

SCOTTISH BIRDS



THE JOURNAL OF THE
SCOTTISH ORNITHOLOGISTS' CLUB

Volume 5 No 2

SUMMER 1968

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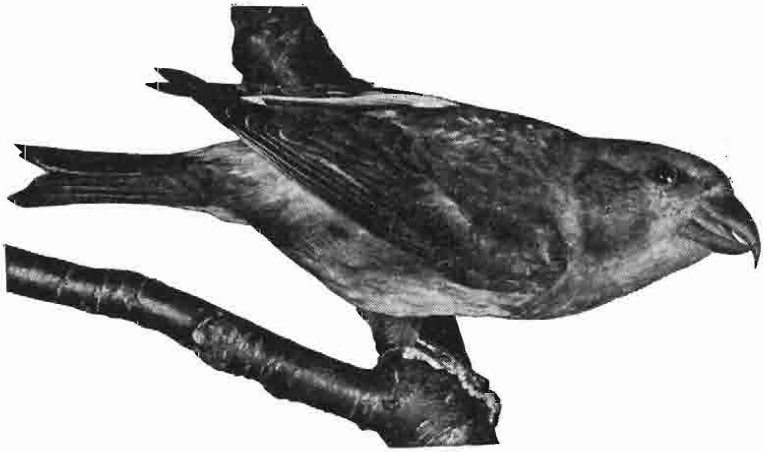
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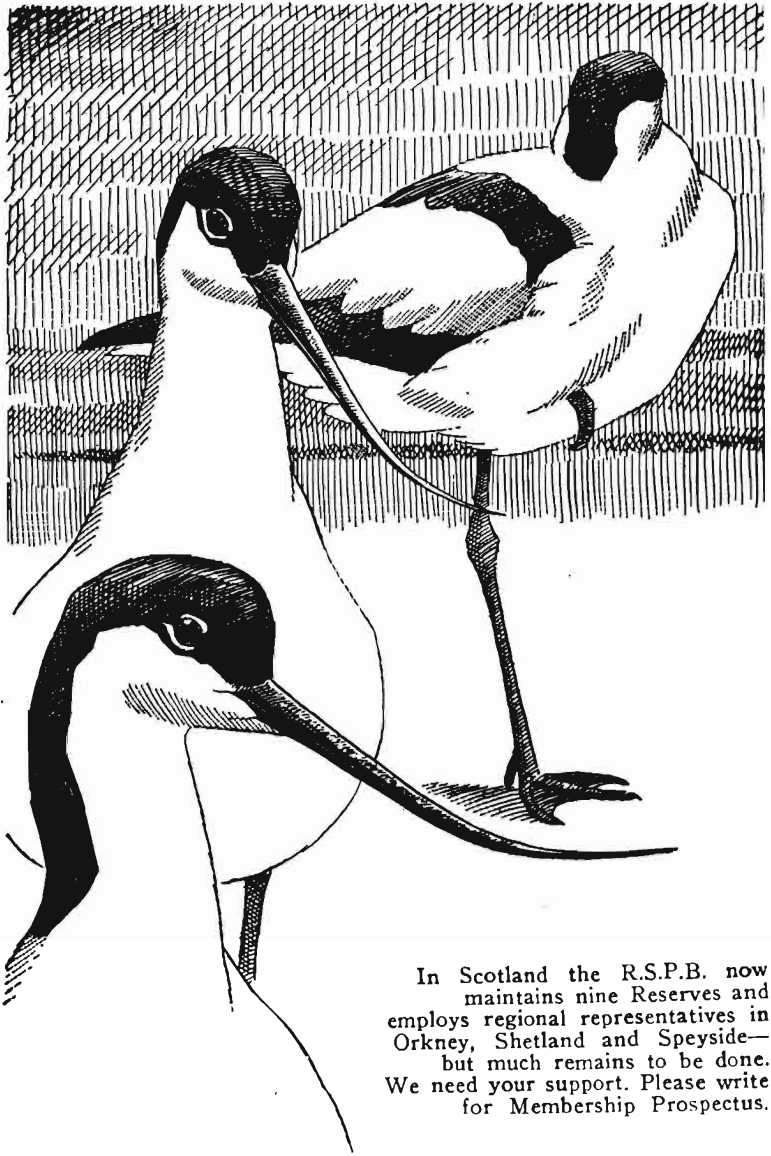
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Vol. 5 No. 2

Summer 1968

Edited by A. T. MACMILLAN with the assistance of D. G. ANDREW, T. C. SMOUT and P. J. B. SLATER. Business Editor, T. C. SMOUT.

Editorial

Fair Isle Bird Observatory Appeal. We are most conscious of the frequency with which we have recommended worthy appeals for funds to readers of *Scottish Birds*. Perhaps because birdwatching can be had for as little as one cares to spend, many societies have been reluctant to raise their subscription rates, and therefore find themselves without the necessary reserves to meet a sudden crisis. The SOC subscription of 25/- a year is of course a fine example of remarkable value, made possible by a large membership; yet one has been able to be a 'Friend of Fair Isle' (a title that suggests one should not expect to get the full value of one's subscription returned in kind) for a mere guinea, and to receive for this a fat annual report and a regular bulletin from the observatory.

There can be few finer birdwatching holidays in Scotland than a visit to Fair Isle at the height of the migration season. For all that, the real value of the island in an ornithological context stems from its unique situation in the chain of British bird observatories and from the quality and continuity of the observations and studies there over the past 20 years. Fair Isle is however much more than a bird observatory; it is a living community of people with a hope for the future, in striking contrast to the inevitable depopulation of more and more remote Scottish islands.

It would be a great shame on us all if we were to let this go, and a great loss both to Scotland and to ornithology. If the observatory failed, the island community would surely follow. Now the old naval huts will no longer do for the observatory and a new building is essential. The Highlands and Islands Development Board has recognised the real value of the observatory with a very practical offer of grants and loans of £26,000. We have to find another £10,000.

Details of the appeal are given in a leaflet enclosed with this issue, and we earnestly commend it to every birdwatcher and to everyone who knows and loves the wilder parts of Scotland.

Internal developments. The first Recent News section appears in this issue of *Scottish Birds*, replacing Current Notes, which will be largely incorporated in the new Scottish Bird Report. This change was planned, but another was not. We apologise for the delay in getting some Short Notes into print and hope that this problem will right itself in the next issue or two.

Film award. The RSPB film *Swallows*, based on C. K. Mylne's *Swallows at the Mill*, won the major award (a Cartier statuette of a Condor in natural stones such as labradorite, coral, jasper and chalcedony, according to *Birds*) at the Second International Cinematography Festival of La Ligue Française pour la Protection des Oiseaux in Paris. The film was edited by Anthony Clay.

Current literature. Some recent papers of interest to Scottish ornithologists are noted below. On the other side of the mirror we were gratified to find in the April 1968 issue of *Ibis* no fewer than 28 papers abstracted from the pages of *Scottish Birds* for a worldwide audience. Some of the abstractor's pungent comments introduce a refreshing air of levity to the pages of the senior ornithological journal; note, for instance, Davis 1963, Diamond *et al.* 1965 and Sandeman 1965.

Black-browed Albatross on the Bass Rock. G. Waterston, 1968. *Brit. Birds* 61: 22-27, 4 plates.

Influx of Great Shearwaters in autumn 1965. R. G. Newell, 1968. *Brit. Birds* 61: 145-159. Relevant to Scottish records.

Movements of Cormorants ringed in the British Isles and evidence of colony-specific dispersal. J. C. Coulson and M. G. Brazendale, 1968. *Brit. Birds* 61: 1-21. Several Scottish colonies analysed. These Cormorants do not migrate, only disperse.

Snowy Owls breeding in Shetland in 1967. R. J. Tulloch, 1968. *Brit. Birds* 61: 119-132, with 14 photographs.

Red-headed Buntings on Fair Isle during 1950-67. R. H. Dennis, 1968. *Brit. Birds* 61: 41-43. Letter and editorial note. Good evidence that all 21 are escapes, as also the 1931 North Ronaldsay specimen, hitherto the only accepted British record, but now struck off.

The Scottish Ornithologists' Club (and Bookshop), 21 Regent Terrace, Edinburgh 7, requires an Assistant Secretary, male or female, who should be willing to take responsibility, have some knowledge of ornithology, and be able to type. Membership, at present 2000, is increasing by 10% per annum. Apply to the Hon. Treasurer giving full details, including salary required and date when available.

Goose emigration from western Scotland

KENNETH WILLIAMSON F.R.S.E.

Introduction

A good deal of scattered information has accumulated concerning the spring emigration of geese which had presumably wintered in Britain, and probably for the most part in Scotland. Much of it has come from several bird-study expeditions to Sutherland and the Outer Hebrides, though in one year (1960) the data were provided by Archibald MacEachern, Principal Keeper at the Butt of Lewis Lighthouse. The species concerned are the Pink-footed Goose *Anser arvensis brachyrhynchus*, Grey Lag Goose *Anser anser*, White-fronted Goose (Greenland race) *Anser albifrons flavirostris* and Barnacle Goose *Branta leucopsis*, all of which have extensive breeding grounds in Iceland and east Greenland. The purpose of this paper is to bring this material together and to examine the meteorological environment of the spring migration.

The movements

1953

John King (1953) was leader of a party of staff and boys of the Edinburgh Academy which spent the period 13th-24th April 1953 at Carbisdale Castle, a few miles west of Bonar Bridge, studying migration in the Kyle of Sutherland. A main aim was to discover to what extent the lines of Loch Shin-Loch More, the River Oyckell-Loch Assynt, and Glen Cassley (fig. 1) constituted 'flyways' for migrating geese. Table 1 summarises the movements observed by this party.

Table 1. Goose migration, Kyle of Sutherland, late April 1953

| Date (April) | Locality | Total flocks | Total geese | Flight direction |
|--------------|-------------------|--------------|-------------|------------------|
| 18th | Carbisdale Castle | 1 | 40 | NW |
| 19th | Carbisdale Castle | 5 | 112 | NW |
| 20th | Loch Eye | 1 | 30+ | W |
| 21st | Carbisdale Castle | 1 | 40+ | NW |
| 22nd | Carbisdale Castle | 2 | 190+ | NW |
| | Spinningdale | 2 | 40+ | W |
| 23rd | Carbisdale Castle | 1 | 40+ | NW |

King made the following points: passage was not restricted to any one period of the day; no return movements to east or southeast were witnessed; and movements took place on both the north and south sides of the Kyle. At Carbisdale, however, they were always along the south bank and always to the northwest (approximately 330°), whereas at points east of Carbisdale they were due west towards the Kyle (fig. 1).

The first movements were seen in improving weather on 18th April and passage continued until observations ceased on the 23rd. Westerly

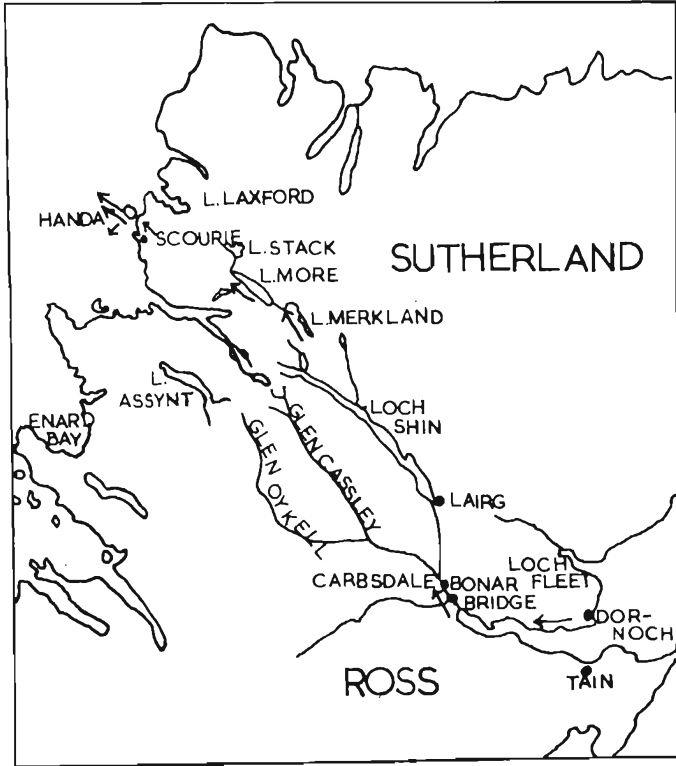


FIG. 1. Spring flight-line of grey geese (shown by arrows) as observed in the Kyle of Sutherland in 1953 and 1957.

winds, from low pressure systems to the north of the British Isles, prevailed until the 17th, when a ridge of high pressure moved northwards into the Iceland sea-area, expanding next day to form an offshoot of the Azores anticyclone which embraced the whole of Scotland, bringing calms and light breezes which lasted until the high retreated eastwards on the 23rd.

There was an unusual influx of Barnacle Geese in 1953 at Fair Isle, south of Shetland, where the species is extremely scarce in spring. A party of 10 arrived on 25th April in westerly weather, the cyclonic conditions continuing until the first days of May. There was some improvement as a high developed over England on 2nd-3rd May, intensifying on the 5th, but maintaining a moderate NW wind at Fair Isle. The Barnacles increased to 25 on the 5th-6th and 14 remained on the 7th; but these had gone by next day with the weather anticyclonic in type and the wind light easterly over the Atlantic.

1954

The primary object of a visit to the Butt of Lewis by R. W. J. Smith and A. Walker (1955), between 24th April and 7th May 1954, was to learn to what extent northern Lewis is used as a 'staging-post' by

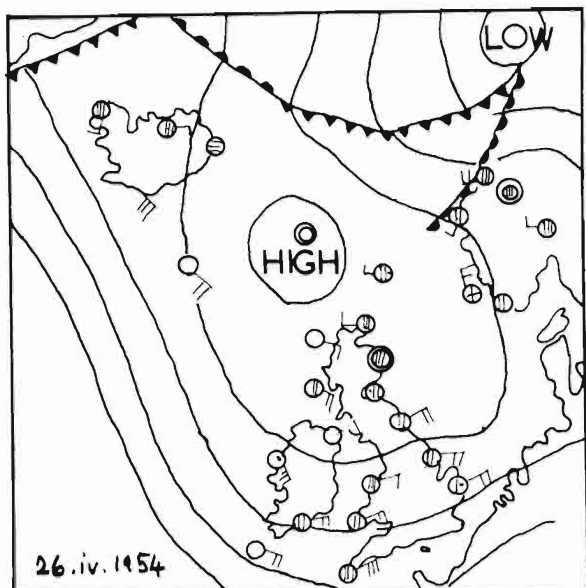


FIG. 2. Goose departures from Butt of Lewis in polar anticyclonic conditions (0600 hrs chart, 26th April 1954).

geese and other birds undertaking a spring journey to Iceland and Greenland. They were too late to see the main goose passage; they had several reports of flocks going northwards during the week preceding their arrival, and the wintering Barnacles were said to have left at the beginning of this period.

During this week there had been an outbreak of polar air into the northern North Sea and Scotland from an Icelandic polar high, bringing a steady SE wind at moderate strength to western Scotland and the Hebrides. A flock of Pink-footed Geese was seen flying northwards at Barvas late on the 25th. The observers' first full day, the 26th, was the last of the anticyclonic spell, and four skeins of 'grey geese', totalling 241 birds, passed Barvas between 1620 and 1820 hrs, with an easterly wind and the prospect of a good airstream all the way to their presumed destination (fig. 2). When low pressure invaded the area on the 27th the passage dwindled, the only big flock, of 110, refusing to face the sea-crossing and settling on the sea at the Butt. Next day a flock of 24, arriving at Barvas just after midday, behaved similarly.

1955

St Clair, Usher and Gardner-Medwin (1956) continued this work, camping close to the Butt of Lewis Lighthouse, but also travelling down the coasts as far as Cellar Head on the east and Aird Dell on the west, between 15th and 25th April 1955. Several of the Grey Lag Geese observed were thought to be local birds, but other grey geese were restless and were doubtless migrants.

The observers arrived during a spell of anticyclonic weather, which had then lasted for several days and continued till the 20th, with calm or light variable airs over Scotland and a south to SE airstream across

the Atlantic between the British Isles and Iceland. By the 18th, when the first geese were seen, the high pressure embraced Britain and southern Norway and the weather was calm and clear in western Scotland. At Cellar Head a flight came in from the southwest and turned northwards towards the Butt, while near Barvas 10 unidentified geese were also seen flying north.

