified Notes:—Great Crested Grebe, first successful breeding in Co. Durham (5), Spoonbill (42), Goshawk (94), Osprey (103), Grey Phalarope (187), Mediterranean Black-headed Gull (205), Hoopoe (261), Golden Oriole (278), Bluethroat (324), Barred Warbler (344), Yellow-browed Warbler (360), Red-breasted Flycatcher (370), Richard's Pipit (374), Woodchat-Shrike (386), Little Bunting (420).

CLASSIFIED NOTES

(Records relating to the Farne Islands will be found in the *Ornithological Report on the Farne Islands for 1957*)

1. Black-throated Diver *Colymbus arcticus* L. Up to the end of April the total recorded on the coast by several observers was 22, mostly single birds. The last recorded, on April 22nd at Bamburgh, N., was still in winter plumage (B.J.C. & J.H.). On January 24th and 27th, one was seen on Gosforth Park Lake, N. (N.G., E.N.G.R., T.W.)

The first autumn record was of a single bird in summer plumage flying north off St. Mary's Island, N., on August 29th. That Black-throated Divers are relatively few on our coast is indicated by the lack of any definite autumn record for the intensively-watched Teesmouth, and by the occurrence of only one bird during a 6½ hours' watch at

Whitburn, D., on November 10th, when there was a great northerly passage of sea-birds. (F.G.G.). Moreover, there are only two other autumn records : September 29th, one flying north off Souter Pt., D., and another on the sea (F.G.G.) ; November 24th, a total of four off Ross Back Sands, N. (A.Ba., D.G.B. & P.J.S.)

2. Great Northern Diver *Colymbus immer* Brünn. As early as January 1st one at Seaton Snook, Teesmouth, was well advanced into summer plumage. (P.J.S.) A few records scattered over the first four months of the year relate to Teesmouth and the Holy Island-Bamburgh area. The latest occurrences were of two flying north off Whitburn, D., on May 22nd, and one flying north off Seahouses, N., on May 31st. (F.G.G.)

The only autumn records were in November : one certainly and one probably of this species flying north off Dunstanburgh, N., on the 10th (W.S.C.) and a total of four in the Holy Island-Bamburgh area on the 23rd and 24th. (A.Ba., D.G.B. & P.J.S.)

At least thirty flying south in the course of half-hour's watch on November 11th at Stag Rocks, Bamburgh. (E.A.R.E.)

4. Red-throated Diver *Colymbus stellatus* Pontopp. Very common along our coast in January and February, apparently more numerous than usual. (F.G.G., J.D.P., P.J.S.) An interesting communal display of several adult birds was seen off St. Mary's Island, N., on January 5th. (J.D.P.) On January 19th, 45 flew north off Hartlepool, D., in three hours. (P.J.S.) One occurred on Gosforth Park Lake, N., on February 9th and 10th. (M.B., L.G.H., W.R.L.) The last spring record was of three at Hartlepool, D., on May 25th. (D.G.B. & P.J.S.)

One flying north at Hartlepool on August 25th was the first record for the autumn. (A.Ba. & P.J.S.) They were numerous at Teesmouth in the third and fourth weeks of September (P.J.S., *et al*), and on November 16th at Hartlepool, D., 51 were recorded flying south in $3\frac{1}{2}$ hours.

5. Great Crested Grebe *Podiceps cristatus* (L.). For the first time on record, this species bred successfully in Co. Durham. The only attempted breeding in Northumberland was baulked by a fall in water-level.

A single bird spent the early part of the year at Teesmouth (D.G.B., P.J.S.), another was seen during February and March in the vicinity of Holy Island by several observers, and on April 2nd, an adult with well-developed crest was fishing close to St. Mary's Island, N. (J.D.P.)

First seen on September 28th, an immature bird was at Teesmouth until October 13th. (P.J.S., *et al*) This may have been the bird recorded on the Marsden, D., stretch of coast from October 23rd throughout November and December. The only other record was an immature bird on Whittle Dene Reservoirs, N. on December 21st (C.M.A.).

6. Red-necked Grebe *Podiceps grisegena* (Bodd.). Records for the first part of the year were concentrated in April, except for a single bird seen at Teesmouth on January 26th (D.G.B.) ; April 2nd, one at Annstead, N. (H.T.A. & F.G.G.) ; April 15th and 20th, one in full plumage in the Kettle, Inner Farne (*F.I.O.R.*) ; April 22nd, one at Teesmouth, and two off Stag Rocks, Bamburgh (per P.J.S.).

Only two records for autumn and winter : August 22nd, one in full plumage flying north off Monk's House, N. (E.A.R.E.) ; November 17th, one at Teesmouth (per P.J.S.).

7. Slavonian Grebe *Podiceps auritus* (L.). The greatest concentration of grebes reported was off Ross Back Sands, N., where at least 30 small grebes were scattered about on February 2nd, the great majority identifiable as Slavonian. (A.Ba., C.G. & F.G.G.) At least 17 at the same place on March 31st. (A.Ba., B.J.C. & P.J.S.) Only two other records for the beginning of the year : January 5th, one at Teesmouth (A.V., per P.J.S.) ; January 19th, one at Seaton Sluice, N. (T.W.).

The only records for the last quarter of the year refer to numbers in the Holy Island-Bamburgh area.

8. Black-necked Grebe *Podiceps caspicus* Hablizl. None definitely recorded until August 20th, when one in transitional plumage was seen near Cresswell, N. (E.L.A.) The only other records were as follows : November 24th, one off Stag Rocks, Bamburgh, N. (A.Ba., D.G.B. & P.J.S.) ; December 12th, one in Tees estuary (per G.W.T.) ; one December 14th and 15th in Hartlepool Docks, D. (P.J.S.)

16. Manx Shearwater *Procellaria p. puffinus* Brünn. Numerous records from the first, on March 31st, of a single bird flying north at Bamburgh, to the last, one bird flying north off Whitburn, D., in a prolonged passage of sea-birds on November 10th, indicate more intensive coastal watching. Several northerly movements were observed during periods of north-easterly winds, the most notable being from July 27th to July 30th inclusive : July 27th, at Teesmouth, 70 passed north in one hour ; July 28th, at Whitburn, D., 79 in 70 mins. ;

July 29th, at Beadnell Pt., N., 39 in 70 mins.; on July 30th, at Whitburn, D., 28 in half-an-hour.

Other northerly movements occurred in August and September, some of them coinciding with storms in the English Channel, as J.D.P. pointed out.

Evidence that Manx Shearwaters do sometimes fly south off our coast is afforded by a record from Teesmouth for August 4th, when *c.* 100 in the afternoon, and 33 during half-an-hour in the evening, flew south in a strong S.E. wind. (J.S.A., *et al.*)

19. Great Shearwater *Procellaria gravis* O'Reilly. The only two records were in August at St. Mary's Island, N., a single bird flying north on the 22nd, and two going south on the 27th. (J.D.P.)

21. Sooty Shearwater *Procellaria grisea* Gmelin. Definitely identified on only two occasions, both at Hartlepool, D., where single birds were recorded on August 7th (per P.J.S.) and September 29th (D.G.B., J.H. & A.V.)

26. Fulmar *Fulmarus glacialis* (L.). The colony centred on Marsden, D., continues to flourish, for 112 nestlings were counted along the cliffs between Tyne and Wear. (F.G.G.) Birds again nested about five miles from the sea in Northumberland, but with what degree of success is not known. The earliness of the return for the breeding season at established colonies was illustrated by the presence of at least 26 Fulmars at Cullernose, N., on November 13th (W.S.C.), and of a few birds at Marsden, D., on November 14th. In connection with this, it is interesting that only one Fulmar was recorded at Teesmouth (D.G.B.), and perhaps the same bird at Whitburn, D. (A.N.), in a day-long passage of sea-birds on November 10th.

27. Gannet *Sula bassana* (L.). Gannets homing in spring were first noted on April 6th, when 187 adults passed north off Whitburn, D., in 1½ hrs. (F.G.G.) This movement continued on a bigger scale on April 7th, when it was recorded at Hartlepool, D., Whitburn, D., and St. Mary's Island, N. (B.J.C., F.G.G., J.D.P.)

Gannets were recorded on numerous occasions throughout the summer, sometimes in concerted movements, until a pronounced southerly passage was observed at Hartlepool, D., on September 15th, when 365 were counted during nine hours. (B.J.C., D.G.B., P.J.S.)

Doubtless swept inland by strong north-easterly gales an adult Gannet was found on allotments at Darlington, D., on December 14th. Although apparently uninjured, it died two days later. (A.Ba.)

28. Cormorant *Phalacrocorax carbo* (L.). Nine nests were seen on Marsden Rock, D., but only two separate nestlings were noted. (F.G.G.)

On March 30th, at Seaton Sluice, N., an extremely white-headed bird with the typical head-pattern of the southern race was seen flying south at very close range. (F.G.G. & D.W.)

On April 21st, one was seen fishing on Colt Crag Reservoir, N. about 25 miles inland. (K.I.)

29. Shag *Phalacrocorax aristotelis* (L.). A Shag ringed as a nestling at Aberdaron Bay, Bardsey, on June 13th, 1957, was found dead at Marsden, D., 200 miles N.E. of Bardsey, on September 3rd, 1957. (J.E. & J.Ed.)

