

Scottish Birds



The Journal of The Scottish Ornithologists' Club

Vol. 3 No. 7

Autumn 1965

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THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

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NOTICE TO CONTRIBUTORS

All contributions should be sent to Andrew T. Macmillan, 12 Abinger Gardens, Edinburgh 12. Attention to the following points greatly simplifies production of the journal and is much appreciated.

1. Papers should if possible be typed with double spacing. All contributions should be on one side of the paper only.

2. Topical material for Current Notes should reach the Editors **before the end of March, June, September and December**, at which time they begin to compile this section. All other notes should be sent promptly but important items can be fitted in until a month or so after these dates.

3. 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.

Scottish Birds

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB



Vol. 3 No. 7

Autumn 1965

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, Cover Design (Leach's Petrel) by LEN FULLERTON. Published quarterly.

Editorial

The Scottish Wildlife Trust. The first Annual General Meeting of the Scottish Wildlife Trust was held on 12th July 1965. Considerable progress has been made in setting up branches to cover the more populous parts of the country. Already branches are active in the Tweed Valley and in the Lothians, and plans are in various stages for five more, based on Ayrshire, Galloway, the Clyde Valley, Fife and Perthshire. Total membership is over 570, and a newsletter has been started to keep members in touch with the trust's activities. Much preliminary work has begun: sites for possible reserves are being studied; threats to wildlife are being examined and action taken; and, above all, valuable contacts are being made.

It is not always realised that planning and development authorities, and proprietors with something of interest on their land, would often welcome more guidance on natural history matters, and on what is of interest, so that allowance may be made for these things in any development. Here the Scottish Wildlife Trust can fill a very useful role, by keeping in touch with these people and acting before a threat develops. It is more difficult and less effective to protest afterwards. Anyone who has spent a lot of time on his plans has an understandable grievance at not being told about the needs of wildlife before he started.

Substantial grants from the National Trust for Scotland and certain charitable trusts, and a good start with members' subscriptions (an excellent proportion of them under Deed of Covenant), have launched the Scottish Wildlife Trust on its way. More members are, however, most welcome, whether members of existing natural history societies or just ordinary people interested in the preservation of wildlife and the countryside. Details and application forms may be had from 21 Regent Terrace, Edinburgh 7. With more members the trust will receive a valuable increase in its income; but, more important, it will be better able to speak with authority for wildlife.

Current literature. Recent papers and reports of special interest to Scottish ornithologists include:

Eleventh Progress Report, Nature Conservancy Unit of Grouse and Moorland Ecology. D. Jenkins *et al.*, 1965. Pp. 35; 4 figs. Summarises current work on Red Grouse, and also Ptarmigan, Black Grouse, Golden Eagle, crows and roe deer.

The ecology of the young stages of the Atlantic salmon in the River Bran, Ross-shire. D. H. Mills, 1964. Freshwater and Salmon Fisheries Research series No. 32, H.M.S.O. Pp. 58. Includes comments on relationship with Goosander, Cormorant, Black-headed, Common and Great Black-backed Gulls, and Black-throated Diver.

A population study of Ptarmigan (*Lagopus mutus*) in Scotland. A. Watson, 1965. *J. Anim. Ecol.* 34: 135-172. Important Cairngorm study of cyclical fluctuation of numbers in relation to behaviour, breeding success, mortality, predation, habitat and weather.

Detection by radar of autumn migration in eastern Scotland. J. Wilcock, 1965. *Ibis* 107: 316-325. Analysis of work in Aberdeenshire.

The spread of the Collared Dove in Britain and Ireland. R. Hudson, 1965. *Brit. Birds* 58: 105-139. Detailed account to end of 1964 (see *Scot. Birds* 3: 292).

Organo-chlorine residues in some raptor and corvid eggs from northern Britain. D. A. Ratcliffe, 1965. *Brit. Birds* 58: 65-81. Analysis of eggs from north England and south Scotland.

Crossbills in Britain and Ireland in 1963. P. (E.) Davis, 1964. *Brit. Birds* 57: 477-501. Includes Scottish immigrants.

Studies of less familiar birds. 130: White-tailed Eagle. G. Waterston, 1964. *Brit. Birds* 57: 458-466. With some comment on Scottish aspects and attempted introduction in 1959.

Shelduck broods in the Tay Estuary. H. Boase, 1965. *Brit. Birds* 58: 175-179. On behaviour and packs of young birds.

A parasitic disease in Eider Ducks. The late E. A. Garden, C. Rayski and V. M. Thom, 1964. *Bird Study* 11: 280-287. Studies on the Ythan estuary show that the parasitic worm involved has the common shore crab as an intermediate host.

Fledging in the Gannet. J. B. Nelson, 1964. *Scot. Nat.* 71: 47-59. Detailed Bass Rock study, substituting fact for fancy.

The breeding density of the Golden Eagle and fox in relation to food supply in Wester Ross, Scotland. J. D.

Lockie. *Scot. Nat.* 71: 67-77. With a shortage of natural prey eagles are evidently dependent on carrion to maintain their present numbers in the area.

The birds of Abernethy Forest. D. (N.) Weir, 1965. *Bird Notes* 31: 283-288.

Operation Osprey, 1964. G. Waterston, 1964. *Bird Notes* 31: 199-200. Loch Garten pair reared three young; other pair failed to hatch—and ate one of its eggs; rumours of third pair.

Research on Scottish Ptarmigan

ADAM WATSON

Nature Conservancy Unit of Grouse and Moorland Ecology,
Natural History Department, Marischal College, Aberdeen

This paper summarises a population study (Watson 1965) near Braemar in Aberdeenshire; surveys Ptarmigan distribution in Scotland; and compares population densities in Scotland, Iceland and the Arctic.

Study areas

The main area was 1220 acres at 2500-3800 ft on Derry Cairngorm, with two secondary areas of 55-60 acres near Cairnwell, Glen Clunie, and one of 80 acres on Lochnagar. The arctic-alpine vegetation was not burned and averaged two inches high. Ptarmigan occupied heaths of crowberry, blaeberry and mixed crowberry-blaeberry-heather, with a special preference for places where groups of boulders provided good shelter and cover. Areas with more than 90% heather were occupied by Red Grouse. Both species were scarce on gravelly places and neither occurred on extensive grassy or mossy areas. The few Ptarmigan breeding at 2000-2500 ft were confined to exposed ridges or screes with stunted vegetation, while the few grouse breeding above 2500 ft were on sheltered taller vegetation. A few sheep in summer at Cairnwell were the only domestic animals.

A largely unmolested Golden Eagle population was steady at one pair per 10,000 acres (Watson 1957), and fox numbers stayed steady with at least one breeding pair per 3000 acres. Although the stalkers trapped foxes in the lower glens, they missed most of the occupied dens, especially at high altitudes.

Food

Crowberry, blaeberry and heather make up over 90% of the Ptarmigan's diet in winter and over 60% in summer (Watson 1964), mostly leaves, green stems and shoots, but some flowers, seeds and berries. Cranberry leaves and berries and dwarf willow are often eaten. Chicks eat flowers

and leaves from their first day but mainly insects for the first week.

Behaviour

During winter, Ptarmigan in the Cairngorms usually occur in small flocks where snow has drifted off the vegetation, and they roost in holes scraped in the snow. Flocks of 100 are not unusual and I once saw one of 450. In deep snow they descend into the breeding range of Red Grouse. Though flocks of Ptarmigan and grouse often feed close together, most of the grouse move further down in these conditions.

The cocks take territories on the high ground as soon as snow-free patches appear during the first long period of calm spring-like days, and if good weather holds they stay on the territories all day and night. A few patches of heath and stones suffice at first for a territorial look-out and feeding place, from which the cock makes song flights on to the surrounding snow-fields (plate 29). The cocks defend their territories by threatening, fighting, and chasing intruding cocks on the ground and in the air, and by walking parallel to their neighbours in prolonged disputes along the boundaries. During these disputes they threaten each other by croaking, erecting their bright red combs, and using various aggressive postures (plate 30a). They advertise themselves by song flights, flying steeply upwards and giving loud croaks as they descend on rapidly beating wings, and by giving a different prolonged croak on the ground. These croaks intimidate intruding cocks and attract wandering hens.

Hens move singly from one territory to another and pair with cocks that show sexual display. A displaying cock approaches the hen aggressively with his breast puffed out, combs erected, tail fanned, and wings drooping so that the primaries often scrape the ground (plate 31). The hen usually runs away and is chased on the ground and sometimes in prolonged flights around an area of up to 200 acres. Later the hen does not flee and then the cock's courtship changes to bowing, crouching with head wagging, and attempts to mount. Hens give several startling high-pitched calls in threat and sexual display, and a sharp Jackdaw-like call when they are alone but soliciting for a cock. I gave more details about calls and postures in Bannerman (1963).

Many cocks seldom sing or show their combs and do not defend territories, and many hens remain unpaired. These non-territorial birds are often seen in small flocks but usually have all disappeared by mid May. Cocks which often sing and display have big territories and one hen (occasionally two), while less vigorous birds have small territories and remain unmated. Territories are mostly 5-18 acres in years of high numbers, but locally as small as 3-9 acres. In years of

low numbers territories are 20-75 acres, and cocks often fly 400 yards to meet their neighbours at the boundaries.

In summer the birds rarely call and are reluctant to fly (plate 28). The hens lay in early May in early years and at the end of May in late years. While they incubate, the cocks keep watch and usually lead away intruding men or dogs. The cocks usually desert their families when the chicks are a few days old, but may rejoin them a few weeks later. Hens usually show a spectacular "injury flight" when disturbed with small chicks (plate 30b). The broods break up between August and October, when flocking begins.

On fine snow-free mornings in autumn and winter, cocks on their territories display to the hens and threaten other cocks, but they desert their territories in the afternoon, in heavy snow and in gales, and they remain continuously in flocks for 3-6 months in snowy winters. The cocks often have aggressive disputes in the flocks, especially on fine days in late winter. The first to leave the flocks are cocks, and some are occasionally on their territories on winter days when nearly the whole population is in flocks.

Mortality

Out of 112 Ptarmigan found dead on the study areas, 103 had been killed by foxes and eagles, six at Cairnwell had hit ski-lift wires, and only three had died in poor condition without any injuries. Predation was probably the only important cause of death of adult Ptarmigan on the study areas. Parasites were unimportant. Of 15 Ptarmigan examined by J. W. Macdonald at the Veterinary Laboratory, Lasswade, only one was in poor condition. It and two others had small numbers of roundworms and coccidia, but the rest had no parasites.

Seasonal changes in numbers

Although the bad weather on the Scottish hills was a drawback, their barrenness was an advantage for easy visibility. When there was no snow in winter the white birds were conspicuous (plate 33a) and easily counted from good vantage points. Counts were also done by flushing them out of a given area with or without dogs, and by plotting their positions on the territories. Counts were not done before 1951, but from 1943 onwards I noted how many I saw during each walk and measured the distance walked. This method provided an index which showed when major changes in numbers occurred.

In five years when several counts were done in winter, numbers stayed steady from autumn till spring and then dropped suddenly by 18% - 47%. A drop from 130 to 80 occurred within five days in March 1952, and in two other

years there were big decreases within 10 and 14 days. These decreases occurred soon after the birds left the winter flocks and occupied their territories throughout the day. More hens were lost than cocks. Half the territorial cocks were unmated in April-May 1952 and many were consistently unmated right through from February to May. Nevertheless many unattached hens were present in March and there were so many of them in February that I had expected to see no unmated cocks in May. The number of breeding hens in May was therefore not limited simply by the number of hens left at the end of the winter. The reason why more hens were lost is unknown. The decreases were not due to deaths, but mainly to the sudden disappearance of birds without territories. A similar late-winter decrease in Red Grouse is due to the expulsion of many birds following a sudden increase in aggressive behaviour (Jenkins, Watson & Miller 1964). The less detailed evidence on Ptarmigan suggests the same. At the time of the decreases there was more strife than at any other time of year and non-territorial Ptarmigan were often seen flying out of sight after being chased by territory owners.

The unimportance of mortality was shown by shooting Ptarmigan in mid March 1952 in a corrie on Derry Cairngorm. On one day I shot five of the 12 territorial cocks in this corrie and two of the seven hens paired with them. No other birds were present. Two weeks later the shot birds had been replaced, presumably by non-territorial birds from elsewhere. The death of nearly half the cocks made no difference in the end to the breeding population. When these spring decreases occurred Ptarmigan were often seen on lower ground below the usual breeding range. Most of the emigrants presumably died, and evidence of this comes from fresh kills seen on lower slopes below 2500 ft every year in April-May.

Breeding

On average, ten old birds produced 25 young in the best year but only one in the worst year. This 25-fold difference cannot be explained by the smaller average clutches of 4-6 eggs in poor years than the average of 7-8 in good years. Poor breeding was due largely to whole broods being wiped out. In the worst years 80% of the hens had no young in August, compared with none in the best years.

The reason for poor breeding was unknown. The food of the parents may have been important, as in Red Grouse (Jenkins, Watson & Miller 1963), but this was not measured. Breeding was no better at low than at high population densities, or in good than in bad summers. Most chicks died

in three years with snowstorms or cold wet weather in June, but lived in other bad summers. In two fine warm Junes they survived well but in two others mostly died. Although hens and young were killed by foxes and eagles and were commonly seen at eyries and dens, predation did not appreciably depress breeding production. Breeding success was almost as good as with Red Grouse on the best-managed moors, where foxes and eagles are much scarcer or absent (Jenkins *et al.* 1963). The slight difference can be attributed to the Ptarmigan breeding later and on average laying a slightly smaller clutch than grouse. Summer losses in the breeding stock were estimated in the last few years from total counts of all adults in May and August. The average loss from all causes was only 9%.

Annual changes in numbers

On the whole study area at Derry Cairngorm the spring stock varied in different years from 2 to 7 birds per 100 acres and in autumn from 3 to 19 per 100 acres. About one third of the area was unsuitable habitat not occupied by Ptarmigan. Population density varied locally, in peak years reaching one pair per 8 acres on 100-acre parts of the area and one pair per 5 acres on smaller areas. Fig. 1 shows that two periods of abundance lasted five and at least three years, with a gap of seven years between them. Recent counts show that the second period also has now lasted five years, up to 1965.

The birds bred well only in years of increase and in the first two peak years. They bred poorly in the later peak years but did not decrease immediately, presumably because most old birds survived. Poor breeding carried on throughout the decline. The sex ratio changed in a similar way to breeding, with breeding stocks made up of equal numbers of cocks and hens during the increase and early years of high numbers, but with many unmated cocks during later peak years and years of decline. Hence many of the territories were unproductive in one summer out of two. Numbers at Cairnwell and Lochnagar sometimes changed a year or two later than in the Cairngorms, but many years of high and low numbers coincided at all three places.