The Atlantic airstream was more SW on the 19th, and it continued to veer to become light to moderate NW. Two birds flew NNW early, and two came down to rest at a pond at 1600 hrs. A skein of 10 Pink-footed Geese started out to sea to NW at 1700 hrs but gave up and returned. On the 20th movement was still going on among the isles, as John Furse saw 25 Greylags and two Whooper Swans passing Coll, but the only arrivals noted at the Butt were 10 Greylags which landed there at dusk. After this date low pressure between Iceland and Britain brought a westerly airstream and changeable weather to the Outer Hebrides and no further movement was seen.

1957

Marr, Rees and Wiseman (1958) arrived in Lewis on 14th April 1957 and concentrated on the east coast and the Butt, where they stayed from late on the 20th to the 26th. During the same period observations

Table 2. Goose migration, Kyle of Sutherland, late April 1957

| Date (April) | Locality | Total flocks | Total geese | Flight direction |
|--------------|---------------|--------------|-------------|------------------|
| 22nd | Handa | 1 | 3 | SW |
| | Scourie | 1 | 40 | NW |
| 23rd | Scourie | 1 | 150 | NW |
| 24th | Loch More | 1 | 20 | NW |
| 25th | Loch Merkland | 1 | 250 | NNW |
| | Scourie | 1 | 1 | NW |
| 26th | Scourie | 1 | 1 | NW |

were also made by Niall Campbell near Scourie (table 2 and fig. 1), and by J. Morton Boyd and the writer at St Kilda. Most of the geese identified at the Butt were Pink-footed, and, although migration was witnessed at all times of the day, there were decided early morning 'rushes' on the 22nd and the 24th. These observations are summarised in table 3.

The weather in the Outer Hebrides was dominated by westerly winds, reaching gale force at times and bringing frequent rain, until 21st April; but a light southerly breeze on the 22nd was associated with a ridge over north Scotland from a Scandinavian high as frontal disturbances passed away. This was a big day of goose emigration at the Butt, a total of 438 grey geese passing on a line SE-NW, for the most part well clear of the land. A Grey Lag Goose, six Whooper Swans, and a number of waders were also seen departing northwards. The British Isles then became involved in a ridge of high pressure spreading from northern Europe, and on the 24th a total of 228 Pink-footed and 139 unidentified grey geese took a NW direction (fig. 3). A dense sea-fog rolled in at the Butt during the morning, otherwise more geese might have been seen.

This was the first day on which geese passed by at St Kilda, with more following on the 25th as the high moved farther west, while emigration continued in Lewis and the neighbourhood of Scourie at least until the following day, when observations terminated. The St Kilda flocks have been incorporated in table 3.

Table 3. Goose migration, northern Lewis and St Kilda, late April 1957

| Date (April) | Locality | Species | Total flocks | Total geese | Flight direction | Pressure (millibars) |
|--------------|----------------|--------------|--------------|-------------|------------------|----------------------|
| 17th | Tiumpán Head | "Grey" | 1 | 7 | N | 1012 |
| 20th | Tolsta Head | "Grey" | 1 | 17 | NNW | 1015 |
| 21st | The Butt | Pink-footed | 1 | 21 | S | 1015 |
| 22nd | The Butt | "Grey" | 4 | 438 | NW | 1023 |
| | Loch Stiapavat | Greylag | 1 | 1 | N | |
| | Loch Stiapavat | Whooper Swan | 1 | 6 | N | |
| 23rd | The Butt | Pink-footed | 2 | 57 | N | 1029 |
| | The Butt | Greylag | 1 | 1 | — | |
| | The Butt | "Grey" | 1 | 12 | NW | |
| 24th | The Butt | Pink-footed | 4 | 228 | NW | 1037 |
| | The Butt | "Grey" | 3 | 139 | NW | |
| | Port of Ness | "Grey" | 1 | 10 | N | |
| | Port of Ness | Pink-footed | 1 | 45 | NW | |
| | Loch Stiapavat | "Grey" | 1 | 150 | NW | |
| | St Kilda | "Grey" | 1 | 26 | N | |
| | St Kilda | Barnacle | 1 | 26 | N | |
| 25th | St Kilda | Pink-footed | 1 | 110 | NNW | 1041 |
| | St Kilda | "Grey" | 1 | 70 | N | |
| | The Butt | Pink-footed | 1 | 55 | NW | |
| | Stornoway | "Grey" | 1 | 200 | NW | |

1958

Boyd was at St Kilda in April 1958, but again only a few lots of geese were seen, and these were late. On the 30th the islands lay on the western side of an extensive European high, with the wind southerly; a skein of 45 grey geese passed by and a number of 'northwest' waders were present. The weather deteriorated as a cold front moved south through Scotland, bringing poor visibility and a northerly air-stream, and on 2nd May a flock of 32 Barnacles flew out to sea when disturbed at the northwestern headland of Gob na h'Airde, but soon returned. They appear to have left under much improved conditions on the 3rd. Cyclonic weather, with east wind and rain at the fronts, seems to have arrested the migration of another group of Barnacles on the 8th-9th; these had gone by the 10th, with anticyclonic weather prevailing to the east.

1959

Marr and Wiseman (Marr *et al.* 1959) returned to Lewis between 18th April and 1st May 1959, in company with J. Reaney and W. H. Truckle. This was a most successful expedition, the party recording more than 2300 geese at the Butt of Lewis alone (table 4).

A major contribution—probably with a bearing on the appearance of Barnacle Geese at St Kilda in the two previous years—was their discovery of an important flyway across the Minch from the direction of Skye, continuing northwestwards through the Sound of Harris. The birds using it appeared to be mainly Barnacles and Greenland White-fronts, while those passing the Butt of Lewis at the same period were predominantly Iceland breeders, Pink-footed and Grey Lag Geese, al-

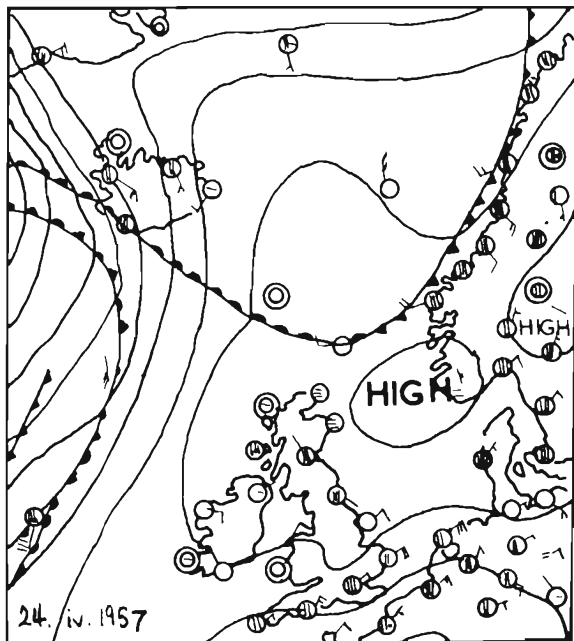


FIG. 3. Goose departures from Butt of Lewis with a Scandinavian polar high centred over the North Sea (0600 hrs chart, 24th April 1957).

though some Barnacles were also seen. The observations are summarised in table 4. It will be seen that departures in NW and NNW directions were general from 22nd to 24th April, but less marked on the 25th and the 27th. No geese were seen on the 26th (but this was the only day in the spring of 1959 when geese were sighted at St Kilda), while from the 28th to the 30th there was a general reluctance on the part of the flocks to continue migration out to sea.

The ridge of a Greenland anticyclone moved south to Scotland on the 18th, and high pressure was centred on the Faeroe Islands next day with calm weather prevailing over most of Scotland, and a light SE wind in the Hebrides. No migration was observed. An occluded front lay between the Outer Hebrides and southern Iceland that night and on the 20th, bringing rain and heavy overcast skies. Visibility continued poor on the 21st with a westerly breeze, the centre of the high having moved to St George's Channel. It had moved farther east by the 22nd, when goose passage really got under way, there being a light southerly breeze in the Outer Isles, with the wind veering but continuing light over the Atlantic. Similar conditions held on the 23rd, but on the 24th the wind became cyclonic SE with the approach towards Iceland of an Atlantic depression, and it veered to SW next day.

One centre of this depression came over Ireland on the 25th, and a strong NE wind prevailed in the Hebrides and northern Scotland; after the wind-change to SW, movement was much reduced and no passage was seen on the 26th. The depression travelled across Scotland to Shetland and beyond, the wind in the Outer Hebrides falling to light NW in col weather on the 27th, and becoming NE with some rain next

Table 4. Goose migration, northern Lewis and Sound of Harris, late April - 1st May 1959

| Date (April- May) | Locality | Species | Total flocks | Total geese | Flight direction | Pressure (millibars) |
|-------------------------|-----------------|---------------|-----------------|----------------|---------------------|-------------------------|
| 19th | near Stornoway | "Grey" | 1 | 180 | NNW | 1026 |
| 22nd | Sound of Harris | [Greylag] | 1 | 43 | NW | 1021 |
| | Sound of Harris | White-fronted | 2 | 191 | NW | |
| | Sound of Harris | Barnacle | 4 | 174 | NW | |
| | Sound of Harris | "Grey" | 1 | 19 | NW | |
| 23rd | The Butt | Pink-footed | 1 | 22 | NNW | 1017 |
| | The Butt | Barnacle | 2 | 9 | NNW | |
| | The Butt | "Grey" | 7 | 260 | NNW | |
| | The Butt | Whooper Swan | 1 | 3 | N | |
| 24th | The Butt | "Grey" | 1 | 70 | W | 1005 |
| | The Butt | "Grey" | 1 | 100 | NW | |
| 25th | The Butt | "Grey" | 2 | 10 | S | 998 |
| | Loch Stiapavat | "Grey" | 1 | 40 | NW | |
| 27th | The Butt | Pink-footed | 1 | 190 | NW | 996 |
| 28th | The Butt | Pink-footed | 1 | 4 | — | 997 |
| | Dell | "Grey" | 1 | 220 | NW | |
| | Loch Stiapavat | "Grey" | 1 | 75 | NW | |
| 29th | The Butt | Pink-footed | 1 | 4 | S | 1009 |
| | The Butt | Pink-footed | 1 | 13 | S | |
| | Dell | Pink-footed | 1 | 105 | — | |
| | Loch Stiapavat | "Grey" | 1 | 16 | S | |
| 30th | The Butt | Pink-footed | 4 | 485 | WNW | 1015 |
| | The Butt | Pink-footed | 2 | 225 | S | |
| | The Butt | "Grey" | 4 | 315 | NW | |
| 1st | The Butt | "Grey" | 1 | 40 | S | 1014 |
| | The Butt | "Grey" | 1 | 8 | NW | |
| | The Butt | "Grey" | 1 | 30 | — | |

Note. Flocks on the ground are shown by a dash — in column six. The behaviour of flocks on the 29th-30th is described in the text.

day. The biggest flock of geese on this day refused to put out to sea.

Another low pressure centre moved across the country to Shetland on the 29th, giving a moderate north to NE wind in the Hebrides, and a light westerly breeze with clear skies in central and southern Scotland. Migrant flocks of geese were still loath to put to sea. The improvement continued during the night of the 29th/30th as a ridge spread northeast from the Azores high, and although south and east Scotland enjoyed the effects of this better weather throughout the 30th the northern part of the Outer Hebrides did not, conditions deteriorating rapidly as a cold front came in from the west, bringing strong SW wind and rain before midday (fig. 4).

The events of the 30th at the Butt of Lewis can be summarised as follows. A total of about 315 unidentified grey geese passed by, up to midday, in four flocks which all came from SE and flew out to sea between west and NNW. Up to 1145 hrs a total of 710 geese identified as

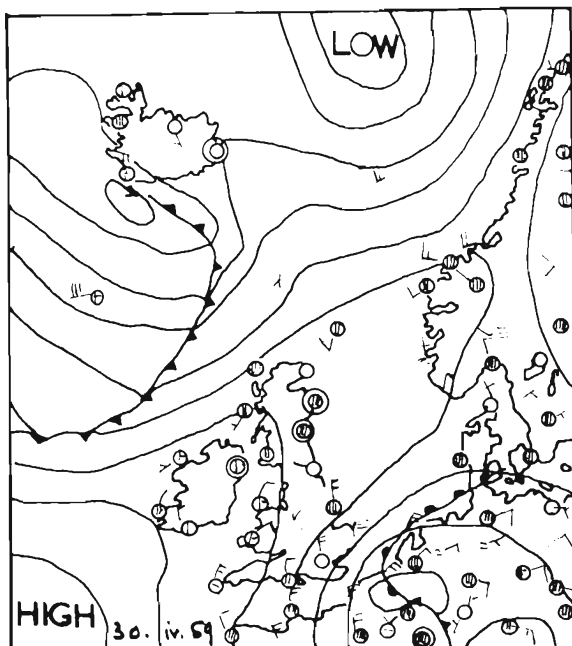


FIG. 4. Goose departures in the ridge of an Azores high (0600 hrs chart, 30th April 1959). Later the same day many geese returned to land, having encountered the cold front advancing SE from the Icelandic low (see text).

Pink-footed passed by in six skeins; of these, some 265 came from SE and flew to the west, about 220 flew from SE and out to sea to WNW, a flock of 140 arrived from SE and turned southwards along the west coast, and a flock of 85 approached the Butt from SE and abruptly changed course to SW. Between 1100 and 1400 hrs a total of 92 Pink-footed Geese came back in from the sea north of the Butt in four parties and flew inland; all appeared to be tired, and the flocks were straggling.

1960

At my request Archibald MacEachern, Principal Keeper at the Butt of Lewis Lighthouse, very kindly made observations on the movements of geese in the spring of 1960. Mr Atkins of the Decca Navigation Station cooperated, counting a number of flocks unsighted from the Lighthouse. The first geese were seen on 18th February, when 9 Greylags passed in a northerly direction (wind SE, force 4); while other groups were observed on 27th March at 1000 hrs, when over 30 Pink-footed Geese flew north (wind east, force 2), and on 2nd April at 0600 hrs, when two Greenland Whitefronts flew by in a southerly direction (wind east, force 6).

Passage of Pink-footed and Grey Lag Geese was steady from 14th April, becoming strong on the 16th, then declining somewhat, and reaching a peak on the 27th-28th (table 5). An interesting feature was a southerly movement of Greylags, usually in small parties (but over 90 on each of two occasions) from late on 30th April to late on 2nd May.

Table 5. Goose migration at the Butt of Lewis, April-May 1960

| Date (April -May) | Species if other than "grey" | Total flocks | Total geese | Flight direction | Pressure (millibars) |
|-------------------------|------------------------------------|-----------------|----------------|---------------------|-------------------------|
| 14th | | 1 | 19 | N | 999 |
| 15th | | 1 | 10 | N | 1018 |
| 16th | | 3 | 154 | N | 1028 |
| | Pink-footed | 1 | 200+ | N | |
| 18th | G. White-fronted | 1 | 2 | S | 1027 |
| | Pink-footed | 1 | 29 | N | |
| | | 1 | 39 | N | |
| 20th | | 1 | 60 | N | 1024 |
| 21st | | 1 | 26 | N | 1028 |
| | G. White-fronted | 1 | 3 | — | |
| 22nd | | 1 | 6 | S | 1026 |
| 23rd | | 1 | 47 | N | 1024 |
| 24th | | 1 | 8 | S | 1023 |
| 25th | Pink-footed | 1 | 300 | N | 1025 |
| 26th | Pink-footed | 1 | 60 | N | 1027 |
| 27th | Pink-footed | 3 | 426 | N | 1032 |
| | | 4 | 800+ | N | |
| 28th | | 4 | 527 | N | 1031 |
| | Pink-footed | 1 | 100 | N | |
| 29th | | 1 | 65 | N | 1028 |
| 30th | | 1 | 12 | S | 1023 |
| | Pink-footed | 1 | 70 | N | |
| 1st | | 1 | 12 | — | 1024 |
| 2nd | | 4 | 195+ | S | 1017 |
| | Pink-footed | 1 | 151 | N | |
| 3rd | Pink-footed | 1 | 36 | — | 1012 |
| | Barnacle | 1 | 1 | — | |

Note. Flocks on the ground are shown by a dash — in column five. Atmospheric pressure is the mean of the 0600 and 1800 hrs readings at Stornoway, Lewis, as published in *The Daily Weather Report*.