30. Heron *Ardea cinerea* L. Northumbrian Heronries : Longridge, Berwick, again no nests (H.F.C.) ; Chillingham Park, four nests (Lady Tankerville) ; Boundary Wood, Alnwick, two nests (J.E.R.) ; Woods near Bellingham, five nests (K.I.) ; Styford, Tyne Valley, five nests (R.L.B.). Adult birds have recently been found shot on the banks of the Tyne.

Durham Heronries : Dyance Wood, Gainford, seven nests (per A.Ba.). On April 7th it was estimated that there were about 20 nests in the larch plantation, but on the 27th three adults and from seven to nine young were found dead (shot) on the ground beneath the trees and only seven nests were still in occupation.

Total number of occupied nests in the two counties was only 23, as compared with 31 in 1956, the lowest number on record !

38. Bittern *Botaurus stellaris* (L.). One recorded at Gosforth Park Lake, N., by many observers throughout the year. " Booming " was first heard on March 17th, and thereafter on many occasions until June 14th.

One picked up exhausted in Sunderland, D., on January 4th, was later released. (per R.H.L.)

On December 21st, one flushed near a hedge at Fenwick Granary, N. (A.B.)

42. Spoonbill *Platalea leucorodia* L. A single record, of one bird flying south over Fenham Slakes, N., on October 8th. (F.S.) The previous occurrence in Northumberland was on May 16th, 1948.

45. Mallard *Anas platyrhynchos* L. A well-distributed species, on all waters. Examples of large flocks : *c.* 300 at Capheaton, N., on November 24th (C.M.A., A.M.), and 344 at Jarrow Slake, D., on

February 25th (F.G.G.). The highest aggregate in the counties for the closing part of the year was 4,096 in November. (per J.E.R.)

46. Teal *Anas crecca* L. Aggregates recorded in the Wildfowl Census are surprisingly low, building up from 53 in July to only 532 in December. (per J.E.R.)

47. Garganey *Anas querquedula* L. First noted at Teesmouth on April 14th, when a pair arrived, birds were seen there on many subsequent occasions, including five drakes, on May 9th. Although no nest was found, a party of seven birds watched frequently from July 23rd onwards included five in juvenile plumage, a brood thought to have been reared locally. (P.J.S. *et al.*)

The now annual occurrence on Holy Island Lough was duly noted on April 6th. (M.B.)

Rarely recorded at Grindon Lough, N., a drake was seen there on May 19th. (A.J.C.)

A pair seen on several occasions between August 11th and 25th at Hurworth Burn Reservoir, D. (A.Ba., P.L.H., P.J.S.)

49. Gadwall *Anas strepera* L. Only one record for spring, a pair on Holy Island Lough on April 1st. (B.J.)

Very few were seen at the end of the year, an early visitor at Teesmouth appearing on August 8th. (A.Ba., P.J.S.) On October 15th, two identified on Greencroft Ponds, Annfield Plain, D. (E.S.) A female at Holywell Ponds, N., on October 12th. (M.B.) On October 29th, three on Gosforth Park Lake, N. (T.W.) A drake spent the rest of the year at Gosforth.

50. Wigeon *Anas penelope* L. Towards the end of September, *c.* 1,000 arrived on Holy Island Slakes, but nearly all resumed their travels before the arrival of the wintering flocks. (F.S.)

52. Pintail *Anas acuta* L. Reported in small numbers from various waters, the largest parties being at Teesmouth, as in previous years ; on March 30th, nine were present, and eleven or more frequented the area from August 10th to September 7th, some of them juveniles. (A.Ba., D.G.B., P.J.S.)

As usual, a few wintered at Gosforth, N., and Jarrow Slake, D.

53. Shoveler *Spatula clypeata* (L.). At least three pairs attempted breeding on the Teesmouth marshes, two successfully, and in August flocks of up to 48 were seen, quickly dispersing after September 1st. (per P.J.S.)

Autumn flocks were recorded elsewhere, the largest being at Gosforth Park Lake, 40 on August 25th, and 25 to 30 in October and November. On August 11th, 28 were at Hurworth Burn Reservoir, D. (A.Ba. & P.J.S.)

Shovelers were also recorded on the coast: on March 2nd, eight drakes and two ducks were swimming off-shore at St. Mary's Island, N. (J.D.P.); a duck and drake flying north off Whitburn, D., on April 6th (F.G.G.); on July 9th, a drake and two ducks near St. Mary's Island, N., and on July 31st, seven present at Beadnell, N. (J.S.A.)

55. Scaup *Aythya marila* (L.). Numbers fell far short of the "invasion" of 1956, the largest flock recorded being a party of 24 at St. Mary's Island, N., on January 19th. (J.D.P.) Small flocks, maximum 18, were seen by various observers passing Hartlepool in September and October. An indication of their general scarcity is perhaps afforded by the fact that in the great northerly passage of November 10th only two were seen flying north in a watch of 6½ hours at Whitburn, D. (F.G.G.) A rather unusual date was the occurrence of a drake on July 13th at Holy Island. (B.J.)

56. Tufted Duck *Aythya fuligula* (L.). Widespread and in fair numbers; the largest concentration was reported at Gosforth Park Lake, where 106 were counted on the partly frozen lake on February 17th. (D.G.B.) Other sizeable flocks were 52 on Bolam Lake, N., on October 20th, and 70 on Capheaton Lake, N., on November 24th. (C.M.A. & A.M.)

On four occasions from August 24th to October 20th inclusive a few were recorded flying north over the sea at Hartlepool, D. (D.G.B., P.J.S.) A duck and drake seen on the sea at Seaton Sluice, N., on March 10th. (D.G.B.)

57. Pochard *Aythya ferina* (L.). This species was apparently more numerous than usual in 1957, as illustrated by flocks of 124 on Grindon Lough, N., and 75 on Greenlee Lough, N., on October 20th, the largest concentration the observer had ever seen on the Northumbrian Lakes. (A.J.C.) At the same time, October 19th, another wildfowl counter, who had seen few Pichard in recent years, recorded 37 on Sweethope Lough, N. (K.I.) In November, *c.* 30 were present on Holywell Ponds, N. (M.B.) The rare occurrence of a Pochard on the coast was noted at Teesmouth, where a drake was flying over the sea on November 3rd in company with seven Scaup and one Teal. (D.G.B.)

60. GOLDEN-EYE *Bucephala clangula* (L.). Seen in small numbers on most waters. The Tweed as usual carried by far the greatest concentration, counts of 35 in November and 90 in December. (F.B.) An immature bird was present at Teesmouth for about a fortnight in June. (D.G.B.)

Amongst the thousands of birds flying north over the sea on November 9th and 10th were several parties of Golden-eye, the largest of 15 birds.

61. LONG-TAILED DUCK *Clangula hyemalis* (L.). More numerous than for many years, particularly in the late autumn.

On January 6th, seven amongst the large flock of Common Scoter wintering at Seaton Sluice, N. (M.B.) Small parties in Holy Island-Bamburgh area during early part of year.

To select from the many records for October-December: on October 15th, a flock of 20 on Fenham Flats, N., " the most seen there for some years " (F.S.); on November 11th, at least 30 in the Bamburgh area and up to 12 more further south (E.A.R.E.); numbers also recorded at Dunstanburgh, Seaton Sluice, Whitburn, and Hartlepool.

62. VELVET SCOTER *Melanitta fusca* (L.). The paucity of records stands in marked contrast to the winter of 1955-56. Indeed, only one record received for first three months of 1957. A few reported in July. Occurrences in autumn were also infrequent and involved only very low numbers, the highest being a party of six present at Hartlepool, D., from October 5th to 13th. (P.J.S., *et al.*)

64. COMMON SCOTER *Melanitta nigra* (L.). Several coastal watchers reported flocks flying north in the months June to September. Prominent in the coastal passage of November 9th and 10th.

67. EIDER-DUCK. *Somateria mollissima* (L.). At the end of the year, more numerous at Teesmouth than ever previously recorded, *c.* 30 being present in late December. (D.G.B., P.J.S.)

69. RED-BREASTED MERGANSER *Mergus serrator* L. Seen on the coast each month, but only in small numbers. Two inland occurrences: a female shot at Shotton Brick-ponds, D., on November 10th (D.S.); a female at Crookfoot Reservoir, D., on December 15th. (B.J.)

70. GOOSANDER *Mergus merganser* L. Again bred successfully in Northumberland. Its main winter-haunts are the hill loughs, but no large concentrations were reported.

71. Smew *Mergus albellus* L. Only two records for the whole year indicate the scarcity of the Smew in our two counties : a duck or immature bird on Grindon Lough, N., on January 1st (A.J.C.) ; a duck flying south over the sea at Hartlepool, D., during a N.N.E. gale on January 13th. (per P.J.S.)

73. Sheld-Duck *Tadorna tadorna* (L.). Successful breeding at Fenham Flats and Teesmouth. After breeding, numbers drop during the period of moult-migration, and it is interesting to note the build-up during the winter at these two haunts of the species. At Teesmouth, on January 1st, 70 flew into the estuary from the N.E., and a count made later showed 400 inside the estuary. This number had risen to 500 on February 10th. Some birds then moved elsewhere, for numbers had dropped to 80-100 in April. (B.J.C., P.J.S.)