Observations in summer by Seton Gordon and Desmond Nethersole-Thompson suggest that Ptarmigan were abundant in the Cairngorms in the early 1920's (especially 1923), the early 1930's (especially 1934), and the early 1940's (especially 1940). The population appears to be fluctuating approximately once every decade. Poor breeding in the Cairngorms in 1963 and 1964 may perhaps be followed by another decline in the next few years.

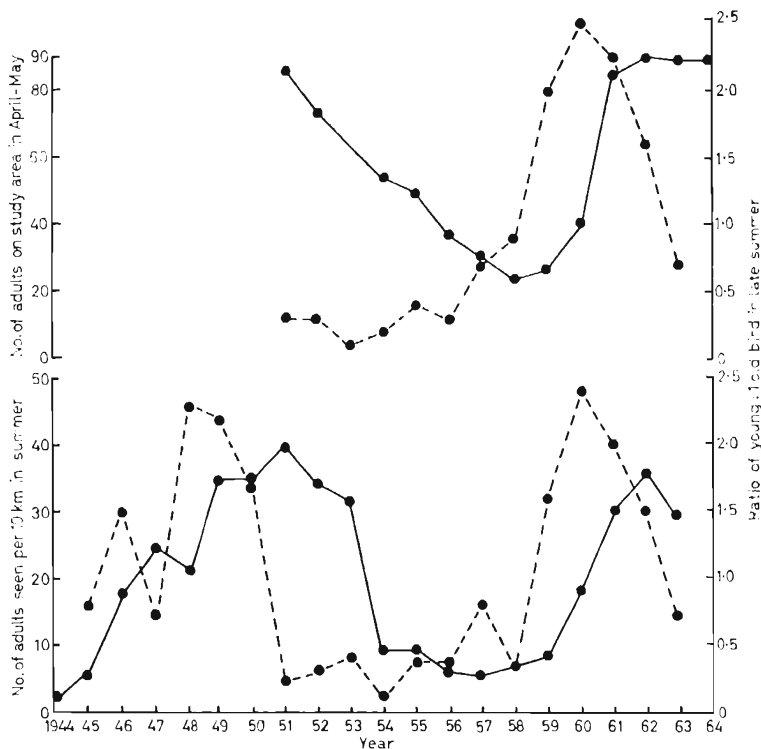


FIG. 1. Annual fluctuations in summer numbers and in breeding success of Ptarmigan on the Cairngorms, with Derry Cairngorm figures in the upper graph. Number of adults —; ratio of young to one old bird - - -. From Watson 1965 (by permission of J. Anim Ecol.).

Comparison of fluctuations in Scotland and Iceland

Mackenzie (1952) stated that the number shot on Perthshire estates fluctuated irregularly (fig. 2) with an average period of 5-6 years. Unfortunately the numbers shot were very small. Even on the biggest estates Ptarmigan are shot on only one or two days a year, when bad weather may greatly affect the bag, and some of Mackenzie's 'peaks' seem doubtful (Lack 1954). Since the average number shot annually on all the estates was only 107, it is impossible with these data to be sure how long the fluctuations lasted (see Appendix 1).

Fluctuations once a decade are obvious in much larger shooting figures from Iceland (fig. 2) (Gudmundsson 1960). Iceland and Perthshire figures were both high in 1880 and around 1890, and in this early period the years with lowest figures coincided at the two places. The general abundance in Perthshire in 1900-13 also occurred in Iceland, but carried

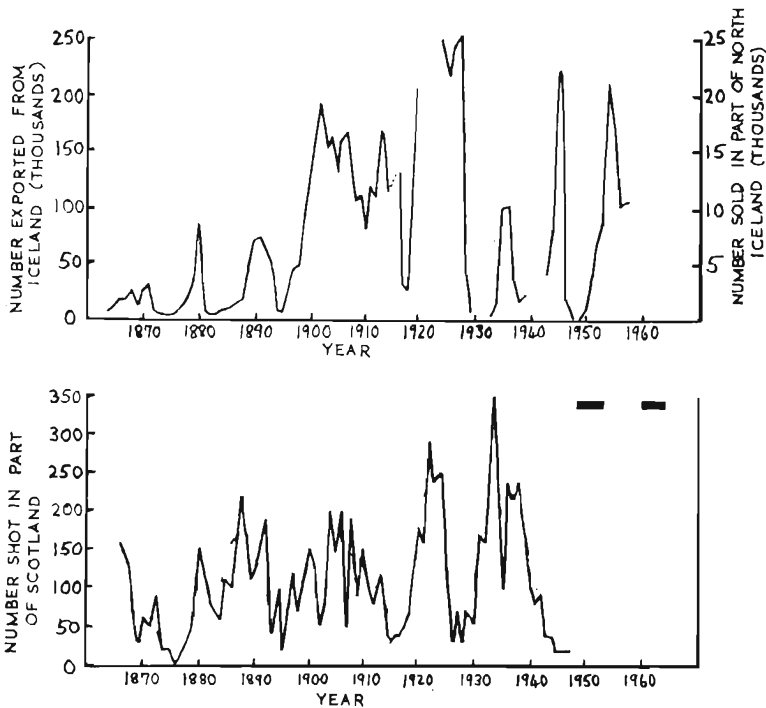


FIG. 2. Numbers of Ptarmigan shot in Iceland and central Scotland. The Iceland figures after 1940 are from a small part of the country (scale on right of graph). The thick black lines on the Scottish graph show periods of abundance during the study in the Cairngorms.

on longer there, and both populations were abundant in the mid 1920's and 1930's, as in the Cairngorms. Unfortunately these comparisons must remain tentative because of the inadequacy of the Perthshire data.

What causes the population fluctuations ?

More detailed work on Red Grouse fluctuations (Jenkins *et al.* 1964) shows that changes in the winter food supply affect the number of young reared, which in turn influences the size of the breeding stock in the following year. Ptarmigan are like grouse in showing a similar relation between breeding success one year and the size of the breeding stock the next year. After summers with good breeding there was usually an increase in the breeding stock next spring, and usually a decrease after poor breeding. However, Ptarmigan population fluctuations appear to be more pronounced than grouse fluctuations. Ptarmigan food supply was not measured during my study, but this is now being done.

Since snow is very deep in some winters, Ptarmigan might

possibly be short of food and might subsequently have a lower breeding stock or breed poorly. In fact breeding stocks were as high and breeding success as good after snowy winters as after mild winters. Moreover the size of the breeding stock was not affected by the amount of snow left in spring when the birds occupied their territories all day long and did all their feeding there. After four snowy winters they took territories in April when nearly all the ground was completely buried in deep hard snow (plate 33b); in two of these years the spring stocks were high and in the two others low. After other milder winters with little snow there were again low breeding stocks in some years and high ones in others. The birds could not have adjusted their territory size to the amount of food available in spring. Territory size may have been related to the amount of food in the previous autumn when territorial behaviour also occurred, but this was not studied.

The fluctuations were not due to shooting, since no more than 20 were shot on 30,000 acres of the Cairngorms in the best year since 1945, and none in most years. Predation was unimportant, since the breeding stocks were not diminished by winter mortality and since adult losses in summer were very small. Ptarmigan maintained breeding densities of a pair per five acres on completely unmanaged study areas at Lochnagar and Cairnwell in 1963-65. This was about as high as any density recorded for Red Grouse (Jenkins *et al.* 1963), even on the best-managed moors where foxes and eagles were much scarcer or absent.

The most likely possibilities to explain the declines are changes in behaviour or food. There was more strife among the Ptarmigan during spring in the years of decline from 1952 to 1957 than in 1960-64. This was partly due to the many unmated cocks in 1952-57, which often caused a lot of strife by approaching hens that were paired with other cocks. Changes in behaviour and in food supply are now being measured, in anticipation of population declines in the late 1960's.

Distribution in Scotland

Ptarmigan breed on all the big hill ranges in the Highlands and on some of the islands (fig. 3). Details are in Appendix 2.

The lower limit averages 2700 ft near Ballater, 2500 ft in the Cairngorms, 2000 ft in Wester Ross and central and west Sutherland, 1200-1500 ft in north Sutherland, and below 1000 ft on coastal hills near Cape Wrath and Whiten Head. On Sgribhis-bheinn near Cape Wrath they live down to 600 ft behind a sea cliff. The upper limit is 4100 ft in the Cairngorms and 1000 ft on Sgribhis-bheinn.

This corresponds with the distribution of arctic-alpine

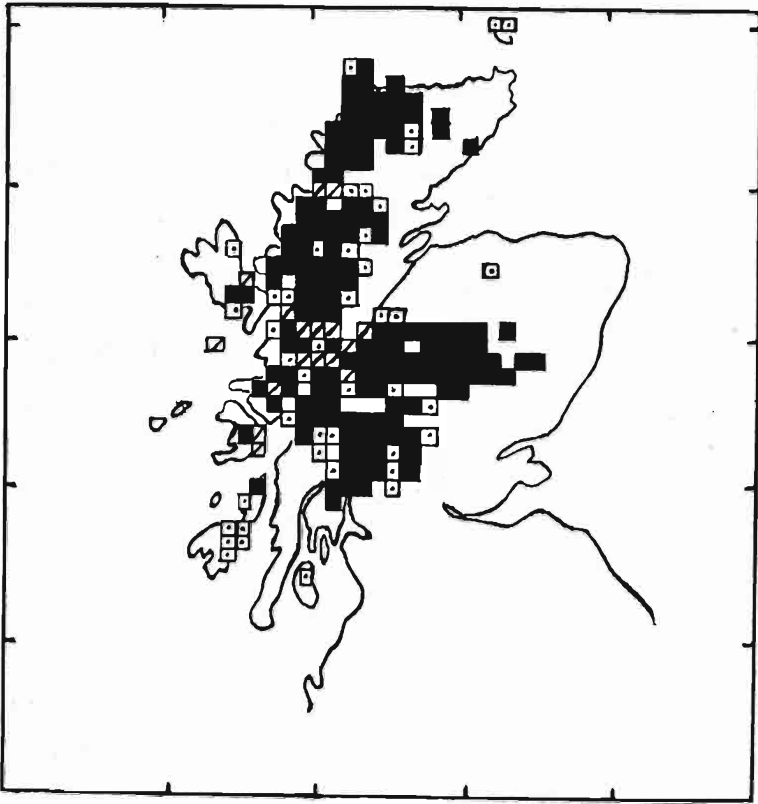


FIG. 3. Distribution of Ptarmigan in Scotland. The map is based on my own observations plotted on the 10 sq km national grid. This gives to a single record from an isolated hill on a small part of a square the same emphasis as many records for a big area of high ground in another square. The map therefore shows maximum limits of distribution, and gives no data on the actual size of the areas occupied by Ptarmigan in different parts of Scotland. Black squares indicate breeding records (eggs or young); divided squares indicate pairs seen in summer but breeding not proved; dotted squares indicate habitat that looks suitable for breeding but has not been investigated.

heaths, which extend lower towards west and north-west Scotland (McVean & Ratcliffe 1962), especially on hills within a few miles of the windswept coast. On Lochnagar near Ballater, tall heather locally goes up to 3000 ft but on average overlaps with the prostrate arctic-alpine communities at 2700 ft. In the Cairngorms the same overlap occurs at 2500 ft, in Wester Ross at 2000 ft, on Foinaven in north Sutherland at 1200-1500 ft and on Sgribhis-bheinn at 600-800 ft.

Table 1. Ptarmigan counts on study areas, and numbers seen per 100 miles

Region	Acreage counted	Number of Ptarmigan per 100 acres	Miles walked	Number per 100 miles
Cairngorms—Lochnagar—Cairnwell	75045(a)	7.4	2927	469
Monadh Liath—Gaick—Drumochter	750	6.8	473	450
Arrochar—Loch Lomond—Ben Lui	600	2.7	21	91
Torrison—Shieldaig—Achnashellach	660	2.9	160	148
Reay Forest—Cranstackie—Ben Loyal	620	3.4	63	135
Cape Wrath peninsula	220	6.0	not recorded	
Schichallion	350	3.7	not recorded	
Monar—Achnashellach	200	2.5	not recorded	
Applecross	3000(b)	5.1	not recorded	
Ben Wyvis	200	5.5	not recorded	

Notes

(a) Includes one 1220-acre area counted 50 times, and several other areas counted two to four times (see Appendix 3).

(b) Includes one 300-acre area counted 8 times.

Table 1 summarises counts given in detail in Appendix 3. The counts were done in several years from 1951 to 1964, and are therefore likely to have included years of high and low numbers in the different regions. Ptarmigan were commoner on eastern hills in Ross-shire, Inverness-shire, Banffshire and Aberdeenshire, than on the less heathy western hills, especially the grassy hills of Argyll and Monar. Densities almost up to average Cairngorm levels were recorded on heathy western hills near Applecross and Cape Wrath, with low densities on nearby grassy hills (Beinn Bhan and Beinn Spionnaidh).

The lower-density areas of west Sutherland, west Ross-shire, west Inverness-shire and north Argyll are occupied by Ptarmigan every year, even when numbers are low. This is different from the situation described in Iceland (Gudmundsson 1960). Ptarmigan in most of Iceland apparently become extinct in years of low numbers and are replaced during the next population increase from a residual centre of favourable habitat and high population density in the north-east of the island.