From 12th to 24th April were days of cyclonic weather with a westerly wind, but an improvement began on the 15th with high pressure coming down from Iceland and rapidly enveloping the whole of Scotland. With this anticyclone firmly established the 16th was a good day for goose passage, there being a light northerly breeze over the sea between Scotland and Iceland. The high moved away and the 17th was again cyclonic; and although Scotland was within a new high pressure area from midnight, the Outer Isles remained exposed to frontal conditions coming in from the Atlantic. The 18th saw some improvement, though a warm front crossing Scotland brought morning fog. Cold fronts with westerly winds again affected the Hebrides and northern Scotland on the 20th, and on the 21st this region lay on the northeast periphery of an Atlantic high, with the wind still westerly. These conditions held until late on the 25th, when, with the centre of the high close to Northern Ireland, the wind fell away to a light breeze, and

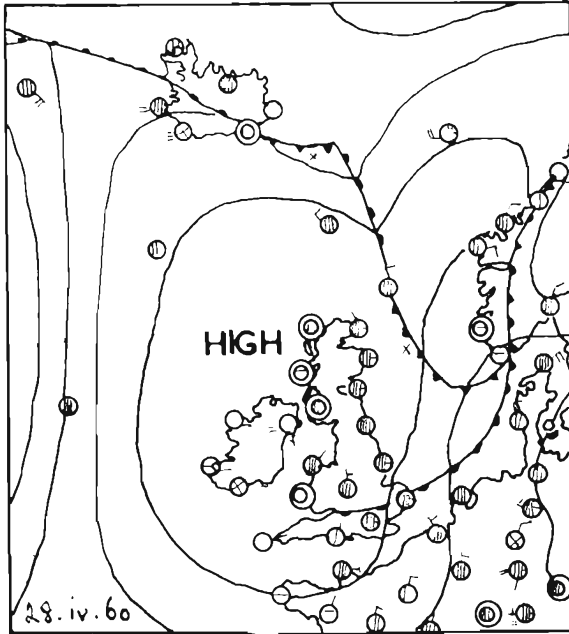


FIG. 5. Peak of goose emigration from Butt of Lewis, 27th-28th April 1960, in an anticyclone which, though polar in origin, had moved to west and southwest of Britain during the previous week (0600 hrs chart, 28th April 1960).

finally to calm. A resurgence of goose passage began and continued during the remaining days of the period, which were markedly anticyclonic with only very light airs (fig. 5). Low pressure came in from the Atlantic on 3rd May and migration practically ceased.

1962

K. D. Smith (*in litt.*) saw an impressive passage of Pink-footed Geese across the Highlands as he was driving to Gilmerton, Perthshire, on the evening of 13th April 1962. Many may have passed before his arrival, but between 1745 and 1805 hrs he counted seven skeins totalling over 300 birds, flying on a line ESE-WNW. It was a "glorious, sunny, windless day." An enormous high pressure system extended from Scotland to Jan Mayen, so that the birds would go out to sea (if they did so) with a following wind all the way to Iceland on the western flank of the high.

Similar travel conditions prevailed next day, the 14th, when 45 grey geese and 12 Pink-footed Geese passed St Kilda. No further passage was reported in mid month, but with a new high developing over England on the 25th and the wind SE in the Outer Hebrides and over the Atlantic, some grey geese and 17 Pink-footed passed by St Kilda. They were followed by 11 grey and 27 Barnacle Geese on the 27th, 12 Grey-lags and 41 Barnacles on the 28th, 12 grey geese on the 29th, 20 on the 30th, and 50 grey plus two Grey Lag Geese on 1st May. This unprecedentedly strong passage for St Kilda took place with settled anticyclonic

weather over the whole northeast sector of the Atlantic Ocean. Also on the 27th, K. D. Smith reported a northwards passage of about 100 grey geese at Glenelg, west Inverness-shire.

Discussion

Migration routes

The observations of King's and Campbell's parties provide clear evidence of a spring flyway across northern Scotland, from the Kyle of Sutherland in a northwesterly direction over Lochs Shin, Merkland and More, passing out to sea in the neighbourhood of Scourie (fig. 1). As Campbell points out, if this flight-line is projected across the northeast Atlantic Ocean then it passes the Butt of Lewis and continues to Iceland, with the east Greenland coast beyond. Flocks of geese are known to gather regularly in fields on the south side of the Dornoch Firth in spring, at the entrance to the Kyle of Sutherland (I. D. Pennie, pers. comm.); these may have travelled north through eastern Scotland, but their immediate provenance is not known.

Much of the emigration must take place on the western side of the country, where there are wintering-grounds—of Barnacles and Greenland Whitefronts especially—south through the Hebrides to Galloway and the Solway. Flocks approach Canna from the south in spring and are seen passing through the gap of Tarbert and moving on towards Skye (J. L. Campbell, pers. comm.). Marr and his party observed geese approaching the Sound of Harris from the direction of Skye and continuing along a northwesterly line, which would take them somewhat to the north of St Kilda. These were mainly Barnacles and Greenland Whitefronts (though some Grey Lag Geese appear to have been involved), and for most of these birds east Greenland must be the end-point of the migration. The various observers at the Butt of Lewis, however, have recorded flocks travelling north along the east coast of Lewis before turning to northwest on passing the Butt; these were mainly Pink-footed and Grey Lag Geese and presumably Icelandic breeders. There is thus a strong indication that the migration routes of the Greenland and Iceland stocks diverge on reaching the Outer Hebrides.

It is obvious from the paucity of records that geese of any kind are scarce in spring at Fair Isle, lying between Orkney and Shetland, and that there is no direct route to the countries of the northwest that incorporates these islands. There is a similar scarcity in Shetland (Venables & Venables 1955) and the Faeroe Islands. Apart from the influx of 1953, in weather initially cyclonic, the only other recent records of Barnacle Geese for this well-watched island are one or two in 1961. Small parties of Greylags occur occasionally in late April and early May, and a few Pink-footed Geese

have been observed in most springs since 1955 (Davis 1965). On the other hand, there is a regular autumn passage of all these species through Fair Isle, though it is smaller than that observed in the Hebrides.

At St Kilda the spring passage is probably more regular, as would be expected, since it lies close to a northwest line from the Sound of Harris, and it may be that more passage goes by the outer isle of Boreray than can be seen from the enclosed Village Bay. Flocks may like to keep the archipelago within reach as they approach the uncertainties of the open sea-crossing, but they seldom appear to put down unless the weather seems unsuitable for onward journeying.

The meteorological environment

The observations of the several parties that have reported on spring goose emigration in Sutherland and the Outer Hebrides leave no doubt that the movement reaches its greatest intensity in anticyclonic weather, and that it is weak or even inhibited under cyclonic conditions. Taking the three years 1957, 1959 and 1960, for which we have a fairly full series of observations from Lewis, it can be shown that activity increases with rising atmospheric pressure (table 6).

There are a number of attributes of an anticyclone or a high pressure ridge which might, separately or cumulatively, provide the external stimulus to migrate for birds which had attained a suitable physiological state. Anticyclones or highs are regions of subsidence, the descending air tending to dissipate cloud and so increase the sunshine, resulting (in spring) in clear skies over a vast area and a rise in daytime temperatures. Usually the gradient wind is slight, and this and the good visibility will greatly assist navigation, and will be especially important where a long overseas journey is involved. Conversely, cyclonic weather brings heavy cloud associated with the vigorous frontal developments, in the region of which prolonged rain or snow may occur; and, owing to the steep pressure gradient within the system, strong winds, which veer markedly and strengthen in the frontal regions, can offer an extreme hazard to an oriented migration across the sea.

Anticyclonic conditions may be relatively local if the high is of small extent, but more usually they are widespread, and they may last for several days. The situation which would provide the optimum travelling conditions for the geese would be one in which good visibility was combined with a light following wind all the way to Greenland or Iceland. This situation would be most likely to arise if an outbreak of polar air were to sweep southwards to Scotland as a ridge from the Greenland-Iceland region, as happened in April

1954, 1960 and 1962 (fig. 2). Expansion across the North Sea to Scotland of a Scandinavian polar anticyclone might also assist the migrants over much of their journey, as in April 1957 (fig. 3). The late anticyclone of 1962, from 25th to 30th April, was derived from a polar air-mass sweeping eastwards across the Atlantic Ocean.

Not all the anticyclonic developments over Scotland at this season provide optimum conditions for the journey, however. If the high pressure originates as a ridge of the Azores high, lying to the southwest of the British Isles, there is usually a complementary westerly airstream between the northern periphery of the anticyclone and low pressure dominating the Greenland-Iceland region beyond (fig. 4). This situation, while affording good departure conditions, might bring rapidly worsening weather as the journey progresses, a strengthening beam wind introducing the risk of a drift off course.

Since the geese cannot recognise the source of the air-mass, but only its obvious attributes of visibility, wind-strength and direction etc., there are clearly some risks in leaving the protection of the land in anticyclonic weather, though these are less than in attempting to depart under cyclonic conditions. The polar anticyclonic situation is the most likely one over Scotland and the adjacent seas in early and mid April, before the Azores high has reached its full summer development, and in most cases an anticyclone originating to the north would give the birds a following wind on their journey. The strengthening of the Azores high at the end of the month and in early May introduces greater hazards for late-staying birds, and the earlier in spring that the geese are able to emigrate, the better are their chances of an unimpeded flight.

Observations at the Butt of Lewis show that an Azores ridge may stimulate departure from mainland Scotland on the first leg of the journey as readily as a polar high, but that many geese, arriving at this last staging-post, will refuse to put out to sea if there are signs of a deterioration of the weather beyond. Should they elect to leave, and later meet with adverse weather, as on 29th-30th April 1959 (fig. 4), many—perhaps most—will return to land. In all likelihood many more do so than can be observed from any given point, since it appears that the flocks lose their cohesion and straggle back low over the water in small, scattered groups. At such times, birds which have set out may take shelter at St Kilda and the Flannans, or they may sustain a drift to Fair Isle, Shetland and the Faeroe Islands on the westerly winds. Some flocks arriving at the Butt, and being wary of the conditions beyond, have been seen to settle on the sea, or continue their flight in a southerly direction along the west coast of

Table 6. Goose 'departures' and 'returns' (number of birds) in relation to atmospheric pressure (millibars)

| | 990-999 | | 1000-1009 | | 1010-1019 | | 1020-1029 | | Above 1029 | |
|---------------------------------------|------------|-----------|------------|------------|-------------|------------|-------------|------------|-------------|----------|
| | Dep. | Ret. | Dep. | Ret. | Dep. | Ret. | Dep. | Ret. | Dep. | Ret. |
| 1957 | — | — | — | — | 24 | 21 | 514 | 1 | 1059 | — |
| 1959 | 525 | 14 | 170 | 138 | 1102 | 387 | 537 | 70 | — | — |
| 1960 | 19 | — | — | — | 161 | 232 | 1050 | 43 | 1853 | — |
| Totals | 544 | 14 | 170 | 138 | 1287 | 640 | 2101 | 114 | 2912 | — |
| Percentage of total 'departures' | | 7.8 | | 2.4 | | 18.3 | | 30.0 | | 41.5 |
| Percentage 'returns' in each category | | 2.6 | | 81.2 | | 49.7 | | 5.4 | | 0 |

Lewis, as in 1954, 1955 and 1959.

The increasing incidence of such behaviour as the weather worsens can be seen from table 6, which shows a relatively lower proportion of 'returns' to 'departures' with rising atmospheric pressure, i.e. with an increasingly anticyclonic type of situation. 'Departures' include all birds seen to fly to sea in a direction between west and north, while 'returns' embraces those which alighted, or turned south on reaching the Butt, or straggled in from the sea.

Temperature

Since variations in temperature have often been held to be a major stimulus to migratory activity, this has been examined in relation to the spring emigrations of 1957, 1959 and 1960. A summation was made of the dry bulb readings (degrees Fahrenheit) at six stations reporting to the *Daily Weather Report*, and the average values were found for 0600 and 1800 hrs. The stations selected were those close to the main winter haunts of geese in Scotland, namely Renfrew, Leuchars (Fife), Dyce (Aberdeenshire), Tiree (Inner Hebrides), Benbecula and Stornoway (Outer Hebrides).

In 1957 overnight falls in temperature were most marked between 21st and 24th April, corresponding with the biggest movements of geese. The greatest values were losses of 10°-11° overnight between the 22nd and 24th, followed by 7° the following night. There was heavy goose passage each morning in this period. There were at the same time the most pronounced daytime gains, steepest on the 23rd and 24th with 9° and 11° respectively. On the 21st, however, the day preceding the first big goose passage at the Butt, the rise was the lowest recorded; nor was the overnight drop so well marked.

The position in 1959 was complicated by the fact that the onset of migration on the 19th coincided with the entry into Scotland of a ridge of the Greenland high, accompanied by a sharp fall in temperature; and this ridge was quickly replaced by a warm, moist air-mass from the Azores high bringing a rise in temperature, which reached 50°F on the 22nd, the first big day of goose passage. Renewed activity from the 27th to the 30th was associated with a slight fall in temperature.

The initial phase in 1960, involving only a small number of birds, followed an overnight rise; but the first strong movement, on the 16th, succeeded a big overnight fall of 13½° to 34°F. The next big passage, on the 25th, was associated with the smallest overnight change in the period, only 3°. From the 26th to the 30th the fall increased; the largest number of geese passed on the 27th after an 8° drop to 43°F, and the next largest number went on the following day after a 9½° fall.

There is no evidence in these data of any marked response to temperature fluctuations as such; indeed, any apparent association (as with a steep overnight fall) might be purely fortuitous and in reality a reaction to the anticyclonic situation as a whole. Temperature fluctuations may show wide variation, according to whether the air-mass has a polar or a sub-tropical source. During a polar development, when the cold air has travelled over a relatively cold ocean, one would expect the greatest temperature extremes, owing to the warming influence of the sun by day, and the increased radiation, due to the lack of cloud-cover, at night. If the high is of sub-tropical origin the air-mass on arrival will be warm and moist and the day and night disparity in temperature less pronounced. We have seen that, although this is not the optimal situation for overseas emigration, the geese are nevertheless strongly activated by a high of sub-tropical origin, and they presumably respond to features other than temperature changes.

The migration period

The peak of emigration appears to be during the last ten days of April, and of nearly 10,000 geese recorded in this paper, 80 per cent were moving in this period. In some years, small numbers may move in mid month, as in 1960 (16th April) and 1962 (13th April). There is a paucity of observations from this early period, and it may be that a relatively small proportion of the wintering flocks are physiologically prepared for the return journey by mid month, and respond if suitable weather permits.

Ideally, since the polar anticyclonic development affords

the safest journey, more ought to go with the mid-April highs, and one can only conclude that some factor militates against an early departure in most years. It is difficult to explore this aspect of the problem without a full series of data covering most of April, over a number of years, not only from passage points but also from winter haunts of populations known to breed in Greenland and Iceland.

Donald Watson (*in litt.*) has made observations over several years on the departure dates of one northwestern goose population, the wintering Greenland Whitefronts in the Ken valley, Kirkcudbrightshire. His data are incomplete, since no systematic watch has been possible, but they indicate some variation in departure dates from one year to another. Thus, despite intensive search, no geese were seen in the Loch Ken area after 23rd April 1959, or after 25th April 1960, whereas in 1958 there was still a considerable number on the 28th and the 29th and the last seem to have left on the 30th. The spring of 1957 seems to have been an early one, with big departures on the 19th-20th (at the Butt, the peak of Grey Lag and Pink-footed Goose passage was from the 22nd to the 25th). There were Greylag departures from Kirkcudbrightshire on 18th April 1959 (passage at the Butt was from the 19th) and on 16th April 1960 (the 16th was a good day at the Butt), with at least some Whitefronts leaving that year between then and the 21st. It would seem that 1957, 1959 and 1960 were in all probability 'early' or at least fairly normal years, but that 1958 was 'late.'

Watson suggests (*in litt.*) that good feeding conditions during the month or so prior to departure may be important, and that a cold or backward spring (with relatively little growth of new grass) may delay migration. He also comments that there is usually a high proportion of young birds in the late flocks, and that these might reasonably be expected to be the least robust individuals and the worst sufferers in a backward spring.