Similarly at Fenham Flats, N., at least 240 were present on January 7th and 250 on March 17th, a total which had dropped to 75 on April 14th. (F.B.)

In connection with the drop in numbers, it may be significant to recall the 1956 observation of many hundreds of Sheld-duck flying north past Holy Island on February 16th and 17th.

Further evidence of passage through the Tyne gap is afforded by a record from west of Haltwhistle, N., where a flock of 33 was seen flying east at 9.20 p.m. (B.S.T.) on the cloudless night of June 25th, " the earliest date on which I have observed the moult-migration." (M.P.)

On July 5th, 13th and 16th, small parties of Sheld-duck were seen flying north off St. Mary's Island. (J.D.P.)

75. Grey Lag-Goose *Anser anser* (L.). At Holy Island, *c.* 200 present on January 27th and *c.* 50 on February 24th ; *c.* 100 roosting at Holborn Moss, N., on March 17th. (F.B.) On January 12th, five at Colt Crag Reservoir, N. (J.R.C.)

Once again a party spent the summer at the Farne Islands ; first recorded on June 13th, when two were seen, the maximum recorded was 11 on August 10th. (*F.I.O.R.*) On September 8th, three seen on the sea at some distance from Stag Rocks, Bamburgh, N., were no doubt members of this " summering " party.

The flock of *c.* 200 geese reported as Grey Lags, seen to come in from the sea near Budle Bay, N., on October 6th (per E.A.R.E.) might well have been the Holborn birds arriving, for *c.* 250 roosted at Holborn Moss, N., during the last three months of the year. (F.B.)

78(A). BEAN-GOOSE *Anser arvensis arvensis* Brehm. Once a regular resort of the species, the area of the Northumbrian Lakes was visited by a party of six, which was present at Grindon Lough from March 16th to 19th. (A.J.C.)

78(B). PINK-FOOTED GOOSE *Anser arvensis brachyrhynchus* Baillon. Only 28 at Holy Island on January 27th, but *c.* 200 on February 24th. (R.H.) An impressive sight was provided by three great skeins totalling *c.* 500 flying N.W. near Haltwhistle, N., on March 9th. (M.P.)

In autumn, 12 seen flying south off Hartlepool, D., on September 15th, an early date, when the species arrived at Spurn also. (A.Ba., D.G.B., & P.J.S.) At Holy Island, 87 on December 3rd. (R.H.)

80. BRENT GOOSE *Branta bernicla* (L.). Maximum in the 1956-57 winter for Holy Island Slakes was *c.* 1,000 on January 9th. On February 9th a flock of 250-300 came in to feed on Fenham Flats as the tide ebbed. (A.Ba., C.G. & F.G.G.) *c.* 100 were still present on March 9th. (A.J.C.)

In December, on the same flats, 65 were seen on the 3rd (R.H.) and *c.* 140 on the 23rd. (E.L.A.)

81. BARNACLE GOOSE *Branta leucopsis* (Bechstein). The only record for the year was of 26 at Holy Island on October 20th. (R.H.)

82. CANADA GOOSE *Branta canadensis* (L.). As in 1956, Canada Geese have been reported from various places between Tweed and Tees in most months of the year. At St. Mary's Island, N., on January 3rd, one seen flying south, and on January 30th, two came flying low from the south and turned out to sea on an E.N.E. line, held undeviatingly during the four minutes under observation. (J.D.P.) The first record for the Tees estuary occurred on May 15th, when two were seen. (D.S-S. & P.J.S.) On June 1st, one with Mute Swans on the Tweed estuary. (H.F.C.)

On June 2nd, what was apparently the same flock was seen at three widely-separated places: at 10.25 a.m. *c.* 32 seen flying south near Chathill, N. (M.B.); about 1.0 p.m. *c.* 35 swimming close inshore at Whitburn, D., where one was shot by local youths (per F.G.G.); about 2.0 p.m. 29 settled on Hurworth Burn Reservoir, D., but did not stay long. (P.R.)

One seen on June 10th on Cowpen Marsh, Teesmouth. (A.J.V.) It seems as if the flock recorded on June 2nd finally decided upon the amenities provided in the Bamburgh area, for about 40 were seen there on a number of occasions in September and October. (E.A.R.E.)

85. Whooper Swan *Cygnus cygnus* (L.). The Wildfowl Census shows it as fairly numerous and well distributed, being most numerous on Holy Island Slakes, where there were *c.* 100 on February 9th. (A.Ba., C.G. & F.G.G.) At the end of the year, *c.* 200 were on the Slakes in November. (R.H.)

Another regular haunt is the Northumbrian Lakes, a flock of 22 being present in mid-April. (R.M.T.G. & E.M.L., B.J.) The latest record for the spring was of a single bird at Grindon Lough on May 19th. Numbers were high at the end of the year, showing a maximum of 63 at Grindon Lough on December 1st. (A.J.C.)

As usual, a number spent both winters in S.E. Northumberland, and a tour of Holywell and neighbouring waters on March 9th showed a total of 19, falling to a maximum of 11 at the end of the year.

86. Bewick's Swan *Cygnus bewickii* Yarrell. A few records only. From January 11th to 15th, three adults and four immature birds were on Holy Island Lough. (D.G.B., R.H.) They were seen at the same place with four Whoopers on March 2nd. (W.R.L.) On March 9th, one with nine Whoopers on Grindon Lough, N. (A.J.C.)

From October 20th onwards, two at Holy Island Lough. (R.H.) On December 22nd, two amongst 36 Whoopers on Grindon Lough, N. (C.M.A., A.J.C.) On December 30th, seven on a flooded field near Rainton Gate, D. (Letter to *The Field*, January 16th, 1958.)

89. Golden Eagle *Aquila chrysaëtos* (L.). One seen in the Cumberland Pennines on May 29th, was followed until it was last seen soaring over the Northumberland side of the county boundary. (E.B.)

91. Buzzard *Buteo buteo* (L.). A few records of single birds. On March 9th and 17th, one in the Haltwhistle neighbourhood, N. (M.P.) On September 20th, one near Langley Castle, N. (K.I.) One in the Fenwick-Kyloe area from May 12th to June 2nd. (E.A.R.E. & B.L.) In the same area, two present in September (A.B.), and one on November 30th. (E.A.R.E. & B.L.)

92. Rough-legged Buzzard *Buteo lagopus* (Pontopp.). One seen to fly in from the sea near Fenham, N., on October 6th, spent the rest of the year in the district. (E.A.R.E. & B.L.)

94. Goshawk *Accipiter gentilis* (L.). For the first time since 1912 this rare species occurred in Northumberland ; for Durham there exists only one well-authenticated record. Unfortunately, it was accidentally shot in a Wood-pigeon shoot near Blagdon, N., on November 29th, and proved to be a first-winter female of the North European

form, with plumage much soiled as if it had spent much time in an industrial area. (S.E.C., M.W.R.)

98. Honey-Buzzard *Pernis apivorus* (L.). One haunted the Kyloe district, N., from November 3rd until December 31st. (A.B., B.L.)

100. Hen-Harrier *Circus cyaneus* (L.). A male spent the early part of the year in the Fenwick-Holborn area, N. (B.L.) Another male was seen near Kielder, N., on April 17th, and stayed for about two weeks. (A.Ba.)

In the autumn, a female or immature bird was seen about Crag Lough, N., on five occasions in the second half of October (per M.P.), and on November 28th, a female was recorded at Blagdon. (M.W.R.)

102. Montagu's Harrier *Circus pygargus* (L.). A male haunted the Durham site in the spring of 1957, but breeding is not known to have occurred in the county.

103. Osprey *Pandion haliaetus* (L.). On May 12th, one fishing in the Tees just above Cauldron Snout. (I.L., per P.J.S.) Two had been seen in Yorkshire about a week previously. On November 22nd, one reported at Tarset on the N. Tyne. (per K.I.)

105. Peregrine Falcon *Falco peregrinus* Tunst. No record of successful breeding in either county. A female was seen to kill a Carrion-Crow in the air over Plenmeller Fell, Haltwhistle, N., on January 24th. (M.P.) Peregrines often resort to the Holy Island Slakes in winter, and on February 9th an immature bird was exploiting the food supply available there. (A.Ba., C.G. & F.G.G.) On October 12th, one seen at rest in Blyth Bay, and flying up Meggie's Burn, N. (M.B.)

107. Merlin *Falco columbarius* L. The only records of Merlins seen on the coast in winter came from Teesmouth, where one was seen on several occasions during the first four months of the year, and two on March 17th. (per P.J.S.) On May 13th, a male was seen to take a House-Sparrow in a garden at Hexham, N., pausing a moment about four yards from the window. (E.M.L.)

110. Kestrel *Falco tinnunculus* L. More records of urban nesting: a pair reared four young on a roof of Vickers' Elswick Works (L.P.H.); a pair nested again on one of the buildings of a hospital at South Shields and reared five young. (F.G.G.)