Population density in Scotland and the Arctic

It is often thought that Scottish Ptarmigan are uncommon relics living on small areas of rather unsuitable habitat, but counts in the Arctic (table 2) and Scotland (Appendix 2) refute this. Population densities in Scotland are far greater than anything so far recorded in the Arctic, and Scotland

Table 2. Counts of Ptarmigan during summer in the Arctic

Author	Region	Acreege counted	Adult Ptarmigan per 100 acres
Gudmundsson (1963)	North Iceland	1977	5.5
	N.E. Iceland	1411	2.8
	S.E. Iceland	5185	0.3
	S.W. Iceland	5683	0.3
Jenkins (1953)	Andoy, North Norway	3000	0.0 (0.5 locally reputed in good years)
Longstaff (1932)	West Greenland	4100	1.4
Manning, Höhn & Macpherson (1956)	Banks Island, Canada	—	0.2 (b)
Savile (1951)	Chesterfield Inlet, N.W.T., Canada	1220 (c)	2.3
Savile (1959)	Somerset Island, N.W.T., Canada	—	"very low" (in litt.)
Savile (1961)	Ellef Ringnes Island N.W.T., Canada	9600	0.1 (this was the best habitat)
Savile & Oliver (1964)	North Ellesmere Island	5500	0.1
Soper (1940)	West Baffin Island	2240	1.7
Watson (1957a)	North Norway, inland	30	0.0
Watson (1963)	East Baffin Island, inland	640	0.0
Watson (unpublished)	do, inland	8 areas of 640, total 5120	0.0-0.7 (mean 0.2)
	do, coast	640	0.8
Weeden (1959)	Central Alaska	16000	0.1-0.4 in different years
Weeden (1962)	Central Alaska	9600	1.6-3.5 in different years
Wynne-Edwards (1952)	Central Baffin Island	—	9 seen in 1000 miles of walking

Notes

- (a) Based on doubling the known number of cocks.
 (b) Estimated from numbers seen on many long walks.
 (c) Excluding bare rock and ponds.

obviously provides a very favourable habitat. The only exception is one moderately high density recorded in Iceland, which in fact is a subarctic area, but even this is greatly exceeded by many of the Scottish figures. This may seem surprising, since heaths in many parts of the Arctic, including some of the study areas mentioned in table 2, are more luxuriant and the ground less barren than on Ptarmigan habitat in Scotland. Several possible explanations are that (i) the Arctic heaths may be of poorer quality as food, (ii) the Arctic heaths are largely cut off by deep hard-packed

snow every winter and this may limit breeding stocks, and (iii) Ptarmigan migrate south in winter in many parts of the Arctic, and may suffer heavy losses during their extensive flights. These ideas are entirely speculative but would be worth following up.

Changes in status in Scotland

There are no records this century from previous Ptarmigan haunts in Arran, Rhum and the Southern Uplands, and none since 1938 in the Outer Hebrides. Richmond (in Bannerman 1963) gives four possible reasons for this, and their validity is discussed below.

(i) The climate is warmer and wetter, with more thaws and sea breezes. Yet Ptarmigan occur at very low altitudes on seaboard hills in Sutherland, at higher population densities than in the Arctic.

(ii) Cocks in the Arctic stay white in spring long after hens but not in Scotland; hence Scottish birds are relics out of step with normal conditions for Ptarmigan. However Scottish cocks and hens moult in a similar sequence to other southern populations in Japan and the Aleutian Islands, and the subarctic populations of Norway and Iceland are intermediate between Scottish and high-arctic birds. Willow Grouse show similar geographical variations in moult, with high-arctic races at one extreme, Red Grouse at the other, and Norwegian or Newfoundland birds intermediate. Hence the moult is adjusted appropriately to climate.

(iii) Red Grouse might oust the "less progressive" Ptarmigan or spread disease to them. In fact Ptarmigan seem to have the same parasites as Red Grouse, and I have several times observed Ptarmigan ousting territorial Red Grouse from arctic-alpine ground.

(iv) The frequent hill fog in the west may depress the birds' behaviour. Nevertheless Ptarmigan on the mainland are as common in the foggier conditions at 3500 ft as at 2500 ft, and are as common at higher altitudes wherever the vegetation is suitable.

A simpler explanation for the decrease in the far west is that the area of suitable habitat is very small on the sharp island hills. Local extinctions are therefore more likely in years of low numbers. This happens on isolated small hills in east Scotland where in some years the area of continuous suitable habitat is presumably not enough for one or two pairs. Ptarmigan have been seen in recent years on Rhum and Harris, and it is clear that the contraction of range in the Hebrides was only temporary.

There is no evidence that the range has contracted on the mainland. Millais' (1909) account of mainland distribution

still holds good today, and although he considered Ptarmigan in west Sutherland were dying out they were abundant there in 1960-61, and have been common for many years according to keepers. The impression that Ptarmigan are uncommon and live only on a few hills in Sutherland (Baxter & Rintoul 1953) and Perthshire (Boase 1961) is clearly based on inadequate information (see Appendix 2). Unlike their Victorian predecessors few ornithologists nowadays take a dog to the Ptarmigan ground in summer or go there at all between October and April, and they are therefore likely to overlook the birds.

Effect of tourism

Every year, more people go to the hills at all seasons, and ski-lifts on Cairngorm and Cairnwell have been working more or less daily since late 1961 and late 1962. Hundreds of people ski there almost every day from December to April or May, sometimes with thousands in one day, and in summer many tourists use the lifts and walk near them. Moreover the wires kill 10-20 Ptarmigan every winter. If human disturbance were important, a decrease might be expected on areas around the lifts.

Instead, the high autumn populations at Cairngorm and Cairnwell increased further in the summers following the installation of the lifts. Ptarmigan have been as numerous ever since as on other nearby hills and corries seldom or rarely visited by people. Birds with territories near the lifts are tamer than usual and often go on feeding while people ski down or pass overhead on the lifts only 10 yards away. Ptarmigan alongside the Cairnwell lift have bred as well two years running as on another area a mile away which is rarely visited. Clearly these populations have not been affected adversely.

The extra human traffic has widened the paths up Cairngorm and a few other hills by a few feet. At Cairngorm and Cairnwell the vegetation within 50 yards of the top ski-lift stations and within a strip 10 yards wide from the stations to the nearby hill-tops has been damaged by trampling. It is easy for casual observers who only use the lift or walk to the nearby summit to exaggerate this, since nearly all the vegetation they see is damaged. However this trampling has affected only a minute part of Cairngorm and Cairnwell, and is concentrated on exposed barren ridges which did not support continuous vegetation or many Ptarmigan before the lifts were built. With ever-increasing traffic, more vegetation will be destroyed by trampling, but the damage is not yet serious. There is no reason yet to fear that Ptarmigan will decrease because of increases in skiing, walking and climbing on the main skiing hills or on other hills not yet developed

for tourism. I expect Ptarmigan in the Cairngorms to decrease in the next few years, but this will be a regular feature of their population fluctuations and cannot be attributed to human disturbance.

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I am grateful to Prof. V. C. Wynne-Edwards for reading the manuscript and for his early encouragement of the research. Dr D. Jenkins made useful comments on the manuscript.

Summary

This paper summarises a population study of Ptarmigan in the Cairngorms, where numbers fluctuated greatly once every decade. The main food was leaves, green stems and shoots of crowberry, blaeberry and heather. Population density varied locally, reaching a maximum of one breeding pair per 5 acres on some study areas. Breeding success and breeding stocks were not appreciably affected by summer weather, predation, or snow cover in winter or spring, and shooting was negligible. The birds defended bigger territories in years of low numbers.

Ptarmigan in Scotland are confined to arctic-alpine heaths and are not limited by altitude, temperature or snow cover. They occur on all the main Highland hills and some of the islands. They are commoner in east than west Scotland, but heathy western hills support high numbers. Population densities are far greater than anything recorded in the Arctic. There is no recent record from Arran and south Scotland, but no evidence of any contraction in range or decline in numbers on the mainland. A recent sudden increase in human disturbance by skiers and walkers near ski-lifts has not diminished Ptarmigan numbers on these areas.

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Appendix 1. Analysis of Ptarmigan bags from Mackenzie (1952)

I have defined periods with two or more successive years' figures above or below the average as periods of abundance or scarcity. By this definition, obvious periods of abundance occurred in 1920-24 and 1931-39, and earlier ones in 1866-67, 1880-81, 1886-91, 1899-1901, 1904-06 and 1910-11. In addition there were peaks of one year only in 1884, 1897, 1908 and 1913. The problem about the single peaks is whether for instance there was really one peak in 1884 separated from a different peak in 1886-91, or whether the single low figure in 1885 was an artefact due to the weather at shooting time. If one accepts the first possibility, the result suggests an irregular fluctuation with an average period of seven years. Alternatively there was a fairly regular fluctuation about every decade, and this seems more likely since the below-average figures for single years are mostly quite high. On this basis, periods of abundance including bags of less than 107 in a single year occurred from 1884-91, 1897-1901, and another long period from 1904-13, with three single below-average (though quite high) figures in 1907, 1909 and 1912. Unfortunately it is impossible with these data to decide for certain one way or the other.

Appendix 2. Ptarmigan distribution in Scotland

Caithness. Two pairs seen with young on Morven in August 1957.

Sutherland. Common on Ben Klibreck and small numbers on Ben Griam More and Beinn Stumanadh in east Sutherland. Common throughout the hills of the Reay Forest, from Ben Hee to Arkle and Foinaven (especially Ben Hee), and on the isolated western hills of Ben Stack, Quinag and Canisp. Very common on Ben More Assynt, Breabag and other hills near Inch-nadamph, and 50-100 brace have often been shot there in a year. Cranstackie and the massifs of Ben Hope and Ben Loyal are well populated, and also the outlying foothills, such as Conamheall south of Cranstackie, Ben Hiel east of Ben Loyal, and Meallan Liath east of Ben Hope. Common in 1961-62 on low hills between the Kyle of Durness and Kinloch-bervie; on Fannheall, Creag Riabhach, Fashven and Sgribhis-bheinn, and probably on others which looked suitable at a distance but were not visited by me. On Sgribhis-bheinn they were seen almost to the edge of the 600 ft sea cliff at Clo Mor, and the population on this hill appeared to be quite dense in September 1961, including one pair with a brood of fully grown young (Watson 1961). In July 1962 I saw two pairs with small young at 650 ft and 900 ft on the heathy north side of Sgribhis-bheinn. Two pairs had young in July 1962 on a similar heath at 900-1100 ft behind Whiten Head east of Loch Eriboll. The vegetation at Sgribhis-bheinn is described by Watson (1961).

Ross-shire. The county has a far greater area of high ground than Sutherland. Ptarmigan are common on all the main ranges from Ben Wyvis in the east to Ben More Coigach, Cul Mor, Torridon and Applecross in the west. Sgurr a' Chaorachain and Meall Gorm at Applecross, Slioch and other hills between Loch Maree and An Teallach, the Strath Vaich hills, Ben Wyvis, the Beinn Dearg-Seana Bhraigh massif near Ullapool, and the hills north of Strath Carron are all favourite places. Ptarmigan also breed on some smaller hills in the sedom-visited Diebidale-Glencalvie-Inchbae deer-forest country of Easter Ross, on the isolated Sgurr a' Mhuillinn of Strath Conon, and on some isolated hills near Killilan south of Strome Ferry. In southern Ross-shire they occupy a big area on the Attadale and Monar Forest hills west of Strathfarrar, and on the extensive Sgurr nan Ceathramhnan and An Riabhachan massifs between the head of Glen Affric and Strath Carron. Beinn Fhada, the Five Sisters of Kintail, and numerous hills on both sides of Glen Shiel and Cluanie are also occupied. The area between Cluanie and Strath Carron contains blunter peaks than the far west, with many large corries and big expanses of high summit and broad ridge. This area contains much more Ptarmigan ground than the sharp peaks of Torridon and An Teallach near the west coast. I have not searched the Outer Isles for Ptarmigan, but Major Miller Mundy, the proprietor of Amhuinnsuidh deer forest informed me in 1964 that Ptarmigan have often been seen on Clisham of Harris in recent years.

Inverness-shire. Inverness-shire probably contains the most Ptarmigan ground of any county in Scotland. They are common on all the main hills from Glen Moriston and Glen Affric across to the west coast, and on the Ben Alder range, Creag Meagaidh-Carn Liath and the Loch Treig hills. They are particularly abundant on the Cairngorms and Drumochter-Gaick hills, and on the higher Monadh Liath west of the Spey. There are only small numbers on Ben Nevis and the Mamores, but more on the nearby Aonach Beag and the Stob Coire Easain group south of Spean Bridge. They breed on the high hills around Corrieyairack and on the hills west of Loch Lochy and near Glen Roy. Ptarmigan occur sparsely on the hills around Loch Quoich, on Ladhar Bheinn, Beinn Sgritheall and the Saddle

near Loch Hourn, and on the conical Sgurr na Ciche at Knoydart. They also breed on some hills in the deer-forest country between Loch Eil, Loch Arkaig and Loch Morar, and probably on many others which I have not visited. This whole region is very wet, with grassy hills and apparently rather sparse Ptarmigan populations, but it has not been thoroughly searched. The drier hills nearer the west coast would be worth investigating. They appear to be more healthy and hence more likely to support good stocks of Ptarmigan. A few Ptarmigan breed on the Black and Red Cuillin in Skye, and a pair was seen in summer a few years ago on Rhum (V. P. W. Lowe, pers. comm.). In January 1951 I saw one in a birch wood at 750 ft near Loch Laggan after a severe gale the night before.

Banffshire. Ptarmigan are very abundant on a large area in the Cairngorms, from Ben MacDhui, Cairngorm and Bynack More to Ben Avon. A few breed on Creag Mhor north of Glen Avon, and Ben Rinnes is a very isolated outpost near Dufftown. R. Hewson (in litt.) has found from local landowners that although there is no definite breeding record for Ben Rinnes, coveys were seen there during several years in the 1920's when some were shot, and Ptarmigan were again seen in 1953. During a snowy period in February 1955 I saw several at 2500 ft on the Ladder Hills near the Lecht road, six miles from the nearest known breeding place on Ben Avon. Ptarmigan used to occur in summer on the Ladder Hills and on Cook's Cairn in Glen Fiddich, but there are no recent records.

Aberdeenshire. This county contains a very large area of high ground above 3000 ft and also the densest recorded Ptarmigan populations in Scotland. They are abundant on the extensive Mar and Invercauld parts of the Cairngorms, and over a vast area along the Grampian chain from Carn Ealar and An Sgarsoch in the west through the Glen Ey hills to the Cairnwell, Glas Maol, the Glen Callater hills, Lochnagar, Broad Cairn and Mount Keen-Braid Cairn in the east. Ptarmigan breed at least in some years on Culardoch north of Braemar and regularly on the isolated hill of Morven north of Dinnet. The overlap between Ptarmigan and Red Grouse occurs higher in the Ballater area than recorded elsewhere in Scotland. On some south-facing and west-facing parts of Lochnagar no Ptarmigan breed below 3000 ft and grouse occasionally breed up to 3200 ft, with one unusual record in 1954 of a hen grouse incubating eggs at 3400 ft. On other parts of Lochnagar the Ptarmigan breed regularly down to 2500 ft, for example by the lochside in the corrie north-east of the summit.

A rough estimate can be made of the Ptarmigan population in the Cairngorms massif, mainly in Aberdeenshire but partly in Inverness-shire and Banffshire. This is based on population figures from the Derry Cairngorm study area, and on the fact that Ptarmigan on both the Dee and Spey sides of the Cairngorms have fluctuated approximately together in recent years. The surface area of the whole massif above 2000 ft has been calculated at 150 square miles by Nicol (in Alexander 1950). I have estimated the suitable Ptarmigan area between 2500 and 4000 ft to be approximately 100 square miles. The estimated figures for the spring breeding population vary from 1300 in a low year such as 1958 to about 5000 in a peak year, with about 15,000 in a peak autumn.