If we concede that fitness to undertake a long overseas flight may well depend upon the availability of good grazing during the early spring, then the departure pattern is as likely to be governed by short-term climatic conditions as by current weather developments in mid and late April. The best way of testing this view would be to examine the departure pattern in relation to the accumulated temperature records for the first quarter of the year. This parameter measures both the accumulated degrees of warmth, and the degrees of cold, above and below 42°F (6°C), which is the accepted minimum temperature for the active growth of grasses and similar vegetation. The Meteorological Office (Scotland) kindly supplied me with figures computed from maximum and

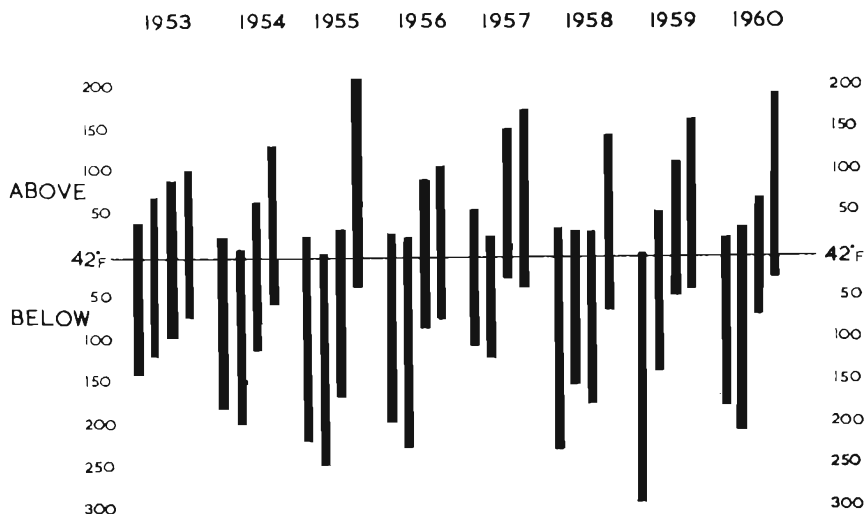


FIG. 6. Accumulated temperatures (day-degrees F) above and below 42°F, for the months January to April inclusive, 1953-60, from observations at two stations in Dumfriesshire.

minimum temperature readings obtained at two sites in Dumfriesshire (Crichton Royal Hospital near Dumfries, and Glenlee Power Station near New Galloway), and in fig. 6 the averages from the two sites are plotted as accumulated day-degrees above and below 42°F for the months of January to April inclusive.

The best March gain is shown by 1957; nor was February particularly cold that year. This was an 'early' goose year, with departures from Loch Ken on 19th-20th and peak passage at the Butt from 22nd to 25th. March was less warm, but February milder than in 1957, in 1959, when all the geese were away from Loch Ken by the 23rd and there was continuous passage past the Butt from the 19th (although the biggest day was the last of the month). It should be added, however, that this was a spring with very weak anticyclonic development (see table 6), and this fact may have contributed to a protracted emigration. In 1960 there was equality between accumulated warmth and cold during March, following a colder February than in the other years; departures from Loch Ken appear to have been later than in 1957 and 1959, and the main passage at the Butt was from 25th to 28th, continuing into May.

The coldest March, after a cold February, was in 1958, but unfortunately goose departure data are meagre; however, the strength of the passage at St Kilda in the first week of May, coupled with the fact that birds were still at Loch Ken at

the end of April, indicates a 'late' year. The spring of 1955 seems to have been as cold, with almost no accumulated warmth in February and very little gain in March; no departures were observed at Loch Ken before the 20th, and few geese took advantage of anticyclonic weather during the third week of April to leave from the Outer Isles. In view of the steady accumulation of warmth from January through to April it is not surprising that goose movements were early in 1953, but there is no obvious reason why 1954 should also have been an early year, with departures from Loch Ken between 16th and 18th, since conditions were colder than in 1960.

The best that can be said is that there is a broad correlation between this climatic parameter and the departure pattern of the flocks, and it must be stressed that the migration data are too incomplete to warrant any firm conclusions. A resolution of this problem must await a longer series of systematic observations from wintering grounds (such as Loch Ken and Loch Leven) coupled with watches at principal passage points (such as the Sound of Harris and Butt of Lewis).

Acknowledgments

I am grateful to all those observers, named in the text, whose notes and records I have used in this study; to Principal Lightkeeper Archibald MacEachern for his keen interest in the work in 1960; to Donald Watson for much interesting and helpful discussion of the subject; and to Dr R. W. Gloyne of the Meteorological Office (Scotland) for assistance with climatic data.

Summary

Observations on goose emigration at principal passage points are summarised, and their meteorological background examined, for most years between 1953 and 1962.

A migration 'flyway' crosses northern Scotland from the Kyle of Sutherland northwestwards over Lochs Shin, Merkland and More; while in the Outer Hebrides divergent routes pass through the Sound of Harris (Greenland White-fronted and Barnacle Geese), and off the Butt of Lewis (Icelandic Pink-footed and Grey Lag Geese).

Goose emigration is stimulated by anticyclonic developments and the passage reaches its peak at such times; cyclonic weather over the Atlantic may cause the geese to return to land, and inhibits migration in flocks about to put out to sea. The main characteristics (and their benefits to the migrant geese) of highs of different origin are discussed.

Migration usually begins in the third week but has its peak in the fourth week of April. There is a suggestion that emigration may be delayed in cold springs because of poor feeding conditions. The accumulated temperature records for one wintering area (Dumfries-New Galloway) are examined in relation to goose departures and show a broad agreement, the migration being later in backward springs. Systematic observations on this relationship would be worthwhile.

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Breeding birds of Orkney

E. BALFOUR

(Plates 5-6)

Introduction

Twenty-five years have elapsed since David Lack carried out a survey of the breeding birds of Orkney (Lack 1942-43), and since then changes have occurred in the status of some species. I have briefly summarised Lack's list of breeding birds, and where changes have occurred between 1941 and 1967 I have commented upon them.

I have included Sule Stack and Sule Skerry in the survey, though Lack discounted them as part of the Orkney archipelago and did not study their bird populations. Sule Skerry lies 35 miles due west of Marwick Head on Mainland and has an area of 35 acres. The Stack lies $4\frac{1}{2}$ miles southwest of the Skerry.

Lack recommended that the next compiler of an Orkney breeding bird list should consult the notes of the late G. T. Arthur. Unfortunately this recorder kept very few notes. He wrote some popular articles for the *Orkney Herald* and a pamphlet (Arthur 1950), reprinted from *Bird Notes* 24: 130-135. He also compiled a plain list of observations, dated 1939, which I have in my possession, to which are added half a dozen extremely brief notes taking it up to 1951.

A. Wood kept few notes, but he delivered some lectures about Orkney birds to the Firth Mutual Improvement Society, one of which was published in 1916.

Environmental changes

Many Orcadians would deny that there has been any noticeable change in their countryside in the last 25 years. However, during the Second World War there were many military

personnel and camps in the country, and since the war there have been some major changes in agricultural practice.

The troops had two effects on the bird population. Firstly, they took to supplementing their rations of poultry eggs by collecting those of the native birds, especially the Lapwing. Secondly, parts of Orkney were made restricted areas and given over for artillery ranges and training grounds. Under these conditions some moorland species thrived and increased in number, the most noticeable increase being in the Hen Harrier population.

The main changes in agriculture over the last 20 years have been the disappearance of the work horse, increased use of machinery, the introduction of silage production, and erection of modern farm buildings. Large tracts of hillground have been ploughed out and reseeded, and many marshes and pools have dried up as a result of draining and ditching programmes. The use of artificial fertilisers and seed dressings seems extensive but chlorinated hydrocarbons are little used except in sheep dips.

There has been a marked increase of willow scrub in some of the damper unfenced commons and moorlands due to the cessation of cattle grazing. This scrub affords suitable habitat for Reed Buntings and Sedge Warblers and if the chance remains in the future this type of scrub could colonise considerable areas of the wetter low-lying moors and meadows.

The Forestry Commission has some experimental conifer plantations on Hoy and these provide fairly extensive cover in two rather desolate valleys.

Gamekeeping ceased at the onset of the war and has never been restored. The human population has also decreased markedly in Orkney over the last 25 years.

Hedgehogs were introduced during the war and are now common on Mainland, Bury and South Ronaldsay. There is also a reference in Buckley & Harvie-Brown (1891) stating that hedgehogs were introduced in 1870. There is some evidence that they take the eggs and young of ground-nesting birds. Conversely, the rabbit population has declined, owing to recurring outbreaks of myxomatosis since the 1950s. Rabbits have disappeared from some of the smaller islands, and this may have some effect on the distribution of some predatory birds and hole-nesters.

A hurricane in January 1952 did much damage to steadings and stackyards and swept away many derelict huts from the abandoned war camps. This probably deprived some Starlings and Blackbirds of nesting sites. Many trees were blown down, including big larches at Binscarth which afforded nesting sites for Long-eared Owls and Sparrowhawks.

An inconspicuous climatic effect has been the recession of the arctic ice since 1900, continuing to 1962. This has resulted in an amelioration of the climate and a general 'warming-up' effect. Since 1940 the weather has been considerably wetter and it is thought that a series of colder winters set in after 1962. Perhaps changes such as these have had an adverse effect on the breeding success of the Red-necked Phalarope and Common Sandpiper, and aided the increase of Stonechats and Sedge Warblers.

Status changes

The clearest increases in breeding populations are those of Red-throated Diver, Hen Harrier, Kestrel, Oystercatcher, Curlew, Great Skua, Arctic Skua, Great Black-backed Gull, Stonechat, Sedge Warbler and Reed Bunting. The birds showing a noticeable decrease are Manx Shearwater, Corn-crake, Coot, Lapwing, Common Sandpiper, Red-necked Phalarope, Lesser Black-backed Gull, Mistle Thrush, Pied Wagtail and Corn Bunting. Other species appear to have decreased (e.g. Peregrine, Red Grouse), though the extent of this decrease is not known. The Dipper has not nested since 1941 nor the Common Scoter since 1958.

An additional five species are now recorded as breeding. They are Buzzard, Collared Dove, Fieldfare, Garden Warbler and Tree Sparrow. Records of Greenshank and White Wagtail are now published for the first time.

Three of the species considered doubtful by Buckley & Harvie-Brown (1891), Omond (1925) and Lack (1942-43) have since been confirmed. They are Ring Ouzel, Blackcap and Goldcrest. Two additional species from Lack's list, Scaup and Black-tailed Godwit, have also been substantiated as breeding birds.

Species that in my view should not have been included as regulars in 1941 and the preceding decade are the Sparrowhawk, House Martin and Whinchat. There is also no definite proof of the Water Rail nesting on Orkney now, though this is characteristically a secretive species.

In his paper Lack discounts the Whooper Swan, Golden Eagle, White-tailed Eagle, Ptarmigan and Sand Martin as breeding birds.

Annotated list of breeding birds of Orkney

For each species, the status given by Lack (1942-43) is summarised and bears the initials (DL). Subsequent change in breeding status, to the end of 1967, is discussed, and the present status indicated.

Red-throated Diver *Gavia stellata*. Increased and spread in recent years (DL). Has further increased, as below :

| | Lack - 1941 | Balfour - 1967 |
|-----------|---------------|----------------|
| Mainland | several pairs | 12-15 pairs |
| Hoy | several pairs | not known |
| Eday | 2 pairs | 6-8 pairs |
| Stronsay | 1 pair | 1 pair |
| Shapinsay | not known | 1 pair |
| Rousay | 1 pair | 2-4 pairs |

Little Grebe *Podiceps ruficollis*. Several pairs on Mainland, and fewer pairs on north islands (DL). Some decline on Mainland.

Storm Petrel *Hydrobates pelagicus*. Not studied (DL). Thriving colony on Auskerry and large colony on Sule Skerry. Recently recorded as breeding on Pentland Skerries, Rusk Holm and Faray Holm; and probably on Green Holms and Switha.

Manx Shearwater *Procellaria puffinus*. Decreased since the 18th century (DL). Has continued to decrease and is probably confined to Hoy, where Von U. Böcker (1964) estimated 15-20 pairs at Sneuk Head. More study of distribution is needed.

Fulmar *Fulmarus glacialis*. Increased rapidly since first breeding in 1900 (DL). Has further increased and is widespread around almost all coasts. Species is now nesting on low inland cliffs and occasionally on flat ground.

Gannet *Sula bassana*. Not studied (DL). Large colony on Sule Stack of approximately 3000-4000 pairs. Numbers have been consistent for many years.

Cormorant *Phalacrocorax carbo*. Local but not uncommon, nesting on higher ledges with Shag on lower ledges (DL). In recent years fluctuating fairly closely around 600 pairs, two-thirds of which are contained in the two largest colonies—on the twin islets of Boray Holm and Taing Skerry, and on the Calf of Eday—each with about 200 pairs. Nests are either on flat clifftops or on low grassy, shingly, or rocky small islands (Balfour, Anderson & Dunnet 1967).

Shag *Phalacrocorax aristotelis*. Abundant (DL). No apparent change in status.

Heron *Ardea cinerea*. One cliff colony on Mainland (DL). The small colony on the west Mainland cliffs has fluctuated slightly, with a maximum of about 13 pairs.

Mallard *Anas platyrhynchos*. Common and breeds on most islands (DL). Has increased slightly.

Teal *Anas crecca*. Common and breeds on most islands (DL). No apparent change in status.

Pintail *Anas acuta*. Fairly common and increasing (DL). Rather sparsely distributed.

Shoveler *Spatula clypeata*. There has been a rapid increase and spread (DL). Mainly on some northern isles. Scarce on Mainland.

Scaup *Aythya marila*. According to the 1915 BOU list breeds, but no details given (DL). Spasmodic breeder. Bred on Papa Westray in 1954 (P. J. Conder pers. comm.) and apparently continued until 1959 (two pairs). Walker (1967a) records seeing a female with four young on North Ronaldsay in the summer of 1965.

Tufted Duck *Aythya fuligula*. A recent increase and spread (DL). Not numerous, but fairly widespread.

Pochard *Aythya ferina*. Numbers increasing (DL). Scarce. Confined mainly to the north isles.

Common Scoter *Melanitta nigra*. "Presumably has been regular for some years" (DL). Ceased to breed after 1958, and not now regarded as a regular breeder.



PLATE 5. Female Kestrel and brood in heather in Orkney, where ground-nesting was first noticed in 1945 and has been widespread since the mid 1950s. (see page 97).

Photograph by William S. Paton.



PLATE 6. Part of the colony of Cormorants on the Calf of Eday, one of the largest colonies in Orkney



...e page 89 and vol. 4 page 481).

Photograph by William S. Paton

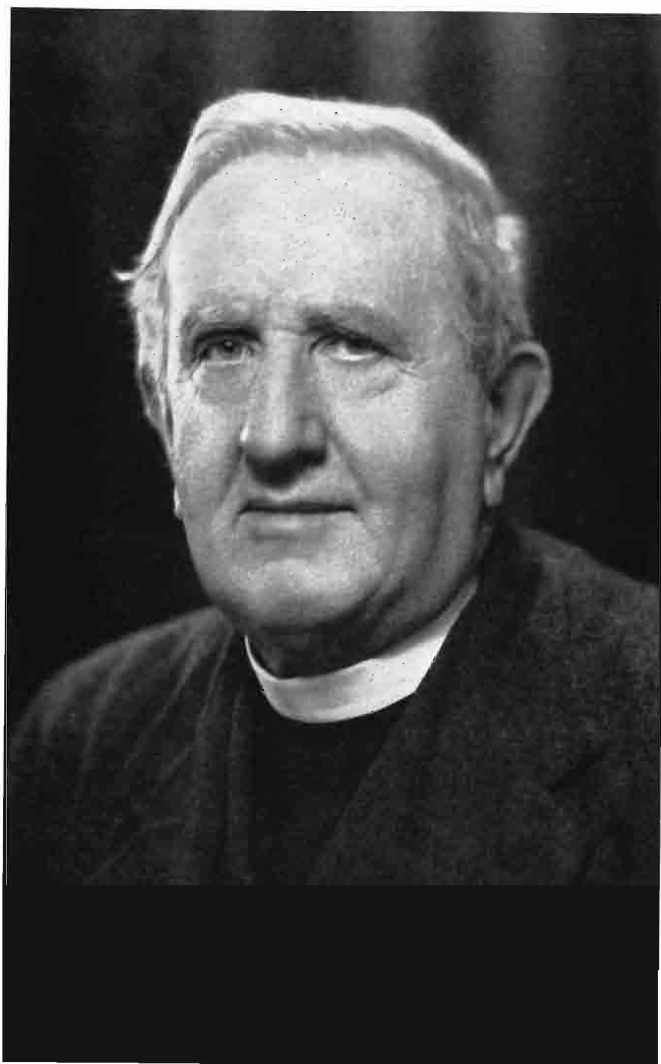


PLATE 7. John Morell McWilliam (see Obituary page 113).