A considerable increase in the number present about Teesmouth in August, comparable with that of August, 1954.

A young bird ringed at Elwick, N., on June 3rd, 1954, was found dead on January 17th, 1957, at Ancroft Moor, N., only ten miles away. (E.A.R.E.)

113. Black Grouse *Lyrurus tetrix* (L.). A marked increase in the number in the Kielder district. (A.K.F.)

120. Water-Rail *Rallus aquaticus* L. On October 9th, one was seen clinging to the tops of the spartina grass along the tide-line on Fenham Flats as the tide was rising. (F.S.)

125. Corncrake *Crex crex* (L.). Only five records of birds heard calling in Northumberland, and none for Durham. An illustration of the reason for the decrease of the species is afforded by a report from Coanwood on the South Tyne; where, in the last week of June, a nest was laid bare by the reaper and later deserted. At the same time, in another field of the same farm, an adult and five young were killed by the reaper. (M.P.)

127. Coot *Fulica atra* L. Widely distributed, numbers showing a marked increase in the autumn, and the largest concentrations occurring at Capheaton, Holywell and Gosforth : maxima of 320 at Capheaton in November (C.M.A. & A.M.), 123 at Holywell in September (D.H.), 150 at Gosforth in September. (W.R.L.)

131. Oyster-catcher *Haematopus ostralegus* L. Several records of inland nesting-sites, some at a distance from water. As early as February 28th, a pair had returned to the gravel-beds in Coquetdale. (E.M.)

133. Lapwing *Vanellus vanellus* (L.). In the first three months of the year some interesting observations of movements were recorded at St. Mary's Island, N., birds apparently arriving from the south or from the sea and either continuing north along the coast or turning W.S.W., possibly for the Tyne gap. (J.D.P.)

Northerly movements were also recorded in October (F.G.G.) and November (D.R.S. & P.S.).

134. Ringed Plover *Charadrius hiaticula* L. Several pairs recorded at inland nesting-sites, as early as February 19th in Coquetdale. (E.M.) At least six pairs were optimistic enough to attempt nesting at Teesmouth, and three broods were produced eventually. (per P.J.S.)

Passage-birds at Teesmouth totalled *c.* 100 in both spring and autumn.

139. Grey Plover *Charadrius squatarola* (L.). Several counts made along a three-mile stretch of Fenham Flats, N., showed a peak of *c.* 300 on April 14th and again on October 19th. (F.B.) Similarly, at Teesmouth, numbers rose to *c.* 150 on October 6th. Records of small parties from several places on the coast.

140. Golden Plover *Charadrius apricarius* L. Amongst a flock of *c.* 500 at Jarrow Slake, D., on April 13th, it was possible to distinguish many birds of the northern race. The Slake is a great winter-resort of this species, and birds appear as early as mid-July, so that by July 29th *c.* 1,000 were present, some of them distinguishable as northern birds. (F.G.G.)

On November 23rd, near Falstone, N., one in a strikingly aberrant plumage was observed. Its body colour was pale lemon-yellow, with all the normally dark brown markings subdued to a very pale sandy hue, so pale as to give the bird an almost uniform yellow appearance. (A.M., F.J.N. & G.W.T.)

145. Common Snipe *Capella gallinago* (L.). On April 23rd, one flying about the beach and over the sea near the South Shields Pier, D. (F.G.G.)

147. Jack Snipe *Lymnocryptes minimus* (Brünn.). A few records for March, April, September and November.

150. Curlew *Numenius arquata* (L.). Figures for Teesmouth show *c.* 300 congregating as early as July 12th, and *c.* 400 present on August 1st. (A.Ba., P.J.S.) Over a three-mile stretch of Fenham Flats, N., *c.* 250 noted on July 29th, and *c.* 500 on October 19th. (F.B.)

A chick ringed at Stannington, N., on June 11th, 1955, was found dead almost two years later, May 12th, 1957, only three miles away. (J.S.A.)

151. Whimbrel *Numenius phaeopus* (L.). Recorded frequently and in every month between the earliest occurrence on April 26th at Teesmouth and the latest on October 6th at Holy Island.

154. Black-tailed Godwit *Limosa limosa* (L.). Several observers saw a maximum of three at Grindon and Broomlee Loughs, N., from April 19th to 22nd inclusive. The only other spring occurrence was a bird in partial breeding-plumage on May 9th at Cowpen Marsh, Teesmouth. (B.J.C.) Between July 14th and 23rd, one or two birds present on the same marsh. (A.Ba., P.J.S.) An adult in breeding-plumage flew in from the sea at Annstead, N., and after remaining a few minutes

by a pool, continued flying S.S.E. (E.A.R.E.) The only other record for the year was of a single adult at Teesmouth from August 22nd to September 5th.

155. Bar-tailed Godwit *Limosa lapponica* (L.). Numbers about average. An influx at Teesmouth during a period of foggy, easterly weather, for 230 were seen on September 22nd, a leap from the 40 previously recorded on August 28th. (per P.J.S.)

156. Green Sandpiper *Tringa ocrophus* L. Only two separate birds reported in spring, one on April 6th at Monk's House pool, N. (E.A.R.E.), and the other on April 20th at Cowpen Marsh, Teesmouth. (A.V. & A.J.V.) During July, August and September, single birds in the main were seen at several places.

157. Wood-Sandpiper *Tringa glareola* L. No spring records until a single bird at Teesmouth on May 23rd. (B.J.C.) At the same place, one present on June 24th. (D.S.-S.)

Between August 8th and 11th, two present at Teesmouth (P.J.S. *et al.*), one at Darlington Sewage Farm, D. (A.Ba.), and one near Washington, D. (A.H.B.) The last occurrence was a single bird at Teesmouth on September 26th. (A.Ba.)

162. Spotted Redshank *Tringa erythropus* (Pall.). A wintering record : one seen on January 6th, 13th and 14th at Wallsend Swallow Ponds, N., where one had been reported on December 2nd, 1956. (M.B., W.D.R., B.L.)

Two birds which could be recognised individually were seen at Teesmouth on many occasions between March 29th and April 22nd (P.J.S. *et al.*) On April 13th, one at Jarrow Slake, D. (F.G.G.) One in breeding-plumage at Teesmouth on May 4th and 5th (D.G.B., P.J.S.), and two records there for July. On August 17th, one at Wallsend Swallow Pond, N. (M.B.), and on August 27th, one at St. Mary's Island. (J.D.P.) On October 12th, one near Embleton, N. (W.S.C. & J.E.R.), probably the bird seen by many observers in the Bamburgh district during October and November. Another late date, one at Teesmouth on October 24th. (A.Ba.)

165. Greenshank *Tringa nebularia* (Gunn.). As usual, only a few seen on spring passage : one at Budle Bay, N., on April 6th (J.H.N.), and the rest at Teesmouth.

The first bird of the autumn passage was recorded on July 18th at Teesmouth. (B.J.C.) Thereafter, occurrences at many places in August and September, usually single birds ; a flock of 12, calling

excitedly, provided a lovely spectacle at Hurworth Burn Reservoir, D., on September 8th. (D.G.B.) On September 29th, at Teesmouth, the last bird recorded. (D.G.B.)

169. KNOT *Calidris canutus* (L.). The largest flocks were seen in the neighbourhood of Holy Island, N.: on February 9th, 3,000 or more massed at high tide on Black Law (A.Ba., C.G., & F.G.G.); on November 23rd, about 3,000 seen on Fenham Flats. (F.B.)

170. PURPLE SANDPIPER *Calidris maritima* (Brünn.). Some unusually large flocks on spring passage: 85 at St. Mary's Island, on March 24th; 57 at Hartlepool, D., on April 14th, "the largest flock seen at Teesmouth in recent years." (per P.J.S.)

171. LITTLE STINT *Calidris minuta* (Leisler). Two recorded on spring passage: one on Brownsman, Farne Islands, on April 15th (E.A.R.E.), and one at Teesmouth on May 21st and 22nd. (B.J.C. & J.H.)

A noteworthy autumn passage, recorded by numerous observers, was heralded by a single bird at Teesmouth on August 11th. Single birds were then recorded frequently at Teesmouth, and one at South Shields on September 3rd, until evidence of a big influx was supplied by a total of 13 at Fenham Flats, N., on September 13th, increasing to *c.* 50 by September 20th. During the same period, Little Stints were noted at many other places. Numbers continued high until September 29th, birds being seen from Berwick to Teesmouth, where at least 21 were present on September 22nd. It is significant that this concentration was correlated with an influx of Bar-tailed Godwits, Ruffs, and passerines during weather conducive to drift-migration from the Continent, and that during a comparable period at the beginning of September, 1956, Little Stints were also prominent. The latest record, a bird at Fenham, N., on October 27th.

178. DUNLIN *Calidris alpina* (L.). An indication of numbers present in suitable haunts is afforded by figures from Fenham Flats, N.: on January 7th, *c.* 4,000; October 19th, *c.* 10,000; and November 23rd, *c.* 8,000. (F.B.) Also noteworthy is a flock of *c.* 2,000 flying into the Tees estuary on March 2nd. (D.G.B.)