Kincardineshire. Mount Battock near Banchory is occupied by breeding Ptarmigan in most years. Wynne-Edwards (1954) saw one at 1200 ft on Cairn-mon-Earn in late April after the severe winter of 1947, and one on a heathy cliff-top by the sea a few miles south of Aberdeen in November 1953.

Angus. Ptarmigan are abundant on Mount Keen-Braid Cairn and in the Tolmount-Glas Maol-Caenlochan area. They breed commonly on the isolated Ben Tirran and on the Clova ranges south of Lochnagar, and breed

in most years on Mount Battock. Angus shares with Aberdeenshire the dense populations on Broad Cairn, Carn Bannoch, Cairn of Claise and other hills along the Grampian chain.

Perthshire. Common throughout the Grampian chain from Glas Maol and Cairnwell in the east to Loch Erich in the west. Particularly common on the high tops in the Dalnaspidal, Dalnacardoch, Atholl and Glen Shee areas, covering a vast area with extensive plateaux and broken corries. These schist hills are less barren than the granite Cairngorms to the north, and extend into Aberdeenshire in the Glen Ey-Clunie-Callater area. Schichallion has a high population, and the birds are common on Carn Maig and in the Talladh Bheithe forest north of Loch Rannoch. In south Perthshire Ptarmigan occur in small numbers throughout the Glen Lyon hills, the Ben Lawers range, on Ben More-Stobinian, the Cruach Ardrain-Beinn Chabair group south-east of Glen Falloch, and on Ben Vorlich-Stuc a' Chroin near Callander. They are fairly common on Ben Lui, Ben Oss and Beinn Dubhchraig near Tyndrum.

Argyll. Ptarmigan breed in small numbers on Ben Starav, Ben Cruachan, the Glen Coe hills, Clach Leathad in Black Mount, and on Stob Gabhar and the long range of hills west of Loch Tulla. A few breed on Beinn Trilleachan and other hills around Loch Etive, and on Beinn a' Bheithir near Ballachulish. In the Ardgool area, Richmond (in Bannerman 1963) saw Ptarmigan on Ben Donich, the Brack and Ben an Lochain, and one in March on Beinn Bheula, which is further south than Ben Lomond (see Stirlingshire section). Richmond also saw pairs on the isolated hills of Ceann Garbh and Beinn Bhuidhe north of the head of Loch Fyne. West of Loch Linnhe, a few breed on Garbh Bheinn of Ardgour, on Creach Bheinn and Fuar Bheinn, and probably on other hills not visited by me. Ben Resipol of Ardnamurchan is an isolated breeding outpost. One pair was seen with young on Scarba in 1959. A few breed on the higher hills of Mull, especially Ben More. There are no records in the last few years from Jura or Islay.

Dunbartonshire. A few breed on Ben Vorlich and Ben Vane, and on the Arrochar hills of Beinn Ime, Beinn Narnain, A' Chrois and the Cobbler.

Stirlingshire. A few breed on Ben Lomond. A hardy group of penniless Glasgow climbers who banded together in the 1930's formed the Ptarmigan Club, naming it after the hardy bird whose southernmost Scottish outpost is on Ben Lomond.

Appendix 3. Counts of Ptarmigan in Scotland

County and hill	Total acreage	Number of Ptarmigan per 100 acres
Aberdeen		
Derry Cairngorm	1220	Mean of 50 counts 6.7; range in spring 2-7; range in autumn 3-19
Ben MacDhui	600	15 2 1 1
	300	8* 9*
	200	7*
	1900	22
Beinn a' Bhuid	300	10 2
	200	11*
	600	10* 9* 12*
Beinn Bhreac	300	9* 10
	200	3
	150	2*

Cairn Toul	150	4*
	600	13
Brae Riach	300	9 7 1
Carn a' Mhaim	200	7*
Lochnagar	300	12 12 8 9
	1000	14
	80	18* 18* 16* 6*
	60	38*
Glas Maoil	250	10
Carn an Tuirc	200	2*
	100	6*
Cairnwell	60	43*
Meall Odhar	55	44*
Mount Keen	140	13* 3*
Angus		
Braid Cairn	50	4* 0 20 4* 6* 0*
Perth		
Schichallion	200	5*
	150	8*
Argyll		
Beinn Dubhcraig	200	4*
Beinn Dorain	200	1
Ben Lui	200	3
Inverness		
A' Chailleach-Carn Sgulain	150	8*
Geal Charn, Monadh Liath	600	7*
Ben Wyvis	200	5*
Maoile Lunndaigh, Monar	100	4*
An Riabhachan, Monar	100	1
Liathach	160	1*
Slioch	100	4
Beinn Alligin	200	3
Sgorr Ruadh	200	4
Fuar Tholl	100	3
Beinn Bhan, Applecross	200	0 1*
Sgurr a' Chaorachain-Meall		
Gorm, Applecross	400	20
	300	2* 2* 2* 2* 3* 4* 3* 8*
Sutherland		
Foinaven	200	3*
	120	2*
Cranstackie	100	6*
Ben Hiel	100	6
Farrmheall	100	6*
Sgribhis-bheinn	120	6*
Beinn Spionnaidh	100	1*
Ben More Assynt	150	8*

Each figure in the third column represents the result of a separate count.

* Shows counts made in April-May.

Special Review

The numbers and behaviour of geese in the Lothians and Berwickshire

By William Brotherston, 1964. *Fifteenth Annual Report of the Wildfowl Trust*: 57-70.

Reviewed by DOUGAL G. ANDREW

This important paper summarises the results of the study which the author has made personally and organised collectively on the status of geese in south-east Scotland. The counties covered are Midlothian, East Lothian, Peeblesshire and Berwickshire, and there are also some notes from Lanarkshire. The subject is a fascinating one for the position has changed so completely since 1867, when Turnbull recorded Bean, White-fronted and Brent as the only geese occurring commonly in East Lothian. Now all three species occur only as casual vagrants over the whole of the east of Scotland, and in their place have come thousands of Pink-footed and Grey Lag Geese.

Mr Brotherston takes up his story in the 1930s. He quotes local evidence to the effect that at least as far back as 1910 there had been a well-marked passage of geese over the Moorfoot Hills in both autumn and spring, and it seems reasonable to assume that these were Pinkfeet passing between Forth and Solway in just the same way as they do nowadays. It is impossible to say how the scale of passage in the 1930s compared with that of today, but it is known that the numbers of Pinkfeet actually coming down in south-east Scotland were relatively small. In the 1930s there were only two fair-sized roosts (Aberlady and Hule Moss) and three small roosts (Tynninghame, Cobbinshaw and Fala Flow), having an aggregate peak population of around 5000 Pinkfeet. Grey Lag were much scarcer. There was, for instance, only one pre-war record of the species in Midlothian, and the only roost was at Aberlady, where numbers seem to have been around 400 at the most.

This set-up was completely changed during the war years 1939-45. Aberlady became an aircraft firing range and an aerodrome appeared on the inland fields where the geese used to feed. At the same time much of the hill ground further inland was brought under cultivation as part of the war effort and this opened up new feeding grounds for the geese, with reservoirs conveniently to hand for roosting purposes. At these inland roosts (with the sole exception of Cobbinshaw) shooting is either completely prohibited or strictly regulated. Under these favourable conditions the numbers of geese visiting this part of Scotland have increased

considerably, and even when the war ended and the coastal disturbance ceased they have shown little inclination to return to the coastal roosts.

The present investigation has shown that there are three roosts in the area which now hold a peak autumn figure of 5000 or more Pinkfeet (Fala/Gladhouse, Hule Moss and in recent years Baddinsgill). In some years up to 4000 have been recorded at Aberlady during the period of autumn arrival, but in most years the numbers have been much lower. Tynninghame and Cobbinshaw are both subject to excessive shooting and within the past few years have been almost completely abandoned. It seems likely that the Aberlady Grey Lag also moved inland during the war. Certainly at least 600 were roosting at Gladhouse by 1948. The main increase, however, seems to have taken place in the early 1950s, when two new roosts were established at Threipmuir/Harperrig and Watch Reservoir. Since 1955 the total peak population of Grey Lag in south-east Scotland has probably averaged around 1500, but in 1963 and 1964 numbers have been considerably higher and Portmore and Hule Moss have been added to the list of roosts.

Pink-footed Goose

The pattern of arrival and departure is described in some detail, based principally on the author's personal observations in the Fala/Gladhouse area. The first small flocks are seen as early as mid September but these do not stay. About the last week of September the traffic becomes heavier; again most pass through, but some stay behind to occupy the roosts. The main arrival takes place around the second week of October, when the numbers staying and the numbers passing through are about equal. Within a week peak numbers are reached. These normally stay for only three weeks at the most, and there is usually a sharp drop in November, followed by another drop in late December, by which time numbers are down to the usual wintering level of 700-800. Some of the departing birds may go down to Aberlady, but the great bulk of the movement is southward to the Solway. Subsequent developments are very much at the mercy of the weather, but the spring return usually begins in February and rises to a peak of around 8000 in mid April. These have all gone by the end of April, though small flocks continue to pass through for the next week or two.

Three abnormal years are described. In 1961 a gale stripped the upland barley just when it was due to be cut and the spilled grain kept full numbers in the area until well into December (incidentally a similar result was obtained in 1954 when bad weather prevented the upland grain crop from being harvested at all). In 1956 and 1963 the numbers recorded

were abnormally low; it is suggested that a poor breeding season and rapid passage through the area was the explanation in 1956, while in 1963 (when the population was at a rather low ebb following the hard winter of 1962-63) a severe gale evidently caught the geese on their way to this country and completely dislocated the usual pattern of arrival.

A large section of the paper is devoted to a discussion of the numbers of Pinkfeet coming into south-east Scotland in the years 1950 to 1963, and this is based mainly on the collective work which the author has so ably organised. The investigation really got going in 1952 with a series of simultaneous counts at Fala and Gladhouse which confirmed suspicions that these two localities really formed a split roost and were used by the same local goose population which did most of its feeding in the Fala area but which, according to circumstances, roosted either at Fala or at Gladhouse or (more often) roosted at both localities in proportions which might vary from night to night. From December onwards Gladhouse is little used, and the large numbers recorded on spring passage seem to roost exclusively at Fala.

In 1955 these organised counts were extended to all the roosts in south-east Scotland and they have been repeated in every subsequent year. They have been held in November (usually the second week), and since 1961 they have been supplemented by additional counts in late October because it has been discovered that in some years onward movement has already begun by the first week of November. Separate tables are given for the October and November counts and the results of all the observations are incorporated in a third table giving an estimate of the arrival peak population in the years 1955-63. The figures brought out in this table vary between 9600 in 1956 and 14,000 in 1961, but in six of the nine years the figures lie within the surprisingly narrow range of 11,300-12,600.

How reliable are these figures? We are told that they are arrived at by making the 'requisite additions' to the October and November counts but no explanation is given as to how the adjustments are calculated, and indeed it seems most unlikely that all the necessary complementary information is available from all the roosts to enable any adjustment of this kind to be calculated on more than an intelligent-guess basis. A note of warning should also be sounded regarding the reliability of the actual count figures, which look so convincingly accurate in their neat tables. Large numbers of roosting geese can only be accurately counted under the best of conditions. All too often the weather is bad or the geese make their arrival in failing light or in one great crowd, and the count breaks down into an estimate. The tables given in this paper conceal the fact that the counts were made under



PLATE 28. Hen Ptarmigan unwilling to leave the place where its chicks are hiding. Setter dog pointing in background. Ben Macdhui plateau, June.
Photograph by David Jenkins



PLATE 29. Cock Ptarmigan on its territory on Cairn Toul in April.
Photograph by Adam Watson



PLATE 30a. Cock Ptarmigan strutting aggressively on its territory, with tail cocked and breast puffed out.

Photograph by Adam Watson



PLATE 30b. Hen Ptarmigan on the Cairnwell showing injury flight at the photographer's feet.

Photograph by Adam Watson



PLATE 31. Tracks left in the snow by cock Ptarmigan displaying with drooping primaries near its mate. Beinn a'Bhuird, March.

Photograph by Adam Watson



PLATE 32. Tracks left in the snow by displaying cock Capercaillie, Ballochbuie Forest, Aberdeenshire, 31st January 1965 (*cf.* pl. 31). Like other species of grouse, cock Capercaillie parade around a female with the wings extended stuttily at their sides and the primaries marking the ground. In this instance only the cock was seen, but the female may have been in a tree and flown away as the observer approached.

Photograph by David Jenkins

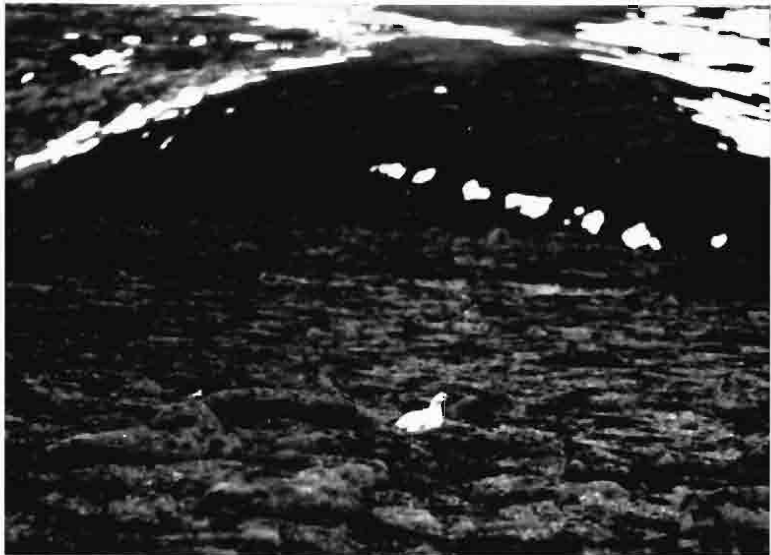


PLATE 33a. Ptarmigan pair on Derry Cairngorm in early April. The hen is still white and very conspicuous against the snow-free ground. By contrast, the cock about a yard left of the hen has completely moulted to its summer plumage and is so well camouflaged that it is almost invisible.

Photograph by Adam Watson



PLATE 33b. Ptarmigan pair at 3400 ft on Derry Cairngorm in mid April after a long snowy period. A thaw had just begun but four pairs had taken territories on a slope where 98% of the ground was buried in snow.

Photograph by Adam Watson

widely varying conditions and consequently with widely varying room for error, and although it is not likely that this affects the general picture presented in the paper it should be emphasised that the count figures provide a rather dangerous basis for the drawing of any more detailed conclusions.