Photograph by Lafayette Ltd.

Eider *Somateria mollissima*. Common on all the main islands (DL). Still regarded as common, but has decreased slightly.

Red-breasted Merganser *Mergus serrator*. Common on all the main islands (DL). Has declined slightly.

Shelduck *Tadorna tadorna*. Common and breeds on most islands (DL). No change in status.

Mute Swan *Cygnus olor*. Rapid increase and spread (DL). Common, about 30 or more pairs breeding on the large, adjacent Harray and Stenness Lochs, and a pair or two on most of the smaller waters on Mainland and several of the bigger islands; a very few occasionally nest by sheltered saltwater lagoons. A considerable non-breeding population (not counted) on Harray and Stenness Lochs increases to at least 200 in winter and has reached 300.

Buzzard *Buteo buteo*. Rare visitor until 1954. Has been resident in Hoy since 1961 and probably bred successfully in 1962 and 1964. One pair reared two young and a second pair failed in 1966. At least one pair successful in 1967.

Sparrowhawk *Accipiter nisus*. A few pairs bred regularly on Mainland (DL). No record of breeding in the last 25 years and irregular after 1930s.

Hen Harrier *Circus cyaneus*. Present in limited numbers (DL). Greatly increased during the war years and reached a high peak in 1949-50. Females tended to outnumber males and this resulted in widespread bigamy. Breeding grounds are mainly confined to Mainland, Rousay and Hoy, with slightly more than 50 nests in recent years.

Peregrine *Falco peregrinus*. A number of pairs present (DL). At least a dozen pairs in 1958 and 1959 on the cliffs of eight islands. Low breeding success in 1964 and 1965, with fewer pairs attempting to nest. Slight improvement in 1967.

Merlin *Falco columbarius*. A decrease in the 19th century, but not at present time. Breeds regularly on Mainland and Hoy (DL). Perhaps 25 pairs between 1955 and 1960, but a slight decrease over the last few years.

Kestrel *Falco tinnunculus*. Not uncommon (DL). Increasing in early 1940s, and began nesting among heather. This was first noticed in 1945 (Balfour 1955). The habit was widespread by mid 1950s. Numbers have since dropped slightly, but it is still generally a fairly common bird.

Red Grouse *Lagopus lagopus*. Absent from north islands, where there is no heather or ling (DL). Considerable decrease from about the early 1930s. Present in small numbers on Mainland and Rousay.

Quail *Coturnix coturnix*. Several pre-1940 nest records (DL). Suspected of nesting at Rendall and Stenness in 1953. One pair reared young on Rousay in 1958.

Pheasant *Phasianus colchicus*. Introduced and doing well on Rousay. One seen in Shapinsay in 1905 (DL). Breeding in Balfour Castle Gardens and at St Margaret's Hope, and perhaps elsewhere.

Water Rail *Rallus aquaticus*. A few pairs breed regularly on Mainland according to G. T. Arthur (DL). No evidence of nesting now, though this secretive species may have been overlooked.

Corncrake *Crex crex*. Abundant in cornfields or long grass (DL). Has decreased considerably, even before the changes in haymaking methods and grass management, allegedly factors which have caused its decline. Birds now nest in such habitats as rushy areas and nettle patches rather than in cultivated or grass fields. Recent increase in North Ronaldsay.

Moorhen *Gallinula chloropus*. Widely distributed (DL). No change in status.

Coot *Fulica atra*. Found on all low-lying reedy waters (DL). Decreased,

especially on Mainland waters about 1930. Now common on a few of the north isles only.

Oystercatcher *Haematopus ostralegus*. Abundant on all coasts (DL). Has increased considerably, and a number have moved inland to breed. They nest in newly sown oat fields, and on waste ground and bare, dry hills.

Lapwing *Vanellus vanellus*. Numerous (DL). Population has declined since 1941. The hard winter of 1963 cut down the numbers drastically, but there has been a slow recovery since then.

Ringed Plover *Charadrius hiaticula*. Common on all suitable shores (DL). Has declined slightly.

Golden Plover *Charadrius apricarius*. Breeds on nearly all large areas of moorland (DL). Has decreased. Some breeding habitat has been lost through the ploughing of hill ground.

Snipe *Gallinago gallinago*. Breeds commonly on all main islands (DL). No change in status.

Curlew *Numenius arquata*. Great increase in last 50 years (DL). Has continued to increase on a large scale, and is a common moorland nesting bird despite the predation of young by Hen Harriers.

Whimbrel *Numenius phaeopus*. No evidence of breeding (DL). Buckley & Harvie-Brown (1891) give several old breeding records and Omond (1925) says that it nested on the hill of Kingsdale on Mainland, but it has apparently not nested for many years.

Black-tailed Godwit *Limosa limosa*. No real evidence of breeding (DL). One pair bred and reared young at Sanday in 1956 (J. Fotheringham pers. comm.). From this and earlier claims it appears that this species is a spasmodic breeder in Orkney.

Common Sandpiper *Tringa hypoleucos*. Formerly common, but a great decrease between 1920 and 1940 (DL). Has continued to decrease. Fewer on Hoy and Mainland, and the Rousay population has dropped by a half.

Redshank *Tringa totanus*. Numerous on all islands, breeding in grassy marshes (DL). No change in status.

Greenshank *Tringa nebularia*. Nested on Heddle Hill, Firth, in 1926. (A. Wood pers. comm.); and on Hoy in 1951 (G. T. Arthur and others).

Dunlin *Calidris alpina*. Abundant (DL). Has generally decreased a little. Ploughing out of fields has curtailed one of the best breeding sites on Mainland.

Red-necked Phalarope *Phalaropus lobatus*. Several pairs present, especially on North Ronaldsay (DL). Has not bred on North Ronaldsay for many years and is holding out precariously on one other island where in recent years only one or two pairs have been present.

Great Skua *Catharacta skua*. Over 20 pairs breeding on Hoy (DL). Has increased and spread to other islands. M. C. W. Evans established the Hoy breeding population at over 60 pairs in 1961. Since 1950 colonisation has occurred on Papa Westray (4-5 pairs), Rousay (5-6 pairs), Eynhallow and Westray.

Arctic Skua *Stercorarius parasiticus*. Nesting restricted to Hoy (over 60 pairs) and Papa Westray (14-18 pairs) (DL). Has increased and spread to more islands. M. C. W. Evans estimated the breeding population on Hoy in 1961 as 100-150 pairs. The Papa Westray colony has also increased. Other islands which are now colonised are Westray, Eday, Sanday, Eynhallow, Gairsay, Wyre, and Calf of Eday, and there are three moorland colonies on Mainland. Lack's finding of 25% pale birds on Hoy was confirmed by Von U. Böcker (1964) in 1959.

Great Black-backed Gull *Larus marinus*. Generally increased (DL). Has increased greatly and is common on large and small islands, hav-

ing in places ousted the Lesser Black-backed Gull. Where there were only a few scattered pairs 25 years ago, there are now large colonies. The colony at Burn at Forse in Hoy was estimated in 1961 by M. C. W. Evans at 1000-2000 pairs. In the fairly recent colony at Stowdale in Hoy I estimated 700-800 pairs in 1965. Other large colonies are found at Calf of Eday and Rothisholm, Stronsay. Of the two sizeable moorland colonies on Mainland one is over three miles from the sea.

Lesser Black-backed Gull *Larus fuscus*. Increasing and breeds at least 100 yards back from clifftops (DL). Has shown a marked decrease from the 1940s but there are indications of a recovery. Two factors may be linked with the decline of these birds. Firstly, the compact nesting colonies were very vulnerable to egg thieves. Two inland, moorland colonies on Mainland, one of 100 pairs and the other of 50 pairs, ceased to exist before 1950. Both colonies were known to be regularly raided by people for eggs. Secondly, as the colonies of the Lesser Black-backed Gull dwindled the larger Great Black-backed Gull increased in numbers and colonised the old territories of the smaller gull.

A new colony started on Mainland in 1964 in a valley which had been burned the previous year. This is an interesting development, because Buckley & Harvie-Brown (1891) quoted Moodie-Heddle, writing in 1889, as saying "Here [referring to Hoy] any one can create a breeding-place of the Lesser Black-backed Gull by burning a large tract late in the season".

Herring Gull *Larus argentatus*. Extremely abundant, breeding on cliffs of all main islands (DL). No apparent change in numbers. Breeds commonly on low flat islands as well as on sloping cliffs, and in some cases on moorlands far from the sea.

Common Gull *Larus canus*. Found on all main islands and is increasing (DL). Widespread in small colonies.

Black-headed Gull *Larus ridibundus*. Breeds commonly in grass marshes and reeds round low-lying waters. Many colonies on larger islands (DL). Status much as formerly. Tends to shift from place to place.

Kittiwake *Rissa tridactyla*. Common and widely distributed (DL). Large colonies on Westray, Calf of Eday, Copinsay and Marwick Head and many smaller ones all round the coasts. Associates with Guillemot.

Common Tern *Sterna hirundo*. Probably in reduced numbers (DL). Small numbers, usually associated with Arctic Terns.

Arctic Tern *Sterna macrura*. Probably in reduced numbers (DL). Fairly numerous and breeds on many islands, although populations tend to fluctuate and change breeding grounds.

Sandwich Tern *Sterna sandvicensis*. Two main colonies on North Ronaldsay (DL). 340 pairs at Whitemill Point, Sanday, in 1958, and at least 300 pairs nested at Bride's Ness, North Ronaldsay, in 1962 after a few years' absence. In 1963 the numbers at the latter site were down by almost a half, and there was no nesting on North Ronaldsay at all in 1964 and 1965. In 1965 the only colony was a small number of nests on Sanday. In 1967, 200 pairs nested on North Ronaldsay. Thus the numbers fluctuate and colonies are shifted from one location to another frequently.

Razorbill *Alca torda*. Not specially studied (DL). Widespread and well distributed on many cliffs, although not particularly numerous and never in large colonies. Often associated with Black Guillemots.

Guillemot *Uria aalge*. Not specially studied (DL). A number of large and small colonies on suitable cliffs, associating with Kittiwakes at largest colonies. Greater numbers at Noup Head, Westray, Calf of Eday, Marwick Head and Copinsay.

Black Guillemot *Cepphus grylle*. Not specially studied; colonised North Ronaldsay in 1938-40 (DL). Fairly common. Small colonies are widely distributed around the coasts and small islands. Nests among boulders, under flat stones, in burrows and in crannies.

Puffin *Fratercula arctica*. Decreased (DL). Small numbers on several coasts and islands. Large colony on Sule Skerry and small colonies at Costa Head, Swona, St John's Head and Berry.

Rock Dove *Columba livia*. Abundant everywhere (DL). No change in status.

Woodpigeon *Columba palumbus*. Abundant on islands with woods (DL). Has shown a further small increase. The adaptation to breeding among heather since before 1940 has continued to spread.

Collared Dove *Streptopelia decaocto*. First observed in Orkney at St Margaret's Hope in July 1962. Attempted to breed on Shapinsay in 1963; apparently bred in 1964 in the Finstown area, and certainly bred in 1965 in Binscarth plantation, where 20 birds were seen together after the breeding season. Has now spread to other areas.

Cuckoo *Cuculus canorus*. A few nest most years, parasitising Meadow Pipts and Dunnocks (DL). Small numbers, fluctuating from year to year.

Long-eared Owl *Asio otus*. Several pairs nest regularly in woods (DL). Rather fewer since 1952, perhaps four to six pairs annually in the past ten years.

Short-eared Owl *Asio flammeus*. A few pairs breed on some islands (DL). Fluctuates. Rather numerous in 1967.

Skylark *Alauda arvensis*. Common in all cultivated grassland (DL). No change in status.

Swallow *Hirundo rustica*. Probably regular breeder but liable to fluctuations. No nests in 1941 (DL). Breeds in small numbers.

House Martin *Delichon urbica*. Same status as Swallow (DL). Has not bred regularly since 1941. A pair bred at Sandwich in 1956.

Raven *Corvus corax*. Well distributed. One or two pairs on many islands (DL). No change in status.

Hooded Crow *Corvus corone cornix*. A few pairs on the larger islands (DL). No change in status.

Rook *Corvus frugilegus*. Common and colonising (DL). Has not increased further.

Jackdaw *Corvus monedula*. Common (DL). No change in status.

Wren *Troglodytes troglodytes*. Abundant where there is cover (DL). Usually common and widespread, but declines in hard winters.

Dipper *Cinclus cinclus*. Rare (DL). Ceased to nest at Hoy in 1940-41, and no evidence of breeding in Orkney since then.

Mistle Thrush *Turdus viscivorus*. Present in small numbers (DL). Very scarce in recent years, not more than two or three pairs.

Fieldfare *Turdus pilaris*. A pair bred in west Mainland in 1967.

Song Thrush *Turdus philomelos*. Abundant in woods, and fairly common in gardens (DL). No change in status.

Ring Ouzel *Turdus torquatus*. Rare breeder (DL). Three young reared on Hoy in 1963 and breeding strongly suspected at three other localities in recent years.

Blackbird *Turdus merula*. Common except on open, dry and high moorland (DL). No change in status.

Wheatear *Oenanthe oenanthe*. Widely distributed on rocky moorland and sandy links (DL). No change in status.

Stonechat *Saxicola torquata*. Low numbers (DL). Hoy has a thriving population and a few pairs breed on Mainland. Fluctuates with severe winters.

Whinchat *Saxicola rubetra*. Small numbers bred annually but none seen in 1941 (DL). No recent proof of breeding.

Robin *Erithacus rubecula*. Local (DL). A few in several plantations and gardens.

Sedge Warbler *Acrocephalus schoenobaenus*. Decreased (DL). It has increased and regularly breeds at several places on Mainland, Sanday, Hoy and, recently, Westray and Stronsay.

Blackcap *Sylvia atricapilla*. Has possibly bred on a few occasions (DL). One pair bred in Balfour Castle gardens, Shapinsay, in 1949 according to G. T. Arthur and P. E. Brown (pers. comm. and Arthur 1950).

Garden Warbler *Sylvia borin*. One pair reared young at Binscarth plantation in 1964 and may also have nested in 1965.

Willow Warbler *Phylloscopus trochilus*. Gradually increasing and spreading (DL). Regular and fairly widespread though not numerous.

Goldcrest *Regulus regulus*. Two old breeding records—some doubt about their authenticity (DL). A pair bred at Binscarth plantation in 1945 and a pair at Carrick wood, Eday, in 1962.

Spotted Flycatcher *Muscicapa striata*. A few irregular breeding records (DL). Has bred regularly in small numbers (perhaps four to six pairs) over the past decade.

Duncock *Prunella modularis*. Common in woods, gorse and gardens (DL). No change in status.

Meadow Pipit *Anthus pratensis*. Common on all islands with well developed moorland (DL). No change in status.

Rock Pipit *Anthus spinoletta*. Well distributed on coasts (DL). No change in status.

Pied Wagtail *Motacilla alba yarrelli*. Very local in 1941 but allegedly commoner previous to that (DL). Formerly a common breeder frequenting old quarries and burnsides. Decreased rapidly from 1935 and is still scarce.

White Wagtail *Motacilla alba alba*. One pair nested in the wall of the mill dam at Breck on Rendall in 1932.

Grey Wagtail *Motacilla cinerea*. A few old nesting records (DL). Has not bred in last 25 years.

Starling *Sturnus vulgaris*. Extremely abundant (DL). No change in status.

Greenfinch *Chloris chloris*. Fairly common (DL). Has decreased slightly.

Linnets *Carduelis cannabina*. Common in woods with bushes and in gorse. Scarce elsewhere. (DL). Status much as formerly. Absent from North Ronaldsay. Additional nesting sites on grass-covered (very old) disused quarry faces and between rag stones on drystone walls.

Twite *Carduelis flavirostris*. Widely distributed, but nowhere abundant (DL). Status much as formerly. Breeds usually in small loose colonies or groups widely scattered. In North Ronaldsay nests in tall fuchsia bushes.

Chaffinch *Fringilla coelebs*. Fairly common in woods and gardens (DL). No change in status.

Corn Bunting *Emberiza calandra*. Common on cultivated land, and absent from moorland (DL). Has become very scarce, with largest numbers in north isles, though absent from North Ronaldsay in 1967.