One trapped at Beadnell, N., had been ringed near Stavanger earlier in the autumn. Three ringed on passage in the Monk's House area were later recovered in south-western France, and a fourth recovered in Co. Down, Ireland. (E.A.R.E.)

179. Curlew-Sandpiper *Calidris testacea* (Pall.). Not a single record for the spring passage. Only a few seen in the autumn, except for Teesmouth, where several records throughout September included flocks of 21 and six on September 7th. (D.G.B., J.H., *et al.*)

181. Sanderling *Crocethia alba* (Pall.). Some large flocks on passage, particularly in spring. At St. Mary's Island, N., *c.* 130 present on March 23rd, *c.* 150 on April 22nd, and *c.* 220 on April 30th, " the most I have ever seen here." (J.D.P.) At Teesmouth, *c.* 200 on May 12th and *c.* 500 on May 26th. (B.J.C., P.J.S.) In autumn, a flock of *c.* 150 frequented the north shore of Holy Island for a day or two. (M.B.)

184. Ruff *Philomachus pugnax* (L.). Only a few records for spring passage, mainly from Teesmouth. Many in autumn from widespread localities, the biggest number at Teesmouth, where there was a sudden rise to 33 on September 22nd, coincident with an influx of Little Stints, Bar-tailed Godwits and passerines. (P.J.S.)

A winter record of two birds which arrived on September 21st and stayed until December 21st at Chevington, N., where two also wintered in 1955. (M.F.)

187. Grey Phalarope *Phalaropus fulicarius* (L.). From August 26th to 29th, one seen frequently off Ness-end, Holy Island. (M.B., D.T.P.) One flew in from the sea and afforded close views at the North Gare, Teesmouth, on October 13th. (per P.J.S.) A first-year male, found dead near Ponteland on September 13th, has been mounted for the Museum collection. (per S.E.C.)

193. Arctic Skua *Stercorarius parasiticus* (L.). Of the many records, only two refer to the spring passage : on May 2nd, two dark birds flying north off St. Mary's Island, N., harried a Lesser Black-backed Gull (J.D.P.) ; on May 12th, a dark bird was harrying terns at Teesmouth. (D.R.S. & P.S.)

From June 22nd to November 10th many recorded, noteworthy occurrences being at Hartlepool, D., where a total of 66, with many Great Skuas, was seen flying south in a six-hours watch on September 14th (D.S.-S., P.J.S., & A.V.), a total of 55 going south in a watch of nine hours on September 15th (D.G.B., B.J.C. & P.J.S.), and at least 51 going south with other skuas on September 29th (D.G.B.), on which date a flock of 35 was seen flying N.W. past the South Gare, Teesmouth. (D.R.S. & P.S.) Arctic Skuas were in the great northerly movement of November 10th, when 18 in all went past Whitburn, D., in a watch of 6½ hours. (F.G.G.)

194. GREAT SKUA *Stercorarius skua* (Brünn.) Many records from the end of July until the last seen on November 11th; more than ever before at Teesmouth, due to more intensive watching. On September 14th, for instance, 18 flew south past Hartlepool, D. (D.S.-S., P.J.S. & A.V.) and on September 29th, at least nine, including a flock of seven, were flying N.W. at Teesmouth. (D.R.S. & P.S.)

A winter record is unusual, one seen off Teesmouth on January 1st. (B.J.C.)

195. POMATORHINE SKUA *Stercorarius pomarinus* (Temm.). From September 14th to November 10th *c.* 45 were recorded, principally at Teesmouth, *c.* 25 of them flying north.

198. GREATER BLACK-BACKED GULL *Larus marinus* (L.). On August 7th, *c.* 700 gathered on the beach at South Shields, and on August 22nd, *c.* 1,000 at Seaton Snook, Teesmouth. (F.G.G.)

An indication of the area of origin of the large numbers which appear in late summer and autumn is afforded by a bird ringed as a chick near Stavanger, Norway, on June 17th, 1957, and found dead at Seaton Snook, Teesmouth, on November 16th, 1957. (P.J.S.) cf. *O.R. 1956.*

199. LESSER BLACK-BACKED GULL *Larus fuscus* L. (A) A notable flock of at least 50 was seen on the beach at South Shields, D., on August 7th. A pair nested successfully on Marsden Rock, D. (F.G.G.)

(B) One of the Scandinavian race was seen at South Shields, D., on April 12th. (F.G.G.)

200. HERRING-GULL *Larus argentatus* Pontopp. A record of inland nesting at Holborn Moss, N., where a pair hatched at least one chick. (F.B.)

202. GLAUCOUS GULL *Larus hyperboreus* Gunn. An immature bird, which wintered at Hartlepool, D., was last seen on February 10th. (per P.J.S.) In March and April *c.* six noted on passage, only one of them an adult. The following three records may refer to the same immature bird because of the proximity of dates: April 13th, at Jarrow Slake, D. (F.G.G.); April 14th, at Seaton Sluice, N. (W.D.R.); April 18th, at Cullernose, N. (W.S.C.)

The only autumn and winter occurrences were of single birds on November 9th, 10th, 11th and 12th, during a northerly movement, and of an adult at North Shields Fish-quay, N., on November 30th. (D.G.B.)

203. Iceland Gull *Larus glaucoides* Meyer. Only three definite records for the year: a second-winter bird at St. Mary's Island, N., on January 2nd (J.D.P.); an immature specimen at Seahouses, N., on August 24th (E.A.R.E.); an immature bird at South Shields, D., on September 15th. (F.G.G.)

205. Mediterranean Black-headed Gull *Larus melanocephalus* Temm. The bird first recorded at Hartlepool, D., on October 29th, 1956, was last seen there on March 23rd, 1957, in breeding-plumage. Probably the same bird returned to Hartlepool on August 1st, retaining traces of breeding-plumage on the head, and was seen by many observers to the end of the year.

Simultaneous observations of this bird at Teesmouth, and of another at St. Mary's Island, N., were made at 4.0 p.m. on January 19th. (J.D.P., W.D.R.)

207. Little Gull *Larus minutus* Pall. Three records of single birds on proximate dates in April: 14th, near Capheaton, N. (E.L.A.); 17th, at Whittle Dene Reservoirs, N. (E.L.A.); 19th, an immature bird at Teesmouth (B.J.C. & J.H.). On May 13th, an adult at St. Mary's Island, N. (J.D.P.)

More than usual about Teesmouth, a probable total of 22 from July 10th to September 26th and one on November 9th. Included in this total is a record of ten adults at Crimdon, D., on August 26th. (P.J.S. *et al.*) Four single birds seen at other localities in autumn.

211. Kittiwake *Rissa tridactyla* (L.). Several observers witnessed the remarkable passage from November 9th to 11th, when many thousands, mainly first-winter birds, beat their way northwards.

212. Black Tern *Chlidonias niger* (L.). Records of birds on passage in May from Budle Bay, Holywell Ponds, St. Mary's Island, N., and Teesmouth.

On July 11th, one seen hawking over the Longstone, Farne Islands (E.N.G.), and the first July record for Teesmouth occurred on the 28th. (B.J.C. & J.H.)

Many recorded on autumn passage, from Holy Island to Teesmouth, the occurrences being concentrated in the second half of August and again in the last week of September.

217. Common Tern *Sterna hirundo* L. In spite of the many hazards faced by terns breeding at Teesmouth, at least 20 young reached the flying stage. (P.J.S.)

217/218. Common and/or Arctic Terns. No record of successful breeding on the Northumbrian mainland. Several inland occurrences in late July, August and September, particularly in the Haydon Bridge district, N. Last seen on November 2nd, four at Seaton Sluice, N. (D.G.B.) and on November 3rd, at least eight at Teesmouth. (D.G.B.)

219. Roseate Tern *Sterna dougallii* Mont. Several adults on passage at Teesmouth from July 7th, when four were present, until August 11th. (P.J.S. *et al.*)

222. Little Tern *Sterna albifrons* Pall. No successful breeding reported on the Northumbrian coast, but *c.* 15 young reared at Teesmouth. (P.J.S.) Last seen there on September 15th. (A.Ba. & P.J.S.)

223. Sandwich Tern *Sterna sandvicensis* Lath. First seen was a single bird on March 27th in the Monk's House district. A big passage occurred on April 16th. (E.A.R.E.)

One inland record ; a single bird over Colt Crag Reservoir, N., on July 14th, eventually flying eastwards. (A.J.C. & B.L.) Passage-birds reached a maximum of *c.* 500 at Teesmouth on August 3rd, and the species was last noted there on September 28th. (D.G.B., P.J.S.)

224. Razorbill *Alca torda* L. Razorbills and Guillemots were seen flying north off Whitburn, D., on May 22nd, to the total of 144 in two hours. Measurements of a dying Razorbill picked up the following day showed it to be of the Southern race. (F.G.G.)