The section on the Pinkfeet concludes with descriptions of the roosting and feeding activities ; the use of resting stations on the moors during the day and of 'parking-out' stations where the geese halt temporarily on their way to the roost ; and of the movements between the roosts, and the longer-distance movements to and from Loch Leven in the north and the Solway in the south.

Grey Lag Goose

The Grey Lag provide an interesting comparative study with the Pinkfeet. Their numbers are smaller and the counting difficulties are therefore less. The main arrival usually takes place about the end of October (a fortnight later than the Pinkfeet) and in some years there have been further arrivals continuing until the middle of December. The highest figure recorded in the area during the period covered by this paper was over 2200 on 14th December 1963, but this has been quite overshadowed by a subsequent count of 3740 on 7th November 1964, which shows that really large numbers can come in with the main arrival. Numbers have usually declined considerably by the end of December, but little is known about the general level of the wintering population, though one may guess that it varies a great deal from year to year. The spring departure takes place about a fortnight earlier than that of the Pinkfeet and the great majority are gone by mid April. A table is given showing the November counts in the years 1955-63 and these show a wide range of variation between 400 in 1960 and 1750 in 1957. In many years, however, it is known that the November counts did not catch the peak numbers, and it would be more realistic to say that the peak autumn numbers have ranged between 1000 and 1500, with notable shortages in 1960 and 1961 and notable excesses in 1957, 1963 and 1964. The numbers in the last two years have been exceptionally high (2200 and 3740) and it will be very interesting to see whether this trend will be maintained.

Grey Lag feed principally on grass, and even when they join the Pinkfeet in the stubble fields in autumn they tend to feed in distinct parties. Gladhouse is the only roost in the area which is regularly used by both Pinkfeet and Grey Lag, and here the two species maintain separate roosting flocks.

Other species

The paper ends with a short account of the other geese that have occurred in the area. These are no more than casual stragglers except for the Barnacle Geese which turn up in ones and twos (exceptionally up to eight) almost every winter in the Pinkfoot flocks. In addition Barnacle Geese are described as 'frequently seen passing over the area on their way to the Solway in autumn, and less often returning north in spring, these being the geese that breed in Spitsbergen.' This is a most interesting observation and one hopes that fuller details will be published.

This investigation is a splendid example of what can be achieved by collective enterprise, and this excellent paper will provide at the same time a reward and a stimulus to those who have assisted in the field work. A solid yardstick has been created against which we shall be able to measure the changes which will undoubtedly take place in future years and Mr Brotherston is to be warmly congratulated on the way in which he has succeeded in drawing a very clear picture out of a mass of individual observations.

Short Notes

American Wigeon in East Inverness

At noon on 17th January 1965 I was watching ducks on the south shore of the Moray Firth just east of Inverness with Wing-Commander R. J. Fursman and R. Clark when I found an adult male American Wigeon (or Baldpate) swimming with a flock of Wigeon. It was a fine sunny day and we had excellent views of it swimming some 300 yds offshore for about ten minutes before it took off with the rest of the ducks.

It stayed in this area and was seen by Dr Maeve Rusk, Melvin Morrison, Bob Emmett, Pat Sellars, Douglas Weir and others. I saw it last on 28th February. During this time it frequented the same area of mudflats bordering the Inverness-Nairn road and was always in the mile of coastline between the bridge over the Aberdeen railway and the Ashton Farm layby.

Extensive mudflats are exposed at low tide and provide a feeding ground for large numbers of wildfowl in winter. At high tide the flocks rest on the sea about 200-500 yds offshore: a couple of hours after high tide the ducks swim in to feed at

the edge of the falling tide, and this is when they are nearest the shore. On 29th January I examined the American Wigeon in bright sun at about 40 yds range as the tide was ebbing. The Wigeon feed principally on *Zostera hornemanni* and *nana*, and whenever I was able to observe the American Wigeon feeding it was on these plants. Its feeding habits appeared identical to the Wigeon's—either up-ending in shallow water or grazing over the exposed flats.

In the latter half of February there is much display in the Wigeon flocks, and occasionally the American Wigeon displayed with male and female Wigeon, usually aggressively when approached by displaying Wigeon.

The following description is taken from notes compiled between 17th January and 28th February:

Sometimes appeared slightly larger and bulkier than Wigeon. Head streaky grey, with bright creamy white crown and forehead, rather more extensive than Wigeon's and very noticeable in field when facing observer; in good conditions, green patch behind eye was glossy and very bright, especially when caught by sun; darker around eye; breast and flanks dark mauvy brown, a distinctive colour and much darker than Wigeon; underparts white; white patch in front of black under tail-coverts appeared more clearcut and obvious than on a Wigeon; upperparts darker vermiculated grey than Wigeon, but wings and tail similar. In flight it appeared darker than Wigeon and the white contrasted more strongly; even at rest the white on the wings looked more extensive, but this was probably due to the darkness of the body plumage; when swimming or grazing the size of this white patch was very variable, some days large and obvious, and on others appearing small and insignificant. Bill blue with dark tip; legs greenish. The bird was not ringed and the flight feathers were intact.

I found that the best method of locating it in the Wigeon flock was to search for the bird without a chestnut head; the striking feature was not that it had a grey and white head but that it did *not* have a chestnut one. The dark body was also a good character. On some days, with good light, the American Wigeon was very obvious, but several times in poor light I found it very difficult to pick out with binoculars from a flock of a thousand Wigeon half a mile off.

ROY H. DENNIS.

(This species has been recorded in Scotland about a dozen times, usually in winter. From 1948 to 1958 there were records in all but three years, but there has been none since. This is the second for East Inverness (see 1: 183).—Ed.)

Surf Scoters in Outer Hebrides and Solway

On 4th February 1965 I discovered a drake Surf Scoter in Broad Bay, near Stornoway, Lewis. Subsequently I saw it again on 7th and 9th February, and on 4th March.

It associated with small parties of Velvet Scoter; Common Scoter and Long-tailed Duck were also available for comparison. The Surf Scoter was diving with the Velvet Scoter and its behaviour was similar. On surfacing it could be picked out easily owing to the sun shining on the nape patch and the bill. The bird was seen from all angles, but though the nape patch flashed as it turned its head when preening, the one on the forehead was only seen under favourable conditions (40x telescope at $\frac{1}{2}$ mile rather than 1500 yds). At this range the bird could not be identified in cloudy conditions. When it was seen the sun was shining from behind me and the water was not too rough. The following description is compiled from notes taken at the time:

Similar size to Common and Velvet Scoters; whole plumage black except for two distinct white patches on head, the more conspicuous one on the nape and extending down back of neck, the other, smaller one, on the forehead; wings wholly black when raised and flapped as bird stood up in water; tail appeared more depressed and less conspicuous than in other species of scoter; bill large and very distinct, most certainly larger than in the commoner species, but exact shape not determined; colour appeared to be yellow and white, no red being seen, doubtless on account of the distance.

This is the third record of the Surf Scoter in the Outer Hebrides; one was shot near Stornoway in the winter of 1865—one hundred years ago—and a drake was seen in Harris on 4th September 1959 (*Scot. Birds* 1: 145).

N. ELKINS.

On 13th February 1965 I was watching Common Scoters at Southernness Point, Kirkcudbrightshire, with other members of the S.O.C. when I noticed a different bird in a raft about 200 yds offshore. Using a 35x telescope I identified it as a drake Surf Scoter. It was a black duck similar in size to the Common Scoters. On the back of the head was a squarish white patch tapering slightly down the nape. On the front of the head a second white patch extended back over the eye and slightly down the side of the head. The shape of the bill was scoter-like, with pinkish marks on the upper mandible, and it was separated from the white forehead by a band of black. With R. T. Smith and others I saw the bird again on 21st February. In good light we were able to see the orange on the upper mandible, and also the slight knob on it.

JOHN H. SWAN.

An adult male Surf Scoter was seen by me on the sea off Southernness on 14th and 21st February 1965. On both occasions it was in the company of Common Scoters and was seen to dive frequently, one dive being timed at 55 seconds. The bird was seen well in bright sunlight with 10x50 binoculars at 300-400 yds. The plumage was black with a conspicuous patch of white on the nape and a smaller one on the forehead. The bill was wedge-shaped, rather like an Eider's, but the colours were indistinct, apparently lemon-yellow, shading to orange on the ridge of the culmen, and with a small area of white at the base.

On 28th February 1965 two adult males, an immature male and an adult female Surf Scoter were seen by J. A. Bailey and me on the tide off Portowarren (near Port Ling), Kirkcudbrightshire. The adult males were similar to the one at Southernness; the immature male was sooty brown or dingy black with less distinct dirty white patches on nape and forehead and a dark wedge-shaped bill; the female was dull brown with paler cheeks and a distinctly wedge-shaped bill.

The birds were at first with Common Scoters but soon became detached, though they remained as a very close group of four. On one occasion one of the adult males displayed briefly to the female by deeply bowing his head before her, then, as she suddenly dived, immediately following her.

On 26th March a male and female were close inshore on a very calm sea with many Common Scoters at Portowarren. The male was slightly larger than a Common Scoter and I was now able to see that the bill, wedge-shaped and slightly convex on the culmen, was pale yellow shading to deep orange-red on the ridge and fading to pure white on the base, with a distinct round black spot close to the base of the upper mandible. The female, about the size of a Common Scoter, showed two dingy white round spots on the side of the face—one near the dark wedge-shaped bill, and the other at the ear-coverts. The male was seen with a small shellfish in its bill after a dive, and frequently displayed to the female for brief periods.

Four birds were seen at the same place by W. Austin, A. J. Smith and others on 14th March and 4th April, but none could be found on 16th April. There is a possibility that two pairs were involved on 4th April (requiring an extra female) but this is not certain.

The bird at Southernness was still there on 11th and 14th March at least. The two places are only a bit more than 5 miles apart, but the overlap of dates and the fact that four

birds were regularly seen at Portowarren indicates that different birds were involved.

E. L. ROBERTS.

About noon on 23rd February 1965 M. J. Warren and I stopped to look at some duck in Luce Bay, Wigtownshire, just north of the junction of the B7005 from Wigtown with the coast road. Most were Common Scoters but in a small party $\frac{1}{2}$ mile from the shore we picked out one with white above the bill and at the back of its head—a drake Surf Scoter. The bird was examined with 60x telescope. Its general shape was like an Eider and slightly larger than the Common Scoters. The white rectangle on the back of the head and neck was most obvious when the bird had its back to us.

It was still there at 4 p.m. when we returned to the area. Next day we visited Southernness and checked that the drake Surf Scoter reported there was still present, so it seems fair to assume that they were different birds, as the two localities are about 50 miles apart.

E. S. CLARE.

(There is no previous report of a Surf Scoter in Wigtownshire, and only one for the mainland of the west of Scotland—Southernness, 1st January 1964 (*Scot. Birds* 3: 195). It seems clear that at least six birds were involved in these Solway records. One cannot be quite certain that this represents an unusual influx, or whether it is a matter of finding the birds, but it is more than 100 years since there was a reliable report anywhere in Scotland of more than single birds, and then only in Orkney. Usually they are seen in company with Velvet Scoters.—Ed.)

Montagu's or Pallid Harrier in Shetland

On 7th August 1964 I watched a juvenile Montagu's or Pallid Harrier at Quarsdale. It was perched on a post by the side of the road, oblivious of the passing traffic.

The breast and underparts were the most conspicuous part of the plumage, being a striking unstreaked chestnut-red. The upper plumage was light brown, with the part round the eyes a much lighter colour, almost white. The legs were long to very long, and thin, and yellow; the beak was hooked and dark with a light yellow hue; the eyes seemed dark with a yellow arc. The body was as large as a small female Peregrine, and was made to seem larger by the long, fairly narrow tail. No white could be seen on the rump.

In flight the bird was extremely rakish and graceful, with

a general appearance in the air not unlike a very large Kestrel. It seemed unwilling to leave the area and flew from peat bank to peat bank as I followed with my binoculars, but eventually it flew out of sight.

S. G. PARKYN.

(George Waterston discussed this record with the observer, and it was submitted also to I. J. Ferguson-Lees, who comments that the white rump in juveniles of both Montagu's and Pallid Harriers is sometimes largely obscured by the dark central streaks and rufous tips to the upper tail-coverts.

We are always very reluctant to publish records where the species cannot be established with certainty, but juveniles of these two harriers are virtually indistinguishable in the field. The one is almost as likely to occur as the other at the time and place of this observation. Montagu's has been recorded once in Shetland (*Fair Isle Bird Observatory Bulletin* 2: 178; *Scot. Nat.* 1956: 4) and the Pallid at least once at Fair Isle (*F.I.B.O.B.* 5: 35), where also a female of one or other has been noted (*loc. cit.*). Although Montagu's is a British breeding bird and the Pallid Harrier is only a rare vagrant, the former has declined recently in Britain and abroad, while the present bird was seen at a time when south-eastern European rarities were recorded in Britain.—ED.)

Snowy Owl in Angus

22nd January 1965 was a calm day with a heavy overcast sky and a slight haze. A thaw was promised but had not arrived to any extent. The fields were frozen hard as rock, and the brown earth was mottled with old snow. As I motored on hard packed snow at the foot of the Angus glens, 3 miles west of Kirriemuir, suddenly I saw a large white bird with round head and yellow eyes sitting in a field of winter wheat only 10 yards from the road. I stopped the car and wound down the window, and the bird rose silently like a phantom—a magnificent and spectacular sight, and definitely a Snowy Owl. It was perfectly camouflaged, being exactly the colour of the snow and frozen earth. The wingspan must have been at least 4½ feet. The white wings were rounded and barred with brown, and there were some brown markings on the back. The bird flew off to the north, and although the wing beats seemed slow it was soon out of sight. It was, however, seen again nearby later in the day.

ISABEL F. LINDSAY.

Increase of Carrion Crow in South East Sutherland

Of the species which in recent years have extended their range northward in Scotland (see 1:253), none has made such a marked increase in south-east Sutherland as the Carrion Crow. A census taken during the years 1955-56 showed that the proportion of Carrion Crows did not exceed 15% of the crow population and may have been considerably less (see 2:184). From 1st November 1963 to 31st October 1964 a further and more detailed census revealed that Carrion Crow numbers had risen to 35% of the population, which shows a remarkable increase in less than 10 years.

Moreover, a large proportion of the Hooded Crows in south-east Sutherland are hybrids; pure-bred birds, which are abundant in north Sutherland and Caithness, have become increasingly scarce in the area. If the present trend continues it looks as if the Carrion Crow may before long displace the Hoodie in south-east Sutherland.