Yellowhammer *Emberiza citrinella*. Not uncommon in hedges and

gorse but breeding range contracting (DL). Has decreased.

Reed Bunting *Emberiza schoeniclus*. Not uncommon (DL). Has increased and benefits from the spread of willow bushes by burn-sides and in other wet places.

House Sparrow *Passer domesticus*. Extremely common (DL). No change in status.

Tree Sparrow *Passer montanus*. There has been a small colony in the old coniferous wood at Carrick, Eday, since at least 1961.

Doubtful breeders

A bird is listed as doubtful when evidence of breeding is insufficient; or when it may have been confused with another closely related species; or when there seems to be a wrong application of an English or vernacular name to a species (e.g. the Goshawk must not readily be accepted as having bred in the past, when it appears that the Hen Harrier has been referred to as "Goshawk," or "Goose-haak", in Orkney). Generally, the validity of very old claims is most suspect.

Black-throated Diver *Gavia arctica*. Evidence of nesting in the last forty years has proven to be negative. All reports that have been critically investigated have turned out to be of Red-throated Divers. I have personally carried out two such investigations since the war and A. Wood did likewise in the early 1920s and early 1930s. Buckley & Harvie-Brown (1891) quote another unsatisfactory record.

Grey Lag Goose *Anser anser*. The single record has been shown to be that of a tame bird (DL).

Little Tern *Sterna albifrons*. This is listed as an Orkney breeder in the *Handbook* (Witherby *et al* 1941), but it is a mistake dating from the time of Baikie & Heddle (1848).

Pied Flycatcher *Muscicapa hypoleuca*. There is no evidence to support Moodie-Heddle's 1864 breeding record (Buckley & Harvie-Brown 1891).

Yellow Wagtail *Motacilla flava*. Omond (1925) described Moodie-Heddle's old breeding records (Buckley & Harvie-Brown 1891) as very doubtful, and they are probably the result of confusion with the Grey Wagtail.

Lesser Redpoll *Carduelis flammae disruptis*. The records mentioned by Buckley & Harvie-Brown (1891) are not satisfactory, and it seems probable that they refer to Linnets, both species being known as Rose Lintie in Orkney.

Three additional species not mentioned by Lack should be added to these six, making nine rejects in all. The three, from G. T. Arthur's list, are Pomarine Skua *Stercorarius pomarinus*, Black Tern *Chlidonias niger* and Turtle Dove *Streptopelia turtur*. The recorder gives very little supporting evidence for these claims and wrote against the Black Tern record "no proof."

There are nine doubtful breeders which seem to have stronger cases for inclusion in an Orkney list because either

the evidence is more convincing or the species would be nearer its normal breeding range.

Slavonian Grebe *Podiceps auritus*. G. T. Arthur lists one nesting record (no date) at Quanterness. A. Wood saw an adult in breeding plumage on Sanday in the 1920s.

Leach's Petrel *Oceanodroma leucorhoa*. Robinson (1934) gives one record from a lighthouse keeper's observations on Sule Skerry. This would seem to be a suitable breeding place, and indeed an adult was caught on the island in July 1967.

Garganey *Anas querquedula*. G. T. Arthur records seeing a female with two young on a loch at North Ronaldsay on 20th July 1943; and Baxter & Rintoul (1953) quote a record of five being flushed from a marsh on North Ronaldsay in July 1938.

Velvet Scoter *Melanitta fusca*. Past evidence indicating that breeding has occurred is circumstantial (see Lack 1942-43). A. Wood is confident that the species nested on Sweyn Holm in 1914. Adults are sometimes present all summer. On 15th May 1958 I saw a small party with Common Scoters on the sea near Sweyn Holm.

Dotterel *Charadrius morinellus*. I was shown an egg, supposedly taken from a plover-like bird's nest, by two boys in 1935. It resembled, but was smaller than, a Lapwing egg. This is at least suggestive evidence and gives some support for earlier breeding claims—see Buckley & Harvie-Brown (1891).

Woodcock *Scolopax rusticola*. Buckley & Harvie-Brown (1891) quote two breeding records for Rousay and two records for Mainland. G. T. Arthur records finding young on Mainland.

Roseate Tern *Sterna dougallii*. A pair is reported to have nested on North Ronaldsay in 1964 (Walker 1967b), but it is impossible now to establish this record beyond doubt, as only an incomplete description of the birds is available.

Redwing *Turdus musicus*. Nests in north Scotland and Shetland, but the two records for Orkney from Buckley & Harvie-Brown (1891) are unsatisfactory.

Wood Warbler *Phylloscopus sibilatrix*. A. Wood states that a pair bred in Binscarth plantation in 1914 and 1915, rearing three and five young respectively. It is strange that this record does not appear on Omond's list, as the two communicated regularly with each other.

Acknowledgments

I wish to tender my grateful thanks to P. J. S. Olney and G. J. Thomas of the RSPB for their assistance in arranging and editing this paper, to Mrs G. T. Arthur for presenting me with her late husband's notes, to M. C. W. Evans for his notes on skuas and gulls on Hoy, to K. G. Walker for information from North Ronaldsay, and to R. G. Ross and P. Leith for data on climatic variations and weather changes.

Summary

The need for an up-to-date account of the breeding birds of Orkney is outlined in relation to changes that have taken place in the environment in the past 25-30 years through changes in land use and management and otherwise.

Attention is drawn to species that have increased or decreased in

numbers, and an annotated checklist of breeding birds gives details of changes noted in their status or general ecology. Doubtful breeding records are discussed separately.

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Arctic auks on the Scottish coast

W. R. P. BOURNE

The Seabird Group

While the character of British seabird breeding populations has been known for many years, the birds which winter offshore are less well known, because they are comparatively inaccessible and elusive and only visit us during the season of short days and bad weather when few ornithologists are active. Now that oil pollution is steadily emerging as a major hazard to the swimming species it is becoming a matter of increasingly urgent importance to identify these wintering populations, in order to assess the magnitude of the damage. By far the best means appears to be the examination of beached bodies, which can provide information both of ornithological interest, as to what birds are visiting our inaccessible offshore waters, and for purposes of conservation, by indicating what harm is occurring to them.

The development of studies of beached birds was therefore made one of the first objects of the Seabird Group (Bourne 1965), and when an examination of a wreck of birds on the northeast coast in January 1966 demonstrated that several races of auks could be identified, including arctic forms rarely recorded before in Britain (Parrack 1967), it was

agreed that the Seabird Group would join the Royal Society for the Protection of Birds in the organisation of a new series of their long-established beach surveys of oil pollution, and would attempt to develop more detailed studies in an attempt to identify more precisely the nature of the birds that were being killed.

It would, of course, be desirable if all the interesting birds found dead on beaches could be prepared as museum specimens, but the number is unfortunately far too large and their condition usually too poor to make this practicable. Since emergency studies in the field by inexperienced people are rarely satisfactory it seemed best to ask in the first instance for the most informative and least objectionable part easily obtained, a wing. Our request resulted during the 1966/67 winter in the receipt from Scotland of 24 wings, with or without other parts, belonging to all five of the regular British auks, compared with 31 wings of the the three commoner species from the rest of Britain, apart from the 1194 sent in as a result of the *Torrey Canyon* disaster (Bourne, Parrack & Potts 1967). Since the Scottish birds appear to include a high proportion of individuals of the long-winged arctic races, including the first record of the typical form of Puffin *Fratercula a. arctica* for Britain, it seems desirable to place the result on record at once, if only in the hope of stimulating further work.

The 24 wings have been sent in by the following people, hereafter referred to by their initials, to whom we are duly grateful: F. J. Walker, eight from Shetland; P. McMorran and D. M. Stark, seven and two from Caithness; A. W. Diamond, M. Marquiss and W. R. P. Bourne, seven from Aberdeenshire. G. M. Dunnet and J. D. Parrack forwarded some of them, and three Guillemots have been made into skins in the Natural History Department at Marischal College, Aberdeen. The subspecific nomenclature used is that of *The Birds of the Palearctic Fauna* vol. 2, 1965, by Charles Vaurie.

Little Auk *Plautus alle*. One long dead found by FJW at Norwick, Unst, December 1966, wing 127 mm. A fair indication of the arctic origin of some of these birds.

Razorbill *Alca torda*. One recently dead found by WRPB at Newburgh, Aberdeenshire, on 10th May 1967 had a wing of 190 mm and a small bill and presumably belonged to the Scottish breeding population *A. t. islandica*. One collected with a possible arctic Guillemot by PMcM on Dunnet Sands, Caithness, on 6th April 1967 had a badly warped wing somewhat under 200 mm, which would also agree with this population, but a culmen 24 mm deep, bringing it within the range normal for the typical form *A. t. torda* of the Baltic,

northern Scandinavia and the arctic, previously known from Britain mainly through ringing recoveries (Hudson 1965), although it seems likely to have occurred among especially the immature birds wrecked on the northeast coast of England in January 1966 (Parrack 1967). A wing of 203 mm collected by FJW at Norwick, Unst, Shetland, lies on the borderline between the two forms.

Guillemot *Uria aalge*. A wing collected by FJW at Harolds-wick, Unst, Shetland, in March 1967, one collected by PMcM on Dunnet Sands, Caithness, on 6th April 1967, five more that she collected there on 30th April 1967, and two collected by WRPB at Rattray Head, Aberdeenshire, on 8th May 1967, are black above, often rather streaked below, and measure 211, 201, 202, 205, 209, 206, 212, 201 and 203 mm respectively, ranging from the upper extremity of the normal range of the typical form *U. a. aalge*, breeding locally, through that of the debatable race *U. a. spiloptera* of the Faeroes, beyond the mean for the arctic form *U. a. hyperborea* of Bear Island and the Barents Sea. An adult male collected by AWD at Rattray Head on 12th March 1967, a subadult from Newburgh, Aberdeenshire, in December 1966, and an immature female from there in April 1967, made into skins, have wings of 213, 202 and 208 mm, and the first two have been compared with specimens of *U. a. hyperborea* from Bear Island in the British Museum (Natural History) and agree with them. It would appear that this form, first recorded in Britain as the result of the recovery in Co. Durham in 1950 of a bird ringed on the Murman Coast in 1940 (Hudson 1965), reported again on the northeast coast of England in the January 1966 oiling incident (Parrack 1967), and once in the *Torrey Canyon* kill (Bourne, Parrack & Potts 1967), probably winters off Scotland quite commonly.

Black Guillemot *Cephus grylle*. One wing of 151 mm picked up by FJW at Norwick, Unst, December 1966.

Puffin *Fratercula arctica*. Until now only our breeding form *F. a. grabae*, of Britain and the Faeroes, appears to have been recorded here, although three birds presumably belonging to the intermediate Norwegian population (Pethon 1966), ringed in Luroy, Nordland, at 66°35'N, 12°15'E, have been recovered several years later at Wick (Shetland) in May, Inchkeith (Firth of Forth) in September, and Sheringham (Norfolk) in February. Three wings collected by FJW at Norwick, Unst, Shetland, in June, August and September 1967, and two collected by DMS in Caithness in August 1967, measure 156, 155, 161, 153 and 158 mm, and average 157 mm, compared with 160 mm average for the five birds in the *Torrey Canyon* kill; but another wing taken by FJW from a bird long dead at Burra-

firth, Unst, Shetland, in February 1967, measures 173 mm, which takes it well up in the usual range for the typical form *F. a. arctica* of the low arctic, breeding in Iceland, Bear Island, and Jan Mayen. Puffins are rather highly migratory but stay far out to sea in winter so that they are hard to collect, which may explain why this form, which was to be expected, has not been reported before. *F. a. naumanni* from Spitsbergen, which is even larger, might well occur too.

Discussion

It appears from these wings that auks from the arctic must winter quite commonly at sea off the Scottish coast, since about half those collected in winter appear to belong to arctic populations; such birds are possibly less likely to be collected than those of local origin, because they probably stay further out to sea. It is an interesting speculation what else might be found if larger numbers of birds were examined. It is also becoming clear that while wing-length, especially, provides a useful indication of the origin of the birds, since in accordance with Bergmann's Rule it normally becomes greater in populations from higher latitudes, with some species such as the Razorbill and Fulmar *Fulmarus glacialis* the bill is a more decisive character. It is also useful for ageing the bird in species such as the Razorbill and Puffin; so that where possible it is useful to have the head of a bird as well as a wing. With the two, most of our commoner seabirds can usually be identified as accurately as with the whole skin.

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Short Notes

Grunting by diurnal raptors

In recent months I have noted grunting calls made by both a captive Buzzard and a captive Osprey. The Buzzard made this noise only when flapping hard, usually when going for bait from the fist, but the Osprey produced a very low, quacking, duck-like grunt, which carried for only a few yards, on several occasions when approached at rest. This

form of calling by the Buzzard may have been what Macpherson described as "a low chuckle or croak of parents bringing food to young" (*Handbook*).

It has not been noted before in the Osprey and is of interest here in view of the controversy over the hatching date of the young Ospreys at Loch Garten in 1959, mentioned in *The Return of the Osprey* (Brown & Waterston 1962). Hatching was held to have occurred on 4th-5th June, when a grunting sound, presumed to be made by a newly hatched chick, was heard over a microphone from the tree and recorded on tape. No carrying of food to the nest was noted till 9th June, however, on which morning thin peeping sounds were heard over the microphone. Besides the unusually long interval between hatching and first feeding, a hatch on 5th June would have suggested an incubation period of 33-35 days, rather shorter than is usual at Loch Garten. These apparent discrepancies would disappear if the grunting was in fact made by an adult.

DOUGLAS N. WEIR.

Long-eared and Short-eared Owls' mode of hunting

In *The Birds of the British Isles*, Bannerman states that Long-eared Owls hunt entirely at night. I was therefore surprised to find one out in the open as early as 5 p.m. on 28th May 1967 and again at 7.15 p.m. on 22nd July, both at Airlie, Angus.

On the first occasion it was seen moving from post to post along a fence and making odd forays over a field of young grass, into which it dived twice, but without catching anything. The bird of 22nd July was quartering a field very low over the ground. The flight seemed less rapid than that of the Short-eared Owl, the wings describing a smaller arc. At close range the ear tufts were immediately conspicuous, sloping back over the forehead and projecting above it, and I was also able to note the orange iris.

D. A. TINDAL.

One is not always able to get close enough to a Long-eared Owl to see its long ear-tufts and orange, not yellow, iris. Mr Tindal's note mentions several other features useful in identification and prompts me to contribute some points of contrast between this species and the Short-eared Owl which I noted on Speyside between 1960 and 1963.

A distinctive difference in the field is the normal mode of hunting: the Long-eared Owl hunts usually at a height of two to four feet above the ground, the wing-beats are quite fast, with short periods of gliding, and the bird wheels back on its flight-line to catch prey. As it flies, the wings are not

raised above the line of the body. The Short-eared Owl hunts at a higher level, six to thirty feet above the ground, and sometimes more; the wing-beats are stronger and slower, and the wings travel above and below the line of the body. Short-eared Owls hunt during much of the day, but it is important to note that Long-eared Owls will hunt in daylight, especially when feeding young. I have seen them hunting in Speyside three hours before sunset and several hours after dawn.

ROY H. DENNIS.

Breeding success of Blackbirds in Edinburgh suburbs

During the spring and summer of 1966 we followed the progress of 93 Blackbird nests in the Liberton and Juniper Green suburban areas of Edinburgh, from laying until the young left the nest, in an effort to discover how successful they are in areas where they are subject to a large amount of disturbance. It is not always realised how high the losses usually are.

The mean size of the 93 clutches studied was 3.45, but only just under 30% of the eggs gave rise to fledged young, so that the mean number of young raised by each pair was 1.03. Most of the losses took place during the incubation period, as 83½% of the young which we found in the nest were known to have fledged. Desertion and infertility appear to have been relatively minor factors in hatching failure. The evidence points to predation, particularly by human beings, as being largely responsible for the high egg-loss during incubation.

Because of differences in the measures used, most of our results are not directly comparable with those of Snow (*Bird Study* 2: 72-84, 169-178), who analysed the data provided by B.T.O. nest record cards. He found clutch size to vary with time of year, 1900 clutches giving an overall mean of 3.86. The number of young raised by each pair rose from 1.1 for nests started in March to 1.6 in June. These figures are rather higher than those found by us, but nevertheless it seems that the high predation in our suburban areas does not reduce success dramatically below that found over the whole country.