226. Little Auk *Plautus alle* (L.). One flying north over St. Mary's Island, N., on October 19th (D.M.), one flying south at Seaton Sluice, N., on November 2nd (D.G.B., P.J.S. & A.V.), and another at Teesmouth on November 3rd (P.J.S.) preceded the great northward procession from November 9th to 12th, with gales from the north-east, noted from various points on the coast. On November 9th, 163 counted in 5½ hours at Teesmouth. (A.V.) At the same place, on November 10th, 181 passed north in 7½ hours (P.J.S. *et al.*), and over a hundred at Whitburn, D. (F.G.G.) Movement on a similar scale was recorded from Monk's House, N., on November 11th and 12th. (E.A.R.E.) That most of the birds got clear with the abatement of the gale is indicated by the paucity of subsequent records : on November 13th, at least 21 on the sea near Cullernose, N. (W.S.C.) ; on November 16th, two at the Farnes (F.B.) ; the last record on November 23rd of one flying north at Seaton Sluice, N. (D.M.)

227. Guillemot *Uria aalge* (Pontopp.) On May 22nd, a northerly passage of Razorbills and Guillemots off Whitburn, D., totalled 144 in two hours. (F.G.G.) Numerous in early August off Teesmouth. (P.J.S.)

229. Black Guillemot *Uria grylle* (L.). One off Hartlepool, D., on April 27th. (A.V.) Many records for the Farnes district involved only a few birds.

235. Turtle-Dove *Streptopelia turtur* (L.). On May 19th, one seen flying north near Embleton, N., and on May 31st one present near Craster, N. (W.S.C.) Several observers recorded the species in north Northumberland during the breeding-season.

237. Cuckoo *Cuculus canorus* L. A summary statement for the Haltwhistle neighbourhood, N. : " Never in my life have I known so few Cuckoos and never have they been so mute." (M.P.) A juvenile, trapped and ringed at Monk's House, N., on June 28th was recovered at Limbourg, Belgium, on August 8th. (E.A.R.E.)

248. Long-eared Owl *Asio otus* (L.). On May 9th, " a tired-looking bird " put up from the cliff-tops at Hartley, N. (J.D.P.).

249. Short-eared Owl *Asio flammeus* (Pontopp.). In marked contrast to the 1956-57 winter, they were particularly numerous in autumn and winter, finding abundant food in the vole-plague. For example, they were noted as " exceptionally numerous " at Blagdon. (M.W.R.) First seen at Teesmouth on August 22nd (F.G.G.), by mid-September at least seven were present, and on September 29th nine were visible simultaneously (D.G.B.), a date when it was estimated that 12 or 14 were over the Tees marshes. (P.J.S. *et al.*) In addition, they were seen in widespread localities by many observers : at Holy Island, Fenham Mill, Embleton, Craster, St. Mary's Island, and South Shields.

252. Nightjar *Caprimulgus europaeus* L. A few records of breeding in the north and south of Northumberland, but none for Durham.

255. Swift *Apus apus* (L.). In view of the complicated movements of Swifts, which should all be recorded, the following is of interest : at Monk's House, N., after noon on June 25th, a total of *c.* 200 passed north, but early the following morning equally large numbers went south again. " I think these are feeding movements, but certainly need careful investigation." (E.A.R.E.) Last seen on October 16th, three with Swallows over Holy Island. (B.L.)

261. Hoopoe *Upupa epops* L. The only occurrence of the year was a first-winter bird on the south side of Budle Bay on September 24th. It was watched at close range feeding avidly on sand-hoppers in the tide-wrack and along the foot of the low bank. Eventually it flew inland, and was last seen flying along a hedge as if seeking a roosting-place. (E.A.R.E.)

262. Green Woodpecker *Picus viridis* L. On May 1st, two seen flying over King's College, Newcastle, towards the trees in Leazes Park. (R.M.P.)

263. Greater Spotted Woodpecker *Dendrocopos major* (L.). A possible migrant, a bird seen amongst stunted trees in the dunes at Newton, N., on November 23rd. (W.S.C.)

273. Shore-Lark *Eremophila alpestris* (L.). Of the three on the Snook, Holy Island, in December, 1956, only one was present in January, 1957. (B.L.) Possibly this was the bird seen with Greenfinches at Beal, N., on January 18th and 19th. (B.L.) The only other record for the year was also in January, a single bird in the sandhills near the North Gare, Teesmouth, on January 12th. (per P.J.S.)

274. Swallow *Hirundo rustica* L. First seen on April 14th: two at Burnhill, near Consett, D. (E.S.) and one at Fenham Flats, N. (F.B.) Latest date, November 24th, a single bird at Seahouses, N. (per G.W.T.)

277. Sand-Martin *Riparia riparia* (L.). As early as March 15th, two seen at Riding Mill, N. (per G.W.T.) Thereafter, four other records for March.

An adult ringed near Kirknewton, Wooler, on July 13th, 1955, was recovered in the Gironde, France, on August 29th, 1957. (E.A.R.E.)

278. Golden Oriole *Oriolus oriolus* (L.). A young male seen and heard at Cockle Park, Morpeth, N., on June 9th. (M.W.R.) On August 8th, a male seen flying about an oat-field some 200 yds. from the sea at Amble, N. (B.J.)

279. Raven *Corvus corax* L. Two or three broods reared, but eggs and young are still destroyed in some districts.

280. Carrion-Crow *Corvus corone* L. Two moorland pairs, in widely separated localities, nested on the ground. (per G.W.T.)

281. Hooded Crow *Corvus cornix* L. Before March 29th, only a few single birds had been seen at Teesmouth (per P.J.S.), and four on Holy Island from January 11th to 15th. (D.G.B.) On March 29th,

one seen flying east over South Shields early in the morning, and on March 30th, seven seen together near Port Clarence, D., (P.J.S.) From that date to the last record on May 15th at Cullernose, N. (W.S.C.), there were only seven records of single birds on passage. One flying north at Hartley, N., was black and brown in colour. (J.D.P.)

As in 1956, no autumn arrival was seen until November, when one appeared to come from over the sea at South Shields on the 10th. (J.Ed.) The only other record to the end of the year was of a single bird at Holborn, N., on November 24th. (D.G.B.)

289. Blue Tit *Parus caeruleus* L. Tits, and in particular Blue Tits, were so numerous in the autumn that the B.T.O. is investigating the phenomenon. It was evident in the North-east, but surprisingly few observers have contributed information. On September 29th, a flock of *c.* 30 was seen at Hartley, N. (J.D.P.), but the biggest movement occurred on October 6th. At Hartley, N., several small flocks, totalling 50-60 birds, were feeding in the grass ; *c.* 50 in a few bushes at Marsden indicates their abundance along the coast between South Shields and Marsden, D. (J.E.) ; large numbers were also present at Teesmouth. On November 2nd, the species was again prominent along the coast from South Shields to Marsden.

290. Coal-Tit *Parus ater* L. A surprising occurrence for South Shields was the appearance of three on September 16th. (F.G.G.) Others seen in unusual places were as follows : one at Graythorp, Teesmouth, on September 26th (A.Ba.) ; one with Blue Tits at Hartlepool, D., on October 12th (A.V. & A.J.V.) ; October 16th, two at Cleadon, South Shields (A.N.) ; October 19th, several on Holy Island. (B.L.)

294. Long-tailed Tit *Aegithalos caudatus* (L.). On October 6th, when Blue Tits were so numerous, 12 Long-tailed Tits were seen about the cliff-verge at Marsden, D. (J.E.) The occurrence of one bird in some bushes on the sea-front at Hartlepool, D., on October 12th (A.V.) coincided with six at Marske on the Yorkshire side of Teesmouth. (D.R.S.)

296. Nuthatch *Sitta europaea* L. A pair sent to the Hancock Museum had been accidentally killed in a pheasant trap at Hamsterley, D., on February 12th. (C.H.L.) Again seen in Hulne Park, Alnwick, N., a single bird on February 22nd. (J.E.R.) On March 19th, one seen in a suburban garden at South Shields, D., when other passage-migrants were about. (per F.G.G.) In April, two seen at Croxdale Hall, D. (T.B.)

298(B). TREE-CREEPER *Certhia f. familiaris* L. Another example of this northern sub-species was trapped at Fenham on November 3rd. (B.L.)

301. MISTLE-THRUSH *Turdus viscivorus* L. A pair at Haydon Bridge, N., selected what seems an unusual site for a nest, a chili pine or " monkey puzzle." (W.J.)

A remarkably large flock was one of over 300 flying west at Haltwhistle, N., on October 24th, very fast and low. (M.P.)

302. FIELDFARE *Turdus pilaris* L. The first considerable arrivals of the 1956-57 winter occurred on January 18th and 19th in the Fenwick area. (E.A.R.E.) This immigration also noted in the neighbourhood of Hartley, N. (J.D.P.), and large flocks appeared in the Longhorsley area, N., in January. (P.O.)

A remarkably early date for the first autumn arrivals was August 25th, when 12 were seen at Fenwick, N. (A.B.) The earliest recorded date for our counties is August 24th. A heavy and prolonged influx occurred from October 17th to 23rd, observed at widespread points on the coast. Another wave of immigrants arrived early in November.

304. REDWING *Turdus musicus* L. A few arrived with the heavy immigration of Fieldfares noted above. (E.A.R.E.)

On October 15th, arrivals were noted at two widely separated places: at South Shields, D., they were arriving throughout the day, one flock numbering *c.* 200 (J.E.), and at Berwick they were heard passing overhead in the evening. (F.B.) Numerous Redwings accompanied the Fieldfares in the heavy October and November passages noted above.