D. MACDONALD.

Current Notes

Compiled by P. J. B. SLATER

(Key to initials of observers : R. W. Adamson, D. R. Anderson, R. S. Baillic, E. Balfour, J. Ballantyne, Miss P. G. Baxter, J. A. Begg, A. P. Bell, H. Boase, W. Brotherston, C. C. D. Budge, Caithness Group per D. M. Stark (Caith Gp), R. G. Caldow, A. H. Chapman, P. A. Clancey, D. G. Clayton, J. L. S. Cobb, D. Coutts, J. R. Crawford, G. M. Crighton, Miss M. H. E. Cuninghame, W. A. J. Cunningham, N. P. Danby, R. H. Dennis, E. Dicerbo, R. C. Dickson, H. E. M. Dott, J. Dunbar, N. Dymond, W. M. M. Eddie, J. Edelsten, Dr W. J. Eggeling, N. Elkins, M. J. Everett, W. B. Ewan, Miss G. A. Fleming, H. A. Ford, I. M. Ford, J. Forsyth, H. Galbraith, H. S. D. Garven, I. Gibson, D. Glen (DGl), D. B. Gray, P. Grubb, D. Gwynne (DGw), Mrs H. S. C. Halliday, K. C. R. Halliday, A. S. Hawdon, J. A. D. Hope, D. C. Hulme, E. N. Hunter, P. F. James, Dr D. Jenkins, R. Job, T. S. Kelly, A. Kerr, M. Kerr, G. E. Land, D. Lea, A. F. Leitch, A. Macdonald, D. Macdonald, M. Macdonald, J. McEachern (JMCE), Major A. M. Macfarlane, Miss J. McFarlane (JMCF), J. MacGeoch (JMCG), H. McKenzie, I. McLachlan (IMcL), Dr H. I. C. Maclean, I. M. MacLean, Mrs M. J. C. Maclean, I. McMaster (IMcM), L. MacNally, J. Maxwell (JMx), R. Meekin, Prof. M. F. M. Meiklejohn, J. K. R. Melrose, Dr D. H. Mills, N. Morrison, W. M. Morrison, C. Murray, D. J. Norden, C. Ogston, D. W. Oliver, J. S. Oliver, W. G. Porteous, Mrs U. Pennell, A. D. K. Ramsay, G. A. Richards, P. Richmond, E. L. Roberts, D. Roxburgh, Dr M. Rusk, W. Russell, D. Shiels, J. H. Simpson, Mrs Simpson (Mrs S), M. Sinclair, A. J. Smith, Mrs E. M. Smith, R. T. Smith, R. W. J. Smith, T. C. Smout, T. Spence, D. M. Stark, R. Straton, C. Tait, I. Taylor, Miss V. M. Thom, W. P. Travers, R. J. Tulloch, L. A. Urquhart, K. Walker, G. Waterston, Mrs M. I. Waterston, A. D. Watson, J. Watt, G. T.

White, Miss V. Wodehouse, P. Wormell, W. Wyper, J. F. Young, B. Zonfrillo.

Unless otherwise stated, all dates refer to 1965).

Distribution

This section does not include observations made before 1st March 1965, except where such records are used to amplify more recent topics.

Up to six **Black-throated Divers** are reported as wintering near Torridon, Wester Ross (ENH), suggesting that the migration of some of these birds may consist of little more than a move to salt water. A concentration of 42 **Great Northern Divers** at Quendale Bay, Shetland, on 16th and 18th April, is unusual even for this favourite haunt (DC, WGP). There were 53 **Red-throated Divers** at Sands of Forvie, Aberdeenshire, on 2nd June and 22 on 11th, which is particularly interesting in view of the lateness of the dates (CO). A badly oiled adult of this species, which was found dead at Portmore Loch on 7th March, is the first recorded in Peeblesshire (EMS, RWJS).

Nine **Great Crested Grebes** were present at Morton Lochs, Fife, on 25th April (CT), and the record number of three pairs subsequently nested there (see 3: 84, 141) (RJ). A **Slavonian Grebe** in summer plumage was also there on 26th April (RJ, CT), while another was seen at Burrafirth, Unst, Shetland, on 13th (RJT, GW), and 22nd June (WJE). Two migrant **Black-necked Grebes** are reported on fresh water: one at Forfar Loch, Angus, on 1st April (HB), and the other at Gladhouse, Midlothian, on 2nd May (EMS, RWJS).

An exceptional date to find a **Sooty Shearwater** in these northern waters is 16th June, when one was seen between St Kilda and the Sound of Harris, Outer Hebrides (WJE). Single 'Blue' **Fulmars** are reported off Prestwick, Ayrshire, on 26th April (GAR), and on the cliffs at Crail, Fife, as last year (3: 198) (WJE).

A **Bittern** seen on an island near Scalloway, Shetland, on 17th May was found dead there two days later (RJT).

A male **Garganey** was at Loch Stiapavat, Lewis, on 24th April (NE); and the appearance of a pair at Caerlaverock on 25th April is only the second recorded occurrence of this species in Dumfriesshire (ELR). Of a number of reports of **Gadwall**, those from the isles are the most unusual: two at Balranald, North Uist, on 8th May (WJE); two males near Lerwick, Shetland, on 9th May, joined by a female on 22nd; and a single male at Loch of Hillwell, Shetland, on 16th and 24th May (WGP). A pair of **Pintail** was at Duddingston Loch, Edinburgh, from 27th to 29th March and there was a single male there on 5th and 8th April (DRA).

Scaup is an uncommon species in the Outer Hebrides: a

female was at Loch Valtos, Lewis, on 4th April and a male was seen near Stornoway on 3rd May (NE). June males are reported from Fife: at Elie Ness on 17th and at Kilconquhar on 29th (DWO).

Tufted Ducks breed rather locally in west Perthshire and it may therefore be worth mentioning that two pairs were present on Lochan-an-Daim, Schiehallion, on 16th May (TCS). A female **Pochard** with four young was present at Morton Lochs, Fife, on 20th June. Grierson records no nesting of this species in the area (2: 134), but this is not the first year it has taken place, as a female with two young were seen there on 19th August 1962 (CT).

June records of **Goldeneye**, all immatures, are of two at Sands of Forvie, Aberdeenshire, on 2nd (CO); and one at Wooden Loch, Eckford, Roxburghshire, on 13th (RSB). A male **Common Scoter** was seen on Loch Lomond at Luss, Dunbartonshire, on 3rd June (JMCE); and a pair was present on a hill loch near Fort Augustus, Inverness-shire, on 17th May (LM). This species appears to be holding its own on Islay as five pairs were noted there between 30th May and 8th June (LAU); this being the same number reported when the colony was originally discovered in 1954 (*Scot. Nat.* 1954: 131). The presence of a pair of **Goosanders** at Spiggie, Shetland, from 14th to 21st March (DC, WGP), is worth recording in view of the few occurrences of this species in the islands.

The latest reports of **Grey Lag Geese** not obviously on their breeding grounds are of 11 at Barr Loch, Renfrewshire, on 1st May (WMME); and a single bird at Scalpsie Bay, Bute, on 24th May (WW, BZ). Two **White-fronted Geese** are reported from Perthshire: one of undetermined race on the border with Stirlingshire at Flanders Moss on 29th March and a Greenland bird at Menteith on 25th April (VMT). The latest flock of **Pink-footed Geese** seen was of 34 birds at Carsebreck, Perthshire, on 15th May (VMT). Two stragglers were at Kinnardochoy in the same county on 30th May (JF); and a still later bird was one with an injured leg but still capable of flight which was seen at the Butt of Lewis on 6th June (NE). A blue-phase **Lesser Snow Goose** was present in the area of Middleton, Midlothian, between 20th and 27th April (JB, WB, VW). Up to 12 **Barnacle Geese** were seen in the Crieff area of Perthshire on various occasions between January and March (AHC, JRC); and odd birds were seen in South Perthshire during late March (PFJ). A single bird was also seen at Esperston Moss, Midlothian, on 28th April (JB). The last at Caerlaverock were 450 on 5th May (ELR): but there is a later record of one at Gutcher, Shetland, on 17th May (RJT). Summer records of Barnacle Geese on the Tay are subject to some suspicion because there are collections of

wildfowl in that area and birds are known to have escaped from time to time (see 2: 307). The latest report is that about 20 have summered for several years, and 23 were reliably identified flying over Newburgh on 12th June this year (WBE per TS). These birds were all apparently pure bred and it seems difficult to account for the large numbers purely in terms of escapes. A possible suggestion is that the flock consists of a nucleus of escaped birds which has proved attractive enough to hold wild birds which have joined it. It is remarkable that these birds have so seldom been seen by local ornithologists. Of a number of reports of **Canada Geese** three seen at Morton Lochs on 3rd April are probably the most interesting as being the first observed there (DWO).

Single **Whooper Swans** lingering into June have been seen at Loch Stack, Sutherland, on 9th; Loch Gowan, Ross-shire, on 13th (DCH); Borve, Lewis, on 6th and 13th (NE); Loch Asta, Shetland, on 16th (DC, GW); Forfar Loch, Angus, on 21st (GMC); and in Islay at Loch Conailbhe on 1st June and at Laggan Point from 30th May to 11th June (LAU).

The most interesting **Buzzard** record is of one at Seafield, Lerwick, on 19th June (WGP). Also outwith their normal range are pairs of **Hen Harriers** reported from Glen Lethnot, Angus, on 6th April (GMC), and from another Angus glen on 14th May (HB).

Osprey records from areas other than Speyside are particularly numerous this spring. They come from:

Mid Yell, Shetland—1 on 12th June (RJT).

Walls, Shetland—1, possibly 2, from 5th to 9th May (DC, RJT).

Fair Isle, Shetland—Singles on 2nd, 11th and 22nd May (RHI).

St Kilda—1 on 29th March (DGW).

Kildonan Glen, S. Uist—1 perched on telegraph pole on 7th May (WJE, DL, GW, MIW).

Glen Naver, Sutherland—1 on 27th May (HSCH, KCRH).

River Laxford, Sutherland—1 fishing on 23rd and 24th May (per GW).

Loch Ness, near Abriachan, Inverness—1 on 1st June (per GW).

Anstruther, Fife—1 going NE on 29th May (DWO).

Isle of May, Fife—1 going N on 26th May (MFMM).

Glenbuck, Ayr/Lanark—1 from 23rd May to 5th June (DR, GAR, WPT).

A male **Hobby** was found dead in Stornoway woods on 9th May (WAJC). Another, also a male, was at Burrafirrh, Shetland, on 16th June. The observer was able to approach in a car to within 15 ft, so that detailed notes of its plumage could be made (DC). Unusual places to see **Merlins** during the breeding season are Morton Lochs, Fife, where there was a male on 20th June (CT); and Lunan Bay, Angus, where one was seen on 22nd June (GMC).

Two **Red-legged Partridges** are reported at Rosemount Farm, Blairgowrie, Perthshire, on 29th April (VMT). Local enquiries reveal that birds of this species were reared and released in

1963 at Coupar and Dunsinane, both within a few miles of Rosemount (PFJ). Apart from odd birds at Fair Isle in late May (RHD), the only report of **Quail** is of one calling near Carmunnock, Lanarkshire, on 30th May (PAC).

After a very early bird seen and heard at Bowling, Dunbartonshire, on 7th April (RCD), the next records of **Corn-crakes** are also the most northerly. These are of one at Fair Isle on 2nd May (RHD); and another at Brims, Caithness, on the same date (Caith Gp). While the area between Kilantringan and Pinmore, Ayrshire, is a regular haunt of this species, ten heard on the night of 2nd June would seem to be a high count (GAR). The species is now seldom heard in the Lothians and one at Fauchledean, Winchburgh, West Lothian, on 11th May is the first near there in recent years (IMcM).

This is the first year that **Curlews** have been found breeding in Lewis. A pair with at least three young was discovered on 20th June (IMM), and another pair showing great alarm was found elsewhere on the following day (WAJC). The first **Whimbrel** are reported from Shetland on 26th April (RJT). There are several records of this species on passage during May and early June: the most interesting is the large count of 130-150 near Loch an Duin, South Uist, on 7th May (WJE, DL, GW, MIW).

Peak counts of **Black-tailed Godwits** on passage are of at least 67 at the Eden Estuary, Fife, on 11th April (CT); and over 60 at Glencaple, Dumfriesshire, on 18th April (ELR). Single birds were seen at Fairlie, Ayrshire (GAR), and Castletown, Caithness (Caith Gp), on 5th April; at Paisley Moss, Renfrewshire, on 13th May (IG, RM, GTW); and amongst **Bar-tailed Godwits** at Loch Indaal, Islay, between 30th May and 10th June (LAU). A single **Bar-tailed Godwit** present on Handa, Sutherland, on 15th May, is the first spring record for that island (GW).

The only **Green Sandpipers** seen were in Shetland: one or two on Fair Isle between 29th April and 7th May (RHD); one at Yell on 4th May; and one at Fetlar on 11th May (RJT). Single **Wood Sandpipers** were seen at Gladhouse, Midlothian, on 30th May (EMS, RWJS); at Bridgend, Islay, on 31st May (LAU); and at Unst, Shetland, on 23rd May (MS). Singles were also present on Paisley Moss between 15th and 19th May and on 30th May, while a pair was seen there on 15th and 16th June (RGC, HG, IG, RM, GTW). There were two very early **Common Sandpipers** in the south, followed by a number of reports at about the usual time:

4 Apr—1 at Port Ling, Kirkcudbright (RTS); 1 on the Nith at Thornhill, Dumfries (Jmx, JFY).

10 Apr—1 at Garvald, Midlothian (JB).

14 Apr—1 at Glencorse, Midlothian (AFL).

16 Apr—1 at Aberlady, East Lothian (ADKR).

17 Apr—1 at Yetholm, Roxburgh (RSB).

18 Apr—2 at Gladhouse, Midlothian (HAF); first noted in Angus (GMC).

A beautiful **Spotted Redshank** in summer plumage was calling over Tentsmuir, Fife, on 22nd June—an odd date (DWO). The first **Greenshank** to return to Lewis was at Grimersta on 30th March, and there were four there by 3rd April (NE). **Little Stints** are seldom seen in spring, but there were two at Tynningame, East Lothian, on 16th May (CT). Single **Curlew Sandpipers** in summer plumage are reported from Skinflats, Stirlingshire, on 4th June (IT); and Aberlady on 20th June (WR).

There have been unusually many reports of **Ruff** this spring:

Fair Isle—a reeve on 13th and 14th May (RHD).

Stornoway—1 on 3rd May (NE).