M. A. MACDONALD, R. L. SWANN.

Lesser Grey Shrike in East Lothian

On 10th June 1967 we discovered a Lesser Grey Shrike sitting on telegraph wires near Whitekirk, East Lothian. We watched it in sunny conditions both perched, at ranges down to eight yards, and flying out over a neighbouring field to hawk for insects. Intermediate in size between Red-backed

and Great Grey Shrike, its upright stance was more reminiscent of the former. We took a detailed plumage description, noting the broad white wing-bar and the black eye patches extending forward to meet across the forehead. The sides of the breast and flanks were pinkish-buff. When disturbed by a passing cyclist, it flew up into a nearby wood and could not be found again.

K. ALLSOPP, E. M. P. ALLSOPP.

(This record is the first for Forth. Lesser Grey Shrikes have been seen in Scotland several times recently (*Scot. Birds* 4: 50, 60, 232, 291, 323, 378), but all of these were in the Northern Isles, for which there is now a good number of records. It is interesting that more are not seen further south.—Ed.)

Woodchat Shrike in Morayshire

While visiting Findhorn, Morayshire, on 2nd June 1967, my wife and I had excellent views of a Woodchat Shrike, which we watched for some 20 minutes in bright sunlight. As it perched on posts and gorse bushes the chestnut crown and nape showed very clearly and it made two or three dives to the ground after prey from each post before moving to a new one. When flying, its white rump, shoulder patches and wing-bars were very conspicuous. We last saw it flying away over the dunes.

J. L. COJEEN.

(This is the first record for the Moray Basin. Like the Lesser Grey Shrike, the Woodchat Shrike has recently been recorded in Scotland more often than before, and we have published a number of records, (*e.g. Scot. Birds* 4: 50, 60, 101, 234, 508, 520).—Ed.)

Recent News

ANDREW T. MACMILLAN

To emphasise the changed nature of this semi-topical column we have given it a new name. Our aim will be to report each quarter on some of the interesting things that have been happening, though we cannot hope, for example, to spot all the smaller irruptions as they take place, as we will not have the whole picture in front of us. The place for a balanced view, and for the mass of records of such things as arrival dates and the occurrences of less common birds (with observers' initials), will of course be in the annual Scottish Bird Report. Nonetheless, local recorders who carefully feed us with information each quarter will know that

even when it does not merit special mention it will help us to make the sort of general comment readers want ("Redpolls are scarce this winter") and to decide what is worth a paragraph that quarter. Even so, we must apologise to those who have gone to a lot of trouble this quarter to send full lists, for the small amount we have been able to use.

In Current Notes we did not normally mention rarities. In this new section we may do so from time to time, since they are often news, but this will usually be subject to the reservation that the records will not have been considered by the Rarities Committee and must be regarded meantime as tentative.

The whole form of Recent News may be regarded as slightly tentative at the moment, but on one thing we are determined—it will be kept short. This will make life easier both for contributors and for ourselves, who certainly could contemplate again only with dismay the overwhelming mountain of paperwork that Current Notes so recently involved. The sort of notes we need should become apparent from what follows.

Oil pollution. Oil pollution in the Tay estuary was fairly serious in the early months of 1968, the after-effects being recorded, for instance, all along the north coasts of Fife and as far round into the Forth as Elie. The source of the oil has not apparently been traced, but the first oiled birds were noted at Tentsmuir from the end of February. Many hundreds, perhaps thousands, of birds were involved, especially from the vast winter flocks of Eiders off Tentsmuir. At Fife Ness there were about 50 badly oiled **Common Scoter** off the beach on 4th March, and 20 (19 males) were dead there on the 9th. Auks were less badly hit, suggesting that most of the oiling was coastal.

Wildfowl. The cessation of shooting following foot and mouth disease restrictions created an 'artificial' distribution of wildfowl in the Solway. Such a situation may throw light on the true preferences of the birds in the absence of disturbance, but the same restrictions make it difficult to study. In the Solway area the small population of **Bean Geese** returned early in January, but 15-20 birds is all it numbers nowadays. **Bewick's Swans**, mainly in February and March, have been seen in Kirkcudbright/Dumfries (1-3), Roxburgh (2), East Lothian (1) and Kinross (a family of 5).

Whooper deaths. During the early months of 1968 heavy mortality occurred among **Whooper Swans** in the Blairgowrie and Coupar Angus area, 30-40 birds, at least a third of the local wintering population, being found dead. Post mortem examination revealed no disease or parasites but a positive

result was obtained in a test for mercury. The birds may have taken treated seeds, pulling up the young plants by the roots, and tests are now being done for other pesticide residues. No other species appeared to be affected. Whoopers graze at times on winter wheat, and this might also be the cause of previous unexplained multiple deaths in Angus and Wigtownshire.

RSPB rarities. By the end of March the old male **Snowy Owl** was back on Fetlar defending his territory against one of last year's young males, but ignoring its sister. Up to four of the young were there in February as well as a strange adult male. No longer is the first Cuckoo loudly hailed in the daily press, but attention is now focussed with the same enthusiasm on the return of the **Osprey**. Suffice to report that all three pairs are back at their respective eyries at the time of writing. Advance information on the return of the **Black-browed Albatross** came when it was filmed following a fishing boat well out in the approaches to the Forth, some 10-14 miles northeast of Eyemouth, on 7th or 8th February; by 13th April it was back flying round the Bass Rock, where it may now become a permanent tourist attraction, having already featured in at least one hotel's brochure as one of the delights of a holiday at North Berwick.

Winter Avocet. There was a very nice tie-up between two reports of an **Avocet** on 13th January. It landed briefly at Aberlady about 10.15 a.m. before flying off west, to be recorded later in the day 33 miles away at Skinflats. Twelve days later what was possibly the same bird was found dead at Fife Ness.

Winter passerines. Though there has not been a major invasion this winter, reports of fair numbers of **Waxwings** continue to come in. **Great Grey Shrikes** are reported from a number of places; the species seems to occur quite widely in winter now. There have also been wintering **Blackcaps** in almost a dozen places in the southern half of Scotland, and this is another species that is recorded so regularly in winter now as hardly to be news. It is interesting how often a pair is found together, as at Bonnyrigg on 4th February. Further minor evidence of unusual numbers of **Goldfinches** in the north (see 5: 51) is provided by reports of pairs at Lybster and Thurso in mid February, a dozen in Inverness from 16th January, one near Elgin on 19th January, and four at Kinloss, Moray, on 3rd February. A report from North Uist in February seems to be the first for the Outer Hebrides other than St Kilda.

Early birds. We have deliberately kept off arrival dates (including the many **Sand Martins** from 28th March), but two early records may be of interest. In Moray a pair of **Collared**

Doves was incubating two eggs on 21st March; and at Fair Isle **Puffins** were back earlier than ever before—on 28th-29th March.

Tailpiece. Finally a true story by W. B. Risk passed on to us by the Clyde area local recorder. On 7th January a **Great Black-backed Gull** was seen eyeing a ball on the 17th tee of Dumfries and County Golf Course. **Crows** have been known to fly off with balls here. The bird picked up the ball, stretched its neck upwards, and spat it out. Another gull appeared, so the first one grabbed the ball again, stretched up like a champagne bottle, shoogled violently, then swallowed the ball and flew away. The fate of the bird is not known.

Obituary

JOHN MORELL McWILLIAM

1883 - 1968

(Plate 7)

In the history of ornithology there are numerous instances of contributions of one kind or another to the ornithological scene of their day by clerics. John Ray, Canon Tristram, Gilbert White, F. C. R. Jourdain, Canon Raven—these are great names whose contribution was possibly greater on account of what they were rather even than what they did. J. M. McWilliam surely belongs to this glorious company.

Born 19th November 1883 fourth son of William McWilliam, Clerk to the Crown and Peace for Co. Monaghan, he was brought up in a countryside and in a society that seems as remote to us today as Scotland under the Stuarts. Educated in Ireland—Campbell College, Belfast, and Trinity College, Dublin—he came to Edinburgh to study Divinity, playing both hockey and billiards for the university, a tribute to the wide and liberal training that was once the hallmark of ministers in the Church of Scotland. He was very proud of his Irish education and used to remark that he always referred to his university degree as B.A., T.C.D., in the belief that the ignorant would believe he had two degrees and the informed would know that he had the best. Ordained in the early years of the Great War (1914-1918), he was, after a spell at Govan Parish Church as an assistant, called to St Bride's, Craigmore, Bute. He very shortly enlisted as a chaplain to the Forces (1917-1919) and served in France, where he noted that the race of Yellow Wagtail breeding in the Seine Inferieure was the same as that in Britain. Amongst other cautionary tales of that time he was very fond of one illustrating the dangers of a limited vocab-

ulary; in his case the only measure of liquid that he could recall was litre—and a litre of cidre proved a formidable thirst quencher.

Back in Bute there followed the most active period in the field, culminating in the publication of *The Birds of the Island of Bute* in 1927. Then the return to Glasgow and the years in the parish in Govan, hard years for the Minister, his wife and the people of Govan in the hungry times of high unemployment, the memory of which still bedevils industry in Scotland. To this period belongs *The Birds of the Firth of Clyde* (1936) and much of the accumulation of his remarkable library. Now the next war and the long and happy ministry in the tiny Dumfriesshire parish of Tynron, a charge that combined the elements of both active ministry and retiral in a most acceptable amalgam. Finally the short period of retirement at Invergowrie cosseted and comforted by his devoted wife aided by his daughter and son-in-law. These are the bare bones of his life. To give them flesh let us think of his contribution to Scottish Ornithology.

In these enlightened days it is hard to imagine the time before publication of the *Practical Handbook of British Birds* (1919-24)—as the Minister remarked, hardly practical and certainly not a hand book—when the main acceptable method of identification of a bird was by its corpse and when a main criterion of judging a naturalist's knowledge of the breeding biology of birds was the number of clutches of different species that were contained in his egg cabinet. It is against this background that the *Birds of the Island of Bute* and the *Birds of the Firth of Clyde* should be judged. They together form a sound basis on which to build, and are remarkable for pointing out clearly the state of ignorance as freely as the state of knowledge. The introduction to the *Birds of the Island of Bute* is a particularly interesting essay showing clearly the thoughts of the Minister, at that time, and suggesting lines of enquiry that have since proved most fruitful.

Books always attracted him. In his university days in Edinburgh he picked up many a bargain in Grant's and Thin's with his friend Dr Oliver H. Wild. Later he was a regular visitor to the sale room of Dowell's, where his whispered remarks reverberated around the rooms to the edification, amusement and occasionally embarrassment, of his companions. More books were bought off the barrows in Glasgow, and Glen's in Parliamentary Road was a very favourite and productive hunting ground. The result of this activity was an amazing collection of books and a library where the precious and the paltry, the good and the bad, the profound and the trivial were intimately mixed like the

jostling crowd in some eastern caravanserai. During this period many of the Minister's purchases found their way to Dr Casey A. Wood and through him to the remarkable library of bird books that bears his wife's name at the McGill University, Montreal.

When George Waterston founded the SOC the Minister along with the Good Ladies formed the backbone of the old brigade that gave the club that aura of respectability from which it has really never fully recovered, and helped to form the sound base from which it has expanded so successfully. The SOC was one of his great and enduring interests and the honour that the club paid him in electing him an Honorary President was not only well merited but deeply appreciated.

It was as a companion and a talker that the Minister will be best remembered. As a companion in the field my recollections of the Minister are always connected with water—the first meeting and an excursion on the 'Dalgá' to the Sgat Islands off Loch Fyne, a memorable trip to North Rona, where I ineffectually remonstrated with him for filling two tins, the big square ones, that had once held McVittie and Price's Digestive biscuits, with Arctic Terns' eggs—he held very strongly, I recall, that the chicks would all die anyway and that it would make no difference to the numbers of Arctic Terns, a true if somewhat tendentious argument! Or those later trips to the Scars or Mochrum. On one visit we were machine-gunned on the former by a passing plane. The birds must have enjoyed that. The talk used to go on all night to the accompaniment of innumerable cups of tea. What remarkable performances they were. Well as the Minister spoke in public, in the pulpit or after dinner, it was in private with a small group of listeners that he was at his best, his most witty, his most serious and his most outrageous, whether telling part of the Talbot Clifton saga; largely, I imagine, apocryphal stories of the 8th Argylls, to whom he was chaplain; simple tales like the story of the learned pig; defending coloured or opaque church windows because his uncle was nearly removed from his charge for bursting into laughter in the pulpit on account of an incident he had seen through the clear windows of his church; building elaborate theories on population, migration or colouration, on the minimum of fact; seriously discussing fundamental religious matters—he was one of the very few clerics not embarrassed to discuss such things; planning some bird's nesting foray; or telling of some saleroom triumph.

In life, as in art, there are many copies and few originals. John Morell McWilliam was an original. We salute his memory.

ARTHUR B. DUNCAN.

Reviews

Pigeons and Doves of the World. B.M. publication no. 663. By Derek Goodwin. Illustrated by Robert Gillmor. London, British Museum, 1967. Pp. vi + 446, errata slip tipped in; 3 colour plates, line drawings and maps throughout. 27½ x 21¼ cm. 126/-

Pigeons are a large, diverse, colourful and successful family of birds occupying habitats from high mountains to tropical jungle, and living comfortably (sustained in winter by cake and bread supplied by indulgent humans) in many of our large cities from London and New York to Ulan Bator, capital of Mongolia. In this handsome book Mr Goodwin, an acknowledged expert, writes about them with enthusiasm and authority.

Twelve chapters, occupying the first 54 pages, supply the background information: nomenclature, adaptive radiation, plumage sequences, colour and kindred topics. They are not strictly confined to pigeons. The chapter on display and social behaviour, much of it relating to British pigeons, invokes comparisons with grebes, gulls, guillemots and man. A glance through *British Birds* and other ornithological journals over the last 20 years will reveal the breadth of Mr Goodwin's interest in bird behaviour.

A few hypotheses appear rather speculative. The author suggests, for example, that a predator disturbing a nesting pigeon might eat its clearly visible white eggs and thus lose the chance to return to eat the sitting bird; whereas if the eggs were coloured the predator would miss them, and could return later for the pigeon. How many predators, anyway, eat egg or bird indiscriminately? However, even his more unorthodox theories are thought-provoking.

The largest section of the book deals systematically with all the species of pigeons. Each has a distribution map and most have an excellent black-and-white drawing by Robert Gillmor, who has also provided three splendid colour plates, showing diversity among pigeons, sexual dichromatism, and adult/juvenile plumage differences. There are clear drawings of some aspects of pigeon behaviour.

For some species nothing is recorded of general habits, nesting, voice, or display; the author points out that one purpose of the book is to indicate what is not known, so that ornithologists visiting northwestern Ecuador, for example, or the Marquesas, should keep a sharp eye on the pigeons. Ripley's Fruit Dove, if still in existence, must be extremely rare; only two were seen (in the Philippines) of which one was shot. And the Solomon Island Crowned Pigeon has not been found since 1904.

R. HEWSON.

Pesticides and Pollution. New Naturalist series No. 50. By Kenneth Mellanby. London, Collins, 1967. Pp. 221; 31 photographs (4 in colour) on 14 plates (2 in colour), and 8 diagrams. 21½ x 15 cm. 30/-

On first reading the title of this book, and learning that the author is the Director of the Nature Conservancy's Monks Wood Experimental Station, one might be excused for thinking that most of it would deal with pesticides. This is not the case; it is a well balanced book, and only 88 pages deal specifically with pesticides. Dr Mellanby draws our attention firmly, but unemotionally, to the many ways in which man is very effectively contaminating large areas of his environment and making them physically intolerable to living things.

Because pesticides have had so much publicity, one tends to forget that

there are other forms of contamination. For example, those of us who have to sit in our cars waiting for a traffic jam to clear may be inhaling into our smoke-blackened lungs dangerously high levels of carbon monoxide; while others, who enjoy the bathing facilities of the Forth, will be immersed in water containing their own untreated sewage.

Besides dealing with air and water pollution and radiation, the author also draws attention to the increasing problems of oil pollution and disposal of radio-active wastes. In the final chapter a little bit of sunshine filters through the smog-laden air and turbid waters, when ways of improving the present situation are suggested.

This book should be read by everyone, regardless of their interest in wildlife, for as Dr Mellanby says, "Unchecked pollution is a real danger, an even greater danger than it would be if all the other pressures on the countryside did not also exist. Unless we control pollution, particularly the insidious effects of persistent poisonous substances, the losses may be irreversible. But pollution control by itself is valueless. Our need is for a more positive approach on the part of the whole nation..."