307. RING-OUZEL *Turdus torquatus* L. Only three records of birds on passage: April 5th, an adult male on Inner Farne; September 22nd, an adult male and a first-winter bird on Holy Island; November 3rd, an adult male on Holy Island. (E.A.R.E.)

308. BLACKBIRD *Turdus merula* L. At Hartley, N., birds were noted moving north from the last week in January. On March 3rd, 68 were counted in the fields between Hartley and Whitley Bay Cemetery after early-morning fog at sea. Another smaller wave came through during the third and fourth weeks of April. (J.D.P.)

Numbers arrived with the October and November Fieldfares and Redwings.

311(A). WHEATEAR *Oenanthe oenanthe* (L.). First seen on March 16th, they were widespread throughout the last week of March. In autumn, most numerous during the period of south-easterly and easterly winds from September 20th to 26th. The latest bird was seen on October 22nd.

311(B). GREENLAND WHEATEAR *Oenanthe oe. leucorhoa* (Gm.). Several records of birds on spring passage in the last week of April and the first half of May.

317. STONECHAT *Saxicola torquata* (L.). Now absent from places where it used to breed. A few reported from widespread localities in autumn and winter.

320. REDSTART *Phoenicurus phoenicurus* (L.). Recorded on spring passage from April 17th to May 15th.

From September 20th to 25th inclusive, a period of E. and S.E. winds with fog and rain, they were numerous at Monk's House, South Shields and Teesmouth. In the easterly gale on November 10th a female was blown in from the sea at Marsden, and looked very weak and bedraggled. (A.N.) Another late bird was a female at Craster, N., on November 12th. (E.A.R.E.)

A nestling ringed in Hulne Park, Alnwick, on June 19th, 1957, was recovered at Logrono, Spain, on September 30th, 1957. (E.A.R.E.)

321. BLACK REDSTART *Phoenicurus ochruros* (Gm.). One at Splindlestone, N., on April 28th. (E.A.R.E.) On May 5th, the male of a pair seen at Marsden, D., was heard singing. They remained in the neighbourhood for at least a fortnight. (A.N.)

Two late autumn records may refer to the same bird : a first-winter male was seen at Seahouses, N., on November 6th (E.A.R.E.), and on November 16th a probable first-winter male was on the shore just south of Dunstanburgh, N. (W.S.C.)

324. BLUETHROAT *Cyanosylvia svecica* (L.). Close views obtained of a female at Marsden on March 25th. (A.N.)

During a heavy influx of passerines, one was sheltering from the S.E. wind and rain in a coastal quarry at Marsden, D., on September 21st. A Bluethroat was seen here on several occasions to September 24th inclusive, and it was definitely established that two birds were involved, a female or immature bird and a male showing something of the red spot. (F.G.G. & A.N.)

325. Robin *Erithacus rubecula* (L.). A record of aberrant plumage : one seen near Beal, N., on September 17th showed mantle and wing-coverts light fawn, tail and remiges almost transparent, bill and legs light horn. (A.B.)

343. Blackcap *Sylvia atricapilla* (L.). Seen in a garden at Marsden, D., during a heavy influx of passerines : a male on September 23rd, male and female on September 24th. (R.K.)

344. Barred Warbler *Sylvia nisoria* (Bech.). The only example for the year, a first-winter bird ringed at Monk's House, N., on September 25th. (E.A.R.E.)

347. Whitethroat *Sylvia communis* Lath. First noted in spring at Holywell Dene, Gosforth Park, and Monk's House, N., on April 23rd.

Two trapped simultaneously at Fenwick, N., on May 19th, 1957, had been ringed there on May 20th, 1956, and August 12th, 1956, respectively.

348. Lesser Whitethroat *Sylvia curruca* (L.). Three records of cocks singing in widely separated localities in May, but no breeding reported.

On autumn passage, single birds at Beal, N., on August 17th (B.L.), at the North Gare, Teesmouth, on September 22nd (B.J.C., J.L. and J.H.) and at Hartlepool, D., on September 23rd. (B.J.C.)

354. Willow-Warbler *Phylloscopus trochilus* (L.). A remarkable record of a bird trapped at the same place on the same date in consecutive years : a bird ringed at Fenwick, N., on May 5th, 1956, was retrapped there on May 5th, 1957. (A.B.)

356. Chiffchaff *Phylloscopus collybita* (Vieill.). Many recorded on spring passage. During a spell of mild weather, one was heard and seen in a garden at South Shields, D., from March 14th to 16th. (F.G.G. & P.H.). At the same time, the species was heard at Corbridge. (W.M.B., R.G. & E.M.L.). Other March records were of two on Holy Island on March 24th (B.L.), and of one at Hartley, N., on March 25th. (J.D.P.). Thereafter, they were heard at various places : at least a dozen in the Howick area, N., on April 9th. (E.A.R.E.).

A surprising number of occurrences in November and December. Either Willow-warblers or Chiffchaffs were recorded at South Shields, D., as follows : one on November 11th and 12th ; two from November 21st to 26th ; one on November 29th. (F.G.G. *et al.*) Records for Craster, N., on November 12th (E.A.R.E.) and Fenwick, N., on November 30th (B.L.) possibly involved the same bird. A bird of the

abietinus race was ringed at Fenwick, N., on December 14th, while another accompanying it, ringed on December 15th, proved to be of the typical collybita race. (E.A.R.E. & B.L.)

360. YELLOW-BROWED WARBLER *Phylloscopus inornatus* (Blyth). One present at Fenwick, N., at the same time as the Chiffchaffs and Firecrest, December 14th and 15th. (A.B. & B.L.)

365. FIRECREST *Regulus ignicapillus* (Temm.). One in a garden at Fenwick, N., on December 14th and 15th; the first record since 1952. (A.B. & B.L.)

368. PIED FLYCATCHER *Muscicapa hypoleuca* (Pall.). Several seen daily in the South Shields district, D., during a period of easterly drift-migration from September 20th to 25th. (F.G.G. *et al.*) They were recorded at Teesmouth in the same period. (B.J.C. & P.J.S.)

370. RED-BREASTED FLYCATCHER *Muscicapa parva* Bech. A male at Palmersville, near Newcastle, on the unusual date of June 27th. (I.C. & I.H.) One on Holy Island on September 4th. (M.B. *et al.*) In the easterly wind and rain of November 9th, a first-winter bird on Embleton links. (W.S.C. & J.E.R., E.A.R.E.)

373. MEADOW-PIPIT *Anthus pratensis* (L.). Spring passage noted at St. Mary's Island, N., from March 23rd to 26th, when 200-300 were present each morning. Again on April 5th, at least 400 were about the fields. Similar numbers present in flocks on September 3rd and 9th. (J.D.P.)

One ringed as a juvenile near Seahouses, N., on July 23rd, 1954, was recovered near Rabat, Morocco, on January 11th, 1957. (E.A.R.E.)

374. RICHARD'S PIPIT *Anthus richardi* Vieill. One at Hartley, N., on September 20th, when a light onshore breeze with fog at sea produced a drift of passerines. (J.D.P.) This is only the fourth record for the two counties, the last occasion being on November 2nd, 1954, when two were seen at Marsden, D.

379. ROCK-PIPIT *Anthus spinoletta petrosus* (Mont.). On September 26th, at least five seen well inside the Tees estuary, where the *1956 O.R.* described them as very infrequent. (R.M.P.)

380(B). WHITE WAGTAIL *Motacilla a. alba* L. The first spring arrival was a cock at St. Mary's Island on March 25th. A few recorded on passage in April and May, and on autumn passage in September and October.

383. Waxwing *Bombycilla garrulus* (L.). First seen on January 25th at Fenwick, N., there were no further records until mid-February, and from then until the last occurrence on April 4th, numbers were widespread over Northumberland and Durham, the largest flock totalling *c.* 150 at Pegswood, N., in March, five of which were ringed. (J.A. & T.H.A.)

The autumn influx forecast by Dr. G. Svärdson materialised, and numbers were reported from many places in November, notably a flock of *c.* 150 coming in from seawards at Tweedmouth, N., on November 22nd. (E.A.R.E.) Hardly any hawthorn berries were available, and lack of food may have caused the death of a bird found at Haydon Bridge on November 10th (W.J.) and of another found dying at Durham City on December 5th. (per J.P.) Birds were scattered, but only in small numbers, in December.

386. Woodchat-Shrike *Lanius senator* L. An adult male was seen on June 9th near Denton Burn, Newcastle. (T.W.) As yet unrecorded in Co. Durham, this rare species has been reported on only three previous occasions in Northumberland, the last being May 23rd, 1954, on Inner Farne.

388. Red-backed Shrike *Lanius collurio* L. Only two occurrences and both in May, a single bird at Holywell Dene, N., on the 16th (J.D.P.) and a male at Primrose, Jarrow, D., on the 17th. (J.E. & J.Ed.)

389. Starling *Sturnus vulgaris* L. Dr. Ennion writes: " Recoveries of birds ringed at the big Lucker roost continue to come in ; 1957 has produced six from Norway, one from Sweden, two from Estonia, two from Denmark, another interesting Irish recovery from Co. Armagh, and one each for Yorks., Lancs., and Cumberland, and four from within 25 miles of roost."