Montrose Basin, Angus—2 reeves on 28th April (GMC).

Eden Estuary—2 reeves on 24th May (DWO).

Aberlady—2 on 15th May (CT).

Paisley Moss—1 from 5th to 10th May (RGC, IG, GTW); 1 on 18th and 19th May (IG, RM, GTW).

New Cumnock, Ayr—reeve on 6th April (JAB).

An **Avocet** was seen preening itself near the lighthouse on North Ronaldsay, Orkney, on 5th May (KW).

An extension of the breeding range of the **Great Skua** is indicated by the discovery of two nests on North Rona on 27th May (WJE). The return of **Lesser Black-backed Gulls** to the Selkirk area was noted on 28th March (AJS); and there were two at Gutcher, Shetland, on 30th March (RJT). A **Herring Gulls'** nest was discovered this year on St Serf's Island, Loch Leven, where this species was first recorded breeding in Kinross-shire in 1961 (1: 459) (WJE).

A **Glaucous Gull** was seen at Loch Gorm, Islay, on 7th June (LAU); and an **Iceland Gull** was seen at Doonfoot, Ayrshire, on 7th and 21st June (GAR). A bird, supposedly an adult of this species, appeared on the *Carrick* moored on the Clyde in Glasgow for the second year running, as previously reported (3: 89, 265). The first seeds of dissent were sown in early March when it was suggested that the bird might be an albino **Herring Gull**, as its plumage and general appearance did not look right for an Iceland Gull (MJE). Further investigations on 15th and 22nd April revealed that the size and colour of the bill were the same as nearby Herring Gulls, as was the colour of the legs. The most interesting evidence is that a Herring Gull was seen displaying to the white bird, and mounting was observed, though without coition (LAU). It seems almost certain that the bird is a Herring Gull. Those who doubt this must hope for an opportunity to see it again next winter.

Highest counts of **Little Gulls** on the Tay are of 100 at Kingoodie, Perthshire, on 29th April (HB); 45 immatures at Lunding Burn, Tayport, Fife, on 8th May (RJ); and 60-65 immatures at Buddon Burn, Angus, on 29th May (AMM). Singles are reported from Gladhouse, Midlothian, on 2nd May (EMS, RWJS); Doonfoot, Ayrshire, on 7th May (GAR); Lochan a' Mhuilinn, near Amulree, Perthshire, where there was an immature with the Black-headed Gulls on 30th May (IMcL); and Scalloway, Shetland, where one which was present between 20th February and 12th March could sometimes be observed alongside seven other species of gull (RJT).

Since Coulson's list of **Kittiwake** colonies (*Bird Study* 10: 147) others have come to light in Lewis (see 3: 144). Two more, one of about 200 pairs round Cellar Head and the other of about 50 pairs on the cliffs south of Tolsta, were spotted from the air on 18th June (NE).

The first **Common Tern** reported, one at Elie Ness, Fife, on 21st April, was rather late (DWO). On the west coast there were four **Common/Arctic Terns** at Barassie, Ayrshire, on 24th April (ND); and five **Arctic Terns** at Doonfoot on 7th May (GAR). The earliest **Little Tern** was one at St Andrews on 26th April (JMcf); and there were at least six in the same area on 1st May (JLSC, DWO, TCS). The first to reach Stornoway did so on 2nd May (NE). The main arrival of **Sandwich Terns** was at the normal time but for two early records:

- 28 Mar—2 at Garlieston, Wigtown (ADW).
- 29 Mar—2 off Prestwick, Ayr (GAR).
- 9 Apr—1 at Fair Isle, stayed to 11th (RHD).
- 11 Apr—7 at Eden Estuary (CT).
- 13 Apr—6 at Brighthouse Bay, Kirkcudbright (PGB).
- 14 Apr—2 at Tynninghame (HAF).

This species is rare in Shetland where, apart from the Fair Isle record mentioned above, two were seen at Sumburgh on 18th April (DC).

There are the following reports of migrant **Turtle Doves**:

- Burrafirth, Unst—1 on 22nd June (HEMD).
- Fair Isle—up to 2 present from 13th to 29th May (RHD).
- North Ronaldsay—several in May and early June; peak of 5 on 26th and 28th May (KW).
- St Margaret's Hope, Orkney—1 on 5th June (EB).
- Crail, Fife—1 on 30th May (MFMM).
- Isle of May—several in late May (MFMM).
- Summerston, Glasgow—1 on 15th and 16th May (WR).
- Inverkip, Renfrew—1 on 31st May (DGI).

The first **Cuckoos** of the spring were at Mugdock wood, Stirlingshire, on 21st April (RSB); and Aberlady, East Lothian, on 24th April (ADKR). On 30th April there were two at Rowardennan forest, Stirlingshire (RCD); one was at Men-

teith, Perthshire (VMT); and another was at Millbuie forest in the Black Isle, Easter Ross (NPD).

A **Nightjar** appeared at Fair Isle on 27th May (RHD). Others heard churring have been singles at Glen Shiel, Ross, on 30th May and 1st June (GEL); and at Glen App, Ayrshire, on 2nd June, when two were also heard at Colmonell in the same county (GAR).

The main arrival of **Swifts** was, as usual, in the first few days of May, but at least one bird was very early:

25 Apr—1 at Raeburn Place, Edinburgh (APB); 1 near Dalkeith, Midlothian (DS).

30 Apr—1 over Meadows, Edinburgh (ADKR).

1 May—2 at St Andrews (JLSC).

2 May—3 at Kilconquhar (DWO); 2 at Portmore (HAF).

4 May—1 at Duddingston (MJE, RS); 3 at Balmaha, Stirling (RCD); 1 at St Andrews (JMCF); 1 at Brechin, Angus (JD).

Two **Swifts** in an unusual locality were seen at Stornoway on 17th and 26th June (NE, IMM).

Four **Hoopoes** have been reported this spring: one at Loch Stack, Sutherland, from 16th to 19th May (NM, GW); one at Nigg, Easter Ross, on 12th May (CCDB); one on Eigg from 18th to 26th May (HICM); and one near Temple, Midlothian, on 9th May (DGC).

Considering the size of the county, it is not surprising that a **Green Woodpecker** seen near Alva on 16th April is the first to be recorded in Clackmannan (IT). Odd **Wrynecks** were seen on Fair Isle between 3rd and 25th May (RHD), and one was found dead on North Ronaldsay on 8th May (KW).

Several observers have noted that **Swallows** were distinctly late this year, but the number of records in the first week of April would seem to contradict this:

28 Mar—a very early bird at Aberlady (JSO).

3 Apr—2 at St Andrews (JLSC).

4 Apr—1 at Kilconquhar (DWO); 2 at Tynninghame (CT).

5 Apr—at least 1 on Fair Isle (RHD).

6 Apr—1 at New Cumnock, Ayr (JAB).

7 Apr—first noted at Thurso (Caith Gp).

The first **House Martins** were also at the usual time, if not slightly early:

17 Apr—2 at Buchanty, Perth (JW).

18 Apr—first birds near Lasswade, Midlothian (NPD).

26 Apr—3 at St Andrews (JLSC).

2 May—2 in Edinburgh (MM); 1 at Kilconquhar (DWO); first birds at Thornhill, Dumfries (JFY).

Sand Martins were well up to time, with many reports for the first few days of April:

29 Mar—1 at Endrick Mouth, Stirling/Dunbarton (RSB).

1 Apr—1 at Earlsferry, Fife (PGB).

2 Apr—5 at Kilconquhar (DWO); 6 at St Andrews (MHEC); 6 at Possil Marsh, Glasgow (DJN).

3 Apr—1 at Applegarthtown, Dumfries (RTS); 3 at Dunbar, East Lothian (HAF); 1 in Perth (CM).

An unusual occurrence was that of three Sand Martins in Stornoway on 5th May and one on 8th May (NE).

All of the five **Golden Orioles** seen this spring were in the islands. Records from the north are of an immature male at Scatness, Shetland, on 6th June (WGP), and a female near St Margaret's Hope in Orkney on 5th June (EB). Those in the west were all males seen the previous week: one on Iona, Argyllshire, on 27th May (HSDG); one at Carloway, Lewis, on 29th May (WAJC); and one on Coll, Argyllshire, on 31st May and 1st June (GAF).

An unusual locality for **Maggies** is Loch Meig, Easter Ross, where two were seen on 2nd and one on 7th April (DHM). A 'black crow with curved red bill and red legs'—undoubtedly a **Chough**—was seen in Clett, Stroma, Caithness, during May (Mrs S per DMS).

A **Great Tit** which was present in Castle Woods, Stornoway, on 5th April, was probably different from the bird which wintered there (3: 266, 322) (NE). Since 1963, when they first bred there (2: 440), **Blue Tits** have become widespread in these woods (WAJC). The first **Coal Tits** in Lewis for 50 years were two seen in Castle Woods on 2nd April, one of which was still there on 11th. There is a possibility that they bred as a pair was seen elsewhere in the woods on 30th May (NE, IMM).

A **Dipper**, showing the characteristics of the black-bellied race, was seen feeding in the only stream on North Ronaldsay on 4th April (KW).

The main passage of **Fieldfares** took place at Fair Isle in early May, with 500 birds present on 3rd and 4th (RHD). There are two records of single birds lingering into the summer: one at Glenglassaugh, Banffshire, on 28th June (JE), and the other at Eddleston, Peebleshire, on 4th July (JADH). The first **Ring Ouzels** appear to have been late, with three males at the Grey Mare's Tail, Dumfriesshire, on 30th March (RWA, ED), and two males at St Mary's Loch, Selkirkshire, on 31st (HAF), the only birds seen during that month.

The first **Wheatears** were very late but the large number of reports of this species in late March and early April suggests that the main arrival took place at the normal time:

28 Mar—cock at Beattock, Dumfries (RWA, ED); 1 at Elie Ness (DWO).

29 Mar—5 males at Grey Mare's Tail (RWA, ED); 1 at Thornhill, Dumfries (JMX); 4 at Dunure, Ayr (GAR); male at Gullane Point, E. Lothian (HAF); 2 at Endrick Mouth (RSB).

30 Mar—1 at Gretna, Dumfries (JKRM); 9 at Summerston, Glasgow (WR); first male at Fair Isle (RHD).

A **Whinchat** at Largo Bay, Fife, on 30th April is the earliest reported (DWO). On 1st May single birds were seen at Whim pond, Peeblesshire (ADKR), and at Loch Drunkie, Perthshire (VMT). The first **Redstarts**, all males, were one at Hule Moss, Berwickshire, on 9th April (HAF¹); and two at Yetholm, Roxburghshire, on 16th April (RSB), when there were also two on North Ronaldsay (KW). A cock **Black Redstart** was seen on Fair Isle on 29th April (RHD), and a hen was at Aywick, also in Shetland, for over a week from 6th May (RJT).

A **Grasshopper Warbler** was heard and seen at Inverness on 29th April (WMM); the only other April record is of one at Possil Marsh, Glasgow, on 30th (RSB, DJN). One was on St Kilda on 1st May (PG), and the first migrant appeared on Fair Isle on 3rd (RHD). Rumours from Culloden, East Inverness, for several summers were confirmed on 6th June and later, when one was heard and seen, but there was no proof of breeding (JMcG, UP, MR).

The first **Sedge Warblers** were rather late with no April records:

2 May—1 at Kilconquhar (DWO).

3 May—7 at Martnaham Loch, Ayr (GAR); 1 at Barns Ness, E. Lothian (AM).

4 May—first in Angus (GMC, JD).

6 May—1 at Summerston (WR); 1 at Thurso (Caith Gp)

Two **Icterine Warblers** have been seen in Shetland: one on Fair Isle on 8th June (RHD); and the other at Voxter on 26th June (RHD, RJT).

A very early hen **Blackcap** was seen in Lerwick on 18th April (WGP). Other April birds were three singing in St Andrews on 29th (JLSC) and a pair at Largo Bay, also in Fife, on 30th (DWO). Few reports of **Garden Warblers** have been sent in, so that the earliest birds appear to have been very late: one in the Girvan valley, Ayrshire (GAR), and one at Brechin, Angus (JD), both on 11th May. One singing in Bridgend woods between 9th and 11th June is the first recorded on Islay (LAU); it is also an unusual species in Peeblesshire where one was singing at Walkerburn on 29th and 30th May (JB). No **Whitethroats** were seen during April:

1 May—1 singing at Whim pond, Peebles (ADKR).

2 May—1 at Kilconquhar (DWO).

6 May—first at Brechin, Angus (JD).

9 May—2 at Saltoun, E. Lothian (HAF¹); 2 at Summerston, Glasgow (WR).

A **Lesser Whitethroat** appeared at Fife Ness with a movement of other warblers on 23rd May (DWO). Another was singing near Stenton, East Lothian, on 29th May (AK, MK).

The first **Willow Warblers** were definitely early:

1 Apr—1 at Gairloch, W. Ross (JE).

5 Apr—1 at Summerston (WR).

6 Apr—1 in Blackford Glen, Edinburgh (MM).

9 Apr—1 at Drongan, Ayr (DBG).

10 Apr—1 at Halleaths, Dumfries (RTS); 1 in Botanic Gardens, Glasgow (RSB).

Single **Chiffchaffs** at Loudon Castle, Ayrshire (GAR), and at St Andrews (MHEC), on 30th March were the first to arrive. The earliest reports from the north were of two at Stornoway on 4th April (NE); and one at Fair Isle on the following day (RHD). In South-east Sutherland one was singing at Skibo between 20th April and 24th June, and one was heard at Dornoch on 13th May, with two on 19th May (DM). In Islay numbers continue to increase, six being heard during the period 3rd to 11th June: two at Kildalton, two at Loch Ballygrant, one in Bridgend woods and one at Port Askaig (LAU). A **Wood Warbler** at Ardeonaig, Perthshire, on 9th May, is the earliest reported (VMT); one was singing at Saltoun three days later (IMF).

An exceptionally early **Spotted Flycatcher** was at Gosford, East Lothian, on 25th April (PR, WR); and there was one nearby at Gullane on 2nd May (JSO). The first at Staffin, Skye, was on 14th May (MJCM); and one had reached Fair Isle by the following day (RHD). Two **Pied Flycatchers** were as far north as Fair Isle on 29th April (RHD), and one or two were in Mid Yell from 4th May onwards (RJT). Further south the earliest was a male at Penicuik, Midlothian, on 1st May (ADKR). A male seen going in and out of a hole in a tree at Kishorn on 12th June is the first record for Wester Ross, although breeding remains to be proved (ASH). **Red-breasted Flycatchers** are much rarer on passage in spring than in autumn, but a fine male was watched for an hour at Whalsay, Shetland, on 25th June (JHS).