DEREK H. MILLS.

The Whooping Crane. The Bird that Defies Extinction. By Faith McNulty. London, Longmans, 1967. Pp. 190; graph, 2 maps, 11 drawings and 17 photographs. 23½ x 15½ cm. 30/-.

Robert Allen, who devoted years of study towards the preservation of the Whooping Crane, wrote, "To watch them in flight is like a brief and unexpected look at the World as it was in the beginning." In 1937 American conservationists, suddenly realising that the species was on the brink of extinction and that a sight such as Allen had described might soon be lost for ever, aroused the U.S. government to take action. In this vivid account the author reviews the cranes' history, the setting-up of the Aransas Winter Refuge in Texas, and the prolonged search which led to the discovery of their breeding grounds in Wood Buffalo Park in Canada's North West Territory.

The perils, apart from the hazards of a twice-yearly migration of 2200 miles, were manifold—the establishment of a waterway through the refuge, the creation of a bombing range on an adjacent island, the threat of oil pollution from nearby borings, indiscriminate shootings, and the pressures of an increasing human population. At one time it was even contemplated to build a railroad through Wood Buffalo Park. Finally a bitter dispute arose as to whether or not some cranes should be captured and reared in captivity. Aviculturists, in efforts to increase the stock from injured birds, had met with little success, mainly owing to the obstinacy of the owner of Josephine, the only captive female crane.

The writer believes that the Whooping Crane will survive. It would indeed be a tragedy if such a noble species existed only within the confines of a zoo. For as long as a remnant of the cranes still haunt the vast open spaces, lovers of wildlife will be reminded of "the beautiful, multitudinous life that has vanished."

D. MACDONALD.

Danske Ynglefugle i Fortid og Nutid (Danish Breeding Birds, Past and Present). Acta Historica Scientiarum Naturalium et Medicinalium, Editio Bibliotheca Universitatis Hauniensis, No. 19. Danish with 46-page English summary. By Bernt Loppenthin. Odense, Odense University Press, 1967. Pp. 609; fold-out map and one line drawing. 25 x 17½ cm. Danish Kr. 100.

This book is a history of Danish breeding birds from prehistoric times to the present day. In some ways the most novel sections to most

readers will be those dealing with a long series of subfossil remains, ranging as far back as the Barnacle Geese and Ptarmigan which apparently bred in Denmark in late glacial times, some 15,000 years ago. Lists are provided of species which the author thinks probably bred in the country at each subsequent period, though when he leaves the firm ground of prehistoric archaeology and launches himself over the quaking bog of the Middle Ages the reader may doubt if some of his comments are more than guesswork. His belief that there was little or no suitable habitat for such dune and saltmarsh nesting birds as Gull-billed Terns, Black-tailed Godwits and Tawny Pipits before 1300 seems particularly hard to substantiate with sound historical evidence.

The critical summary of records in Danish ornithological literature since 1750, however, is most solid and useful. It brings together in convenient form a lot of information only accessible before in scattered papers, and is also much more detailed and explicit than Salomonsen's handlist. One may, for instance, find estimates of the present breeding populations in Denmark of such species as Wood Sandpiper, Black-tailed Godwit and Marsh Harrier (a few hundred pairs of each) and learn how the White Stork has fallen from some 4000 pairs around 1900 to barely 100 pairs today. Sometimes the news is better—the recent colonisation of Lolland by Red-crested Pochards and Zealand by Green Sandpipers shows that not all changes are losses, and a post-script mentions the four nests of Penduline Tits found in Denmark in 1965. May this westward-pushing little bird continue its efforts until we can find its curious and splendid nests by the side of Duddingston Loch.

The English summary is substantial and generally adequate, though specialists will feel the need to attempt the main text for the detailed historical and archaeological discussion. Intending visitors to Denmark would find some value in consulting a copy before they leave.

T. C. SMOUT.

The Pictorial Encyclopaedia of Birds. By J. Hanzák. Edited by Bruce Campbell. London, Hamlyn, 1967. First published in Czechoslovakia, 1965. Pp. 582; 7 halftone drawings and 1118 photographs (45 in colour; No. 584a not numbered). 22 x 15½ cm. 30/-.

This volume is for the school library and for those with a general interest in all birds, but not too demanding of details in descriptive narrative or photographic sharpness. About half the photographic illustrations are of zoo or aviary specimens, and for some of the rarer species mounted museum specimens have been used, for both the colour and the black-and-white reproductions. The use of the same shot for both the colour and the black-and-white picture of the Chestnut Mannikin (colour plate xli and black-and-white plate 1064) was probably occasioned by the need to have one illustration near the text. The colour plates are scattered throughout the volume, not necessarily near their generic groups, and this results, for example, in colour plate xi, pheasants and peacocks, separating the photograph of a Black Kite in flight from its plate number on the previous page.

While some of the photographs do not permit accurate identification of similar species, due to lack of clarity, there should be no mistaking a museum specimen of a *Malimbus* weaver's nest for a *Ploceus* weaver's on plate 1062. The latter does not have the former's long tunnel entrance. This comment arises from your reviewer's long acquaintance with both genera in his compound garden and plantations in West Africa. One infers that this is another case of museum labels becoming switched.

I feel this very well known author and broadcaster has done a better job as editor of the text than the reproduction of the illustrations possibly deserves, and so has raised the volume out of the rut of just another picture book. At only 30/-, this is truly remarkable value, to be recommended to the younger naturalist, and to adults with a general interest in the wonders of this world's birdlife.

A. MACDONALD.

Birds of South Vietnam. By Philip Wildash. Rutland, Vermont and Tokyo, Charles E. Tuttle, 1968. Pp. 234; 25 colour plates, 22 line drawings, map. 21 x 15 cm. \$7.50 [62/6].

Many of the 586 species described are also found in North Vietnam, Laos, Cambodia, Thailand, Burma, Malaysia, Indonesia, Borneo and the Philippines; 236 are illustrated, 215 in colour. For each species, brief notes are given on habits (including habitat) and distribution in South Vietnam, followed by a short paragraph on identification. Printed in Japan.

ATM

Requests for Information

Birds and aircraft. D. R. Grant, Department of Forestry and Natural Resources, 10 George Square, Edinburgh 8, is making a study of the local movements and distribution of gulls in relation to Edinburgh (Turnhouse) Airport as part of an investigation of the bird hazard to aircraft operations there. He will be marking a number of gulls with coloured dyes during the next twelve months and information regarding sightings of them, in particular direction of flight, will be most welcome. Any other relevant information on gull movements, colonies and wintering habits in the area would also be much appreciated.

Local Leaders required. The Young Ornithologists' Club, the junior branch of the RSPB, has a rapidly expanding Scottish membership, and 'Local Leaders' are urgently required to organise meetings and outings in all areas. If you would like to help in this interesting and rewarding activity, please write to Michael Everett, 21 Regent Terrace, Edinburgh 7, for full details.

The Scottish Ornithologists' Club

ANNUAL CONFERENCE

The 21st Annual Conference and 31st Annual General Meeting will be held in the Hotel Dunblane, Perthshire, on 25th-27th October 1968. Bookings should be made direct with the hotels. The full programme will be given in the next issue of "Scottish Birds." The registration fee will be 10/-, and the Annual Dinner 27/6 for those not staying in the Hotel Dunblane (both to be paid on arrival).

Hotels in Dunblane

Hotel Dunblane (Hydro) (Tel. 2551). Special Conference charge £7.17.6d, inclusive of 10% service charge, bed and all meals (except tea on Saturday afternoon) from Friday dinner to Sunday lunch, after-meal coffee, and the Annual Dinner (with wine or soft drinks). For less than a full day, bed and breakfast is 42/-, lunch 12/6 and dinner 18/6, all with additional 10% service charge. Rooms with private bathroom have a supplementary charge of 10/- per person per day.

Stirling Arms Hotel (Tel. 2156). Bed & Breakfast from 27/6 to 30/-.

Schiehallion Hotel, Doune Road (Tel. 3141). B & B 21/- to 25/-.

Neuk Private Hotel, Doune Road (Tel. 2150). B & B 23/- to 25/-.

Ardleighton Hotel (near Hotel Dunblane gates). (Tel. 2273). B & B from 25/-.

Hotels in Bridge of Allan

Allan Water Hotel (Tel. 2293). B & B 40/- to 54/-.

Royal Hotel (Tel. 2284). B & B 47/6.

Prices, except for the Conference Hotel, are provisional and should be confirmed.

LIFE MEMBERSHIP

Members of the Club who prefer to pay their subscriptions on a 'once for all' basis may be interested in the new Life Membership Subscription which was approved at the Annual General Meeting held on 28th October 1967. This was introduced as the result of several requests, and already three members have subscribed in this way. The new Life Subscription is £50, and a Joint Life Subscription is available for married couples for £75.

B.T.O. ORNITHOLOGICAL ATLAS

The proposal by the British Trust for Ornithology to launch an enquiry to map the breeding birds of the British Isles begins this year and will extend over a five-year period. The results will be published in the form of an ornithological Atlas similar to the well-known botanical Atlas of the British Flora, and will be a very valuable reference book of the future.

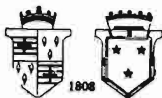
Details of the scheme were issued in a leaflet sent out with the last number of "Scottish Birds" and already a number of Club members have offered to help record, on a simple presence or absence basis, the breeding species in individual 10 km squares of the National Grid map. We hope that many more of our members will find time to cover areas which are well known to them or which they may be visiting on holiday, so that they can share in this very worthwhile project.

The organisation of the enquiry in Scotland is no easy matter, and the Council of the Club is very grateful to Mr Christopher Headlam, Foulis Mains, Evanton, Ross-shire, who has agreed to undertake the work of coordinator for Scotland. Members who would like to help with the enquiry are asked to get in touch with him, giving details of the particular area they wish to cover. Branch Secretaries and others who are already organising their own localities and who have received offers of help are also asked to keep in touch with Mr Headlam, so that as many squares as possible are covered without overlap. Members who cannot do anything this year are reminded that there are four more years in which their help will be welcomed.

STIRLING GROUP SUMMER EXCURSIONS

Saturday 6th July. BASS ROCK (by kind permission of Sir Hew Hamilton Dalrymple). Joint excursion with Glasgow Branch. Numbers limited to 12 per boat. Boats leave North Berwick Harbour at 1 p.m., returning 7.30 p.m. Tickets, about 12s, will be purchased on the boat. Applications to Mrs Hutchison, 27 Northbank Road, Kirkintilloch, Glasgow.

Saturday 7th September. SKINFLATS. Meet at Dutch Inn on main road. Applications to T. D. H. Merrie, West Faerwood, Dollar, Clackmannanshire, who will supply details of time of meeting.



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THE SCOTTISH ORNITHOLOGISTS' CLUB

THE Scottish Ornithologists' Club was founded in 1936 and membership is open to all interested in Scottish ornithology. Meetings are held during the winter months in Aberdeen, Ayr, Dumfries, Dundee, Edinburgh, Glasgow, St Andrews and elsewhere at which lectures by prominent ornithologists are given and films exhibited. Exhibitions are organised in the summer to places of ornithological interest.

The aims and objects of the Club are to (a) encourage and direct the study of Scottish Ornithology in all its branches; (b) co-ordinate the efforts of Scottish Ornithologists and encourage co-operation between field and indoor worker; (c) encourage ornithological research in Scotland in co-operation with other organisations; (d) hold meetings at centres to be arranged at which Lectures are given, films exhibited, and discussions held; and (e) publish or arrange for the publication of statistics and information with regard to Scottish Ornithology.

There are no entry fees for Membership. The Annual subscription is 25/-; or 7/6 in the case of Members under twenty-one years of age or in the case of University undergraduates who satisfy the Council of their status as such at the time at which their subscriptions fall due in any year. The Life subscription is £50. Joint membership is available to married couples at an Annual subscription of 40/-, or a Life subscription of £75. "Scottish Birds" is issued free to members but Joint members will receive only one copy between them.

The affairs of the Club are controlled by a Council composed of the Hon. Presidents, the President, the Vice-President, the Hon. Treasurer, the Editor and Business Editor of "Scottish Birds," the Hon. Treasurer of the House Fabric Fund, one Representative of each Branch Committee appointed annually by the Branch, and ten other Members of the Club elected at an Annual General Meeting. Two of the last named retire annually by rotation and shall not be eligible for re-election for one year.

A Scottish Bird Records' Committee, appointed by the Council, produce an annual Report on "Ornithological Changes in Scotland."

An official tie in dark green, navy or maroon terylene, embroidered with small crested tits in white, can be obtained by Members only from the Club Secretary, at a cost of 17s 6d. A brooch in silver and blue is also available to Members, price 3s 6d, from the Club Secretary or from Hon. Branch Secretaries.

The Club-room and Library at 21 Regent Terrace, Edinburgh 7, will be available to Members during office hours, and on Wednesday evenings from 7 to 10 p.m. during the winter months. Members may use the Reference Library, and there is a small duplicate section, consisting of standard reference books and important journals, which can be lent to students and others wishing to read a particular subject. A lending section for junior Members, which is shared with the Young Ornithologists' Club, is also available.

Forms of application for Membership, copy of the Club Constitution, and other literature is obtainable from the Club Secretary, Mrs George Waterston, Scottish Centre for Ornithology and Bird Protection, 21 Regent Terrace, Edinburgh 7. (Tel. 031 556 - 6042).

Notice to Contributors (revised 1st December 1967)

1. General notes (not of sufficient importance to be published on their own as Short Notes) should be sent to the appropriate local recorders for inclusion in their summary for the annual Scottish Bird Report, not to the editor. A list of local recorders is published from time to time, but in cases of doubt the editor will be glad to forward notes to the right person. All other material should be sent to the editor, Andrew T. Macmillan, 12 Abinger Gardens, Edinburgh 12. Attention to the following points greatly simplifies the work of producing the journal and is much appreciated.

2. If not sent earlier, all general notes for January to October each year should be sent to the local recorders early in November, and any for November and December should be sent at the beginning of January. In addition, local recorders will be glad to have brief reports on matters of special current interest at the end of March, June, September and December for the journal. All other material should of course be sent as soon as it is ready.

3. All contributions should be on one side of the paper only. Papers, especially, should be typed if possible, with double spacing. Proofs will normally be sent to authors of papers, but not of shorter items. Such proofs should be returned without delay. If alterations are made at this stage it may be necessary to ask the author to bear the cost.

4. Authors of full-length papers who want copies for their own use MUST ASK FOR THESE when returning the proofs. If requested we will supply 25 free copies of the issue in which the paper is published. Reprints can be obtained but a charge will be made for these.

5. Particular care should be taken to avoid mistakes in lists of references and to lay them out in the following way, italics being indicated where appropriate by underlining.

DICK, G. & POTTER, J. 1960. Goshawk in East Stirling. *Scot. Birds* 1:329.
EGGELING, W. J. 1960. *The Isle of May*. Edinburgh and London.

6. English names should follow *The Handbook of British Birds* with the alterations detailed in *British Birds* in January 1953 (46:2-3) and January 1956 (49:5). Initial capitals are used for names of species (e.g. Blue Tit Long-tailed Tit) but not for group names (e.g. diving ducks, tits). Scientific names should be used sparingly (see editorial *Scottish Birds* 2:1-3) and follow the 1952 B.O.U. *Check-List of the Birds of Great Britain and Ireland* with the changes recommended in 1956 by the Taxonomic Sub-Committee (*Ibis* 98:158-68), and the 1957 decisions of the International Commission on Zoological Nomenclature (*Ibis* 99:369). When used with the English names they should follow them, underlined to indicate italics, and with no surrounding brackets.

7. Dates should normally be in the form "1st January 1962", with no commas round the year. Old fashioned conventions should be avoided—e.g. use Arabic numerals rather than Roman, and avoid unnecessary full stops after abbreviations such as "Dr" and "St".

8. Tables must be designed to fit into the page, preferably not sideways, and be self-explanatory.

9. Headings and sub-headings should not be underlined as this may lead the printer to use the wrong type.

10. Illustrations of any kind are welcomed. Drawings and figures should be up to twice the size they will finally appear, and on separate sheets from the text. They should be in Indian ink on good quality paper, with neat lettering by a skilled draughtsman. Photographs should either have a Scottish interest or illustrate contributions. They should be sharp and clear, with good contrast, and preferably large glossy prints.

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