One ringed in S.W. Norway in June, 1957, was recovered at Blagdon, N., on November 12th. (M.W.R.)

393. Goldfinch *Carduelis carduelis* (L.). During April, exceptionally numerous in Kyloe Woods, N., frequenting an open plantation of larches. Of " several score " only a few remained on April 30th, and none was seen after that date. (F.B., H.C.F.)

394. Siskin *Carduelis spinus* (L.). More seen during the winter 1956-1957 than for many years past ; flocks of *c.* 60 recorded at Haltwhistle, N., and in Kyloe Woods, N.

Only one record of passage-birds in autumn : four seen in company with Snow-buntings at Marsden, D., on November 2nd. (R.K.)

396. Twite *Carduelis flavirostris* (L.). The only reports are for the Holywell-Earsdon area, N.: January 19th, three with other finches; February 3rd, two with Yellow-hammers; February 17th, 15-20 with Linnets and Yellow-hammers. The observer pertinently suggests that such an unusual number for the district "may be related to the large-scale immigration of Scandinavian thrushes that occurred 16th-18th January." (J.D.P.)

397(b). Mealy Redpoll *Carduelis f. flammea* (L.). On April 24th, many Lesser Redpolls and Goldfinches were seen feeding on large cones in Kyloe Woods, N., and amongst them two were distinctive as Mealy Redpolls. (F.I.B.)

[398. Arctic Redpoll *Carduelis hornemanni* (Holböll). On September 3rd, at Hartley, N., "a bird amongst a flock of Linnets had only a trace of pink on forehead, an unstriated silvery breast, black chin, and pale grey-brown mantle. Rump near pure white, with no striation visible at close range, though flanks lightly marked with pale grey-brown. Distinct white wing-bars on generally pale wing. At least as large as accompanying Linnets, but overall much paler." (J.D.P.)]

404. Crossbill *Loxia curvirostra* L. After the large-scale "invasion" of 1956, Crossbills remained numerous throughout the 1956-57 winter, flocks being reported in many and widely-separated woodlands: *c.* 40 in the Kyloe plantations (A.B., F.B., B.L.); present all winter at Keilder, N., where 60 to 70 were seen on April 17th (A.Ba.); from January to May, *c.* 40 resident at Tarset, N., (M.W.R.); a small flock, maximum seen 11, at Dipton Woods (A.J.C.); on April 1st, 15-20 in pine-woods near Langley, N. (W.M.B., R.G., & E.L.); in January, *c.* 30 near Haltwhistle, N. (A.M., M.P., & G.W.T.), and 20 at Aukside, Teesdale, D. (H.W.)

Amongst the records of breeding was one of a pair with four eggs on January 25th, a time when snow was lying in the district, the North Tyne valley, *c.* 750 ft. above sea-level. On February 13th, the nest contained four young. (R.T.L. *et al.*)

In striking contrast, no records received for the second half of the year.

408. Brambling *Fringilla montifringilla* L. Despite the heavy crop of beech-mast in the autumn of 1956, the only large flocks noted in the 1956-57 winter were in the Slaley-Shotley Bridge district, D., during the first three months of 1957. (G.A.C.)

420. Little Bunting *Emberiza pusilla* Pall. Two of these rare visitors near St. Mary's Island, N., on November 30th. (J.S.B. & T.W.)

421. Reed-Bunting *Emberiza schoeniclus* (L.). On October 4th, evidence of a large-scale passage-movement : some 120 birds between St. Mary's Island and Hartley, N., including one flock of 58. (J.D.P.)

422. Lapland Bunting *Calcarius lapponicus* (L.). Despite the unusually large numbers reported in the closing months of 1956, only very few were noted at the beginning of 1957 : at Marsden, D., where *c.* 40 had been present in December, 1956, only one was seen on January 19th (A.N.), four on February 2nd (J.E. & R.K.), and one on February 17th (F.G.G.) ; on January 20th, three feeding with finches near Holywell Dene, N., where occasional birds seen to the end of the month. (J.D.P.) A female clearly heard and seen at Marsden, D., by an observer familiar with the species, on the unusual date of July 8th. (A.N.)

The first autumn occurrence was a single bird at Fenham, N., on October 6th (E.A.R.E. & B.L.), and at the same place on November 24th, *c.* 40 were feeding in stubble. (B.L.) Apart from this large flock, only small numbers recorded. On a stubble-field near St. Mary's Island, four seen on November 16th, at least one on November 23rd, and two on November 30th. (J.S.B.) At Teesmouth, two seen near Seaton Carew on October 27th (D.G.B. & B.J.C.) and 11 were present by November 3rd (B.J.C., P.J.S.) ; on November 10th, seven seen to come in from seawards at the North Gare (C.M.A., N.B., C.G.), and occasional birds seen into December.

423. Snow-Bunting *Plectrophenax nivalis* (L.). A flock of 300, possibly 350, haunted the coastal area between South Shields and Marsden, D., in the closing months of the 1956-57 winter. Sometimes as many as 150, part of this large company, seen at a slum-demolition area in the heart of South Shields, D. (F.G.G. *et al.*) On March 31st only a single female was seen at Marsden. (D.H.)

Flocks also seen inland at this period of the year : on January 6th, seven at Shaftoe Crags, N. (H.T.) ; on January 28th, near Otterburn, described as numerous (J.D.), as also in Upper Coquetdale in early February. (H.H.)

Numbers again large at the close of the year. In the last week of December, *c.* 500 at Tweedmouth (F.B.). At Cheswick, N., *c.* 200 on December 29th (F.B.). In the Monk's House neighbourhood, N., *c.* 70 in November and December (E.A.R.E.). At Warkworth, *c.* 40 on December 26th (B.J.). In November and December, *c.* 50 near St.

Mary's Island, N. By November 16th at Marsden, D., a flock of *c.* 500. (F.G.G. *et al.*). On the same date at Teesmouth, *c.* 45 present. (D.G.B.). On November 28th, *c.* 150 at Wallsend Swallow Ponds, N. (M.B.).

Species which have occurred, but are not included in the above list :—

Little Grebe (9), Mute Swan (84), Sparrow-hawk (93), Red Grouse (111), Pheasant (118), Moorhen (126), Turnstone (143), Woodcock (148), Common Sandpiper (159), Redshank (161), Common Gull (201), Black-headed Gull (208), Puffin (230), Stock-dove (232), Wood-pigeon (234), Barn-owl (241), Little Owl (246), Tawny Owl (247), Kingfisher (258), Skylark (272), House-martin (276), Rook (282), Jackdaw (283), Magpie (284), Jay (286), Great Tit (288), Marsh-tit (292), Willow-tit (293), Wren (299), Dipper (300), Song-thrush (303), Whinchat (318), Grasshopper-warbler (327), Sedge-warbler (337), Garden-warbler (346) Wood-warbler (357), Goldcrest (364), Spotted Flycatcher (366), Hedge-sparrow (371), Tree-pipit (376), Pied Wagtail (380A), Grey Wagtail (381), Yellow Wagtail (382), Hawfinch (391), Greenfinch (392), Linnet (395), Lesser Redpoll (397A), Bullfinch (401), Chaffinch (407), Yellow-hammer (409), Corn-bunting (410), House-sparrow (424), Tree-sparrow (425).

Key to the initials of those contributing to this Report :

C. M. Adamson, J. Alder, T. H. Alder, E. L. Arnold, Dr. J. S. Ash, A. Baldridge, A. H. Banks, D. G. Bell, Miss D. N. Bell, M. Bell, A. Blackett, E. Blezard, J. S. Booth, F. Brady, Miss W. M. Brady, T. Brough, H. F. Church, A. J. Clissold, B. J. Coates, S. E. Cook, G. A. Cowen, W. S. Craster, J. R. Crawford, T. Cundell, J. Devonport, J. Edwardson, J. Ellison, Dr. E. A. R. Ennion, M. Flanighan, A. K. Forster, E. N. Gray, N. Green, Miss C. Greenwell, F. G. Grey, Miss R. M. T. Grey, H. Hedley, J. Henderson, R. Henderson, Mrs. G. Hickling, Dr. L. P. Hird, P. Hogg, P. L. Hogg, L. G. Holloway, D. Howey, I. Hutchinson, Rev. K. Ilderton, R. T. Jackson, B. Jeffrey, W. Johnson, R. Key, L. J. Kinlen, I. Lawrence, B. Little, Miss E. M. Lobley, W. R. Lofthouse, C. H. Longstaff, R. H. Lowe, J. Lumby, A. McDonald, A. McRae, D. McWilliams, E. Miller, Prof. F. J. Nattrass, J. H. Neesham, A. Nelson, P. Oliver, R. M. Palmer, D. T. Parkin, Dr. J. D. Parrack, M. Philipson, E. N. G. Ray, P. Reid, Hon. M. W. Ridley, J. E. Ruxton, W. D. Ryder, D. R. Seaward, Mrs. P. Seaward, E. Shearer, D. Simpson, F. Stabler, P. J. Stead, D. Summers-Smith, H. Tegner, G. W. Temperley, A. Vittery, A. J. Vittery, D. Watson, T. Winter.