Except for one early bird, **Tree Pipits** seem to have arrived at the usual time:

10 Apr—1 at Buchanan, Stirling (RCD).

21 Apr—1 at Mugdock, Milngavie, Stirling (RSB).

26 Apr—3 at Mugdock (WMME); 1 at Bardowie Loch, Stirling (RSB).

29 Apr—1 at Rowerdennan, Stirling (RCD); first at Banchory, Aberdeen (per DJ).

The first **Yellow Wagtail** to return to Ayrshire was seen at Heads of Ayr on 30th April (GAR). In less usual localities, a female was at Elie Ness on 16th May (DWO); there was one near Uskvagh, Benbecula, on 10th May (DL, GW, MIW); and another on Stroma, Caithness, on 4th June (Caith Gp).

Two more **Great Grey Shrikes** have been seen (see 3: 322). One was two miles south of Moss-paul on the Roxburgh/Dumfriesshire border on both 9th and 12th April (TSK). The other arrived at East Yell, Shetland, during a fall of other migrants on 4th May (RJT).

A male **Hawfinch** was feeding a female or juvenile at Glen-carse, Perthshire, on 16th June (AHC). **Reed Buntings** have not bred on Cramond Island, Midlothian, before, but a pair showed signs of doing so on 23rd May (TCS).

The numbers of **Tree Sparrows** nesting in Scotland have tended to increase of recent years and this has drawn comment from several observers. This year the number of pairs at Newburgh, Fife, had increased to at least 12 (see 3: 268) (TS); 22 pairs bred in Kinnaird Park, Brechin (JD); and a pair nested again at Kinaldie Station, Aberdeenshire, where they were seen feeding young between 1st and 13th June (see 3: 149, 206) (CO). There has been a marked change in the status of this species in east Renfrewshire where it was formerly considered a rarity. It is now widespread and pairs feeding young were found this year at Busby and near Mearnskirck. Three nests were also discovered in Linn Park, Glasgow (PAC).

Earlier observations—before 1st March 1965

A **Black-necked Grebe**, which was seen at Kilmory, Rhum, on 15th March 1960, is the first recorded in the Inner Hebrides (PW).

The first **Arctic Terns** to be found breeding in South Fife were two or three pairs at Largo Bay in 1949 (3: 313). More recently, four pairs nested at the same place in 1958, but they have not been found there since (DWO).

A **Chough**, only the second recorded in Orkney, was seen on the cliffs at Windwick, South Ronaldsay, on 6th January (HM per EB).

A **Red-headed Bunting**, an adult male and therefore almost certainly an escape, was seen on St Kilda on 15th September 1964 (PG).

General observations—behaviour, plumage, etc.

A **Heron's** nest with the abnormal number of seven eggs, suggesting that two females might have been involved, was found at Skibo Estuary, Sutherland, on 20th April. The eggs did not hatch and a bird was still incubating on 17th June, at least a month after sitting would normally have stopped (DM). An **Oystercatcher's** nest at Newburgh, Fife, contained three eggs on 15th April, but there were five in it on 6th May, the large clutch size again suggesting that two birds had laid in the same nest (JW).

Albino birds are frequently reported, but leucism, an abnormal paleness of the plumage, is less often observed—probably because it is less obvious. Two leucistic **Blackbirds** were in Dornoch during June: the first of a uniform dove or silver grey was there from 1st to 10th, and the second, a pale ginger bird, appeared on 14th (DM).

R e v i e w s

Birds of Prey of the World. By Mary L. Grossman and John Hamlet. Photographs by Shelly Grossman. London, Cassell, 1965. Pp. 496; 353 photographs (70 in colour); line drawings include 644 flight silhouettes and 422 range maps; colour chart. 126/-.

Birds of Prey. Survival Books series No. 1. By Philip Brown. London, Deutsch, 1964. Pp. 124; 17 photographic plates (1 in colour). 25/-.

Now that most of the world has been covered by Field Guides to the birds of various regions, the trend seems to be towards larger tomes purporting to cover one aspect of ornithology for the whole world at one fell swoop. *Birds of Prey of the World* follows in this line and, true to form, it is large and attractive in layout, lavishly illustrated and rather expensive.

The book is in two parts, the first of which consists of five general chapters on the biology of the birds of prey and their relations with man. The main difficulty which the authors face here is that, by restricting themselves to the hawk-like birds and owls (only two of the twenty-odd orders of birds), they are taking a horizontal section of a subject which is usually split vertically. Particularly in the chapter on "Ecology and Habits," one feels that better examples of general phenomena might have been found outside these groups. Generally, however, this section is more taken up with examples to show the diversity of the birds of prey than with general rules which would also apply to other species. These chapters are definitely aimed at the general reader: the specialist will find them rather patchy in content, at times full of interest and information, but at others occupied with trivial details which would be better given under the individual species in the second half of the book. Inevitably the examples chosen reflect the origin of the book in having an American bias. Perhaps the most interesting chapter is that on "Birds of Prey and Men," which ranges widely over their association in religion, art and literature and covers also the history of falconry. The growth of ornithology is touched on here, while a separate chapter is given to the problem of conservation.

The latter half of the book is described inside the dust-jacket as a "Field Guide to the birds of prey of the world," but its size would certainly make it an encumbrance to those taking this literally. Each genus is dealt with separately, with a general introduction, a section on habits, and a detailed description of at least one of its member species. Plumage differences of other species and global variations within more widespread species are also included. These descriptions are largely made from skins, and the colours mentioned are related to a colour chart for exact comparison. The illustrations here include many photographs and drawings, but the most valuable features for the globe-trotting ornithologist are undoubtedly the distribution maps given for each species and the Peterson-type drawings to show the plumages characteristic of each species flying overhead. This section will also be useful to the taxonomist and will form a tempting catalogue for falconers.

I have left appraisal of this book's illustrations until last as they are undoubtedly its main selling point. The first half is so packed with photographs, both colour and black-and-white, that they occupy more space than does the text. As well as close-up portraits of a wide variety of species, there are action series of some birds showing them in flight or making a kill. While pronouncing all to be superb, I would single out the double-page study of a Golden Eagle in flight, and the series of a Peregrine killing a Pheasant, for the masterly way in which they convey the

power and fascination of these species. There may be few people who consider this book essential on account of the text, as much of the information can be found more conveniently elsewhere, but I have no doubt that, as a beautiful production, it will find its way on to the shelves of many an ornithological bibliophile.

Although similar in title, Philip Brown's book restricts itself to the British birds of prey and, being small and inexpensive, should achieve the wide readership at which it is aimed. It is written in a pleasantly colloquial style and contains many stories from the author's personal experience, so that it makes easy reading. There are ten chapters, the first eight covering the birds of prey species by species, giving brief accounts of their biology and history in this country, as well as stories of the author's encounters with them during a lifetime dedicated to protection. The last chapters summarise the difficulties involved in protecting them from human persecution, both direct and through toxic chemicals, and the book ends on a melancholy note by asking whether birds of prey in this country are doomed to extinction.

The main undercurrent is the need for protection, and the arguments employed are clearly intended to enlist public support for it. While sufficiently persuasive to convince most readers, the serious ornithologist will consider the author to have overstated his case. He condemns the irresponsibility of egg collectors and gamekeepers with some emotion and, in the case of the Golden Eagle, supports his accusations with what must surely be an exaggerated estimate of past population size. The useful habits of the birds of prey are stressed, while their bad ones are suppressed: a case of the grey being painted white to counteract those who would see it black.

If this book presents a one-sided picture of the aims of conservation, it will not be obvious to those for whom it is intended. Those who do not specialise in the study of birds will find it an interesting and moving account, and it is to be hoped that, having read it, they will be persuaded to support the important and difficult work involved in protecting our birds of prey.

PETER J. B. SLATER.

Birds of North Fife. With Summary Status of Birds in Angus, North and East Perth, and North Fife, and Bird Records at Loch Leven and Kinross. By Henry Boase. Unpublished typescript, 1964. Pp. (6) + 181 + (5); map.

Mr Boase's accounts of the birds of North Perth and Angus have already been reviewed in *Scottish Birds* (2: 266, 388), and with the *Birds of North Fife* he has now completed his review of the Tay faunal area. This is a magnificent achievement and one could only wish that it had been possible to publish all three accounts in a form which would enable their value to be more widely appreciated. Copies, however, have been deposited with the libraries of the S.O.C. and the Edward Grey Institute and with the Dundee Central Library.

This account opens with a short description of the more important bird habitats in North Fife, followed by a detailed systematic list which occupies 117 pages. In his foreword the author acknowledges that he cannot claim any substantial share of the detailed statements. As a result this account lacks the wealth of personal observation which was such a feature of the two earlier works, but the systematic list does represent a very thorough compilation from the published literature which will be invaluable to future workers in this area. A very high standard has been maintained throughout, and the only material error that calls for comment is that a record of a wintering Greenshank has lost its way

and appears, rather sensationally, under Common Sandpiper. Geographically-minded ornithologists should note that Mr Boase has included all records from the East Neuk. The boundary between the Forth and Tay faunal areas comes out in the middle of the East Neuk, and it appears to have been the practice of earlier writers to ascribe all records from this no-man's-land to South Fife.

The systematic list is followed by an account of the environmental changes that have taken place at Tentsmuir; a summary of the 1945 census of rookeries in North Fife, with a useful map; an analytical summary of the status of birds throughout the Tay faunal area and a detailed account of the migration observed there. The work closes with what is, so far as I know, the first full list of the birds observed at Loch Leven. This is a particularly useful compilation (again very largely based on the published literature), and its appearance is all the more welcome because it follows so closely on the announcement that this unique wild-fowl centre has been declared a National Nature Reserve.

This trilogy represents a major contribution to our knowledge of the status and distribution of birds in Scotland, and Mr Boase's election as an Honorary Member of the Scottish Ornithologists' Club will be welcomed as a fitting gesture of appreciation by all those who have admired his work.

DOUGAL G. ANDREW.

The Distribution and Food of the Cormorant in Scottish Inland Waters.

Freshwater and Salmon Fisheries Research series No. 35. By D. H. Mills. Edinburgh, H.M.S.O., 1965. Pp. 16; 5 maps. 5/6.

On fishing lochs and rivers Cormorants are usually shot at sight. Dr Mills now offers some facts in place of circumstantial evidence and exaggerated fears for the future of freshwater fish stocks. Clear maps show the main Scottish breeding colonies of Cormorants and the wide spread of recoveries of birds ringed at seven of them and on the Farne Islands; and also the distribution of numerous inland records, mainly in small numbers from September to April, on Scottish lochs and rivers. Analysis of stomach contents from Cormorants obtained inland suggests that they are not serious predators of salmon, but that they may affect brown trout fishing because of the size (up to 2½ lbs) of the fish they take.

ANDREW T. MACMILLAN.

Bird Taxidermy. The Shooting Times Library No. 18. By James M. Harrison. London, Percival Marshall, 1964. Pp. xiv + 67; 8 photographic plates and 14 line drawings. 10/6.

This book is the first British publication for several years on any type of taxidermy. It should provide all the answers for ornithologists who sometimes find an interesting corpse which they would like to preserve without having to incur the expenses of a professional taxidermist.

It is not intended to be a treatise on taxidermy, but in its 67 pages all the correct procedure is set out in easily followed stages, thus enabling the beginner or amateur to make a reasonable specimen for his collection. It must be stressed, however, that the book is only a guide and must not be blamed if the specimen does not attain perfection. Good, realistic taxidermy cannot be achieved by following a book. This comes only through experience, and requires practice, concentration and persever-

ance; but if the reader follows the procedures carefully he will one day be able to show his handiwork with justifiable pride.

I feel, however, that if the primary method of mounting a bird (ch. 2) had not been encumbered with the other methods described on pp. 39-42, there would be less chance of the amateur becoming confused and disillusioned by tackling unnecessary and complicated techniques. My only other criticism is of the workbench (pl. II), which is a direct contradiction to its title. The light, although from the window, is poor and should be supplemented by an extending lamp. The bench itself is too small for easy working, and the conglomeration of tools and materials does not help by being "to hand." The equipment required at one time to work on any specimen is so little that it is very easy, and so advantageous, to keep the working surfaces as clear as possible.

In all other respects I think that this inexpensive little book provides a great deal of constructive information which more than justifies its publication, and it will surely find its way on to many ornithological bookshelves, where it may well become a "Bible" for those who, until its publication, have been unable to attempt taxidermy, through lack of a guiding hand.

JOHN BISHOP MURRAY.

Requests for Information

National Wildfowl Counts. The Wildfowl Counts, which provided the detailed information on winter distribution used in the Nature Conservancy Monograph on Wildfowl in Great Britain, are now being extended to include surveys of breeding and summering wildfowl, in addition to the monthly counts for September to March. Many areas are unfortunately still very inadequately covered and new counters are urgently required, especially in the Glasgow area, the South-West and the North and North-East.

Anybody willing to assist with these counts (in any area, in winter and/or summer) is asked to contact Miss V. M. Thom, 19 Braeside Gardens, Perth, for details.

Marked Rooks. As part of the study of Rooks described in *Scottish Birds* 3: 229-230, over 700 Rooks have been marked in summer 1965 with conspicuous plastic wing-tags and colour-rings at Newburgh, Aberdeenshire. Sight records of these birds, which we believe have dispersed widely, would be very valuable in tracing the autumn and winter distribution. Records should be sent to Dr G. M. Dunnet, Culterty Field Station, Newburgh, Aberdeenshire.

Correction

Yellow-breasted Bunting. The bird on Auskerry, Orkney, recorded in the Summer number (3: 317), was seen on 22nd September 1964 not October.

STOP PRESS. The lecture at Prestwick on 20th October 1965 listed in the syllabus has been cancelled.

Official Section

THE SCOTTISH ORNITHOLOGISTS' CLUB EIGHTEENTH ANNUAL CONFERENCE HOTEL DUNBLANE, PERTHSHIRE 22nd to 24th October 1965

Friday 22nd October

- 5 to 7.30 p.m. Conference Office in the Hotel Dunblane opens for members and guests to register, and collect name cards and Annual Dinner tickets.
- 8 to 9 p.m.
- 6.15 p.m. Meeting of Council.
- 8.30 to 9.30 p.m. FILM AND SLIDE PROGRAMME in the Ballroom. At 9.30 p.m. excursion leaders will describe places to be visited on Saturday and Sunday afternoons.
- 9.30 p.m. to midnight Lounges available for informal discussions and refreshments (late licence).

Saturday 23rd October

- 8.45 to 9.15 a.m. Conference Office opens for registrations.
- 9.20 a.m. Official Opening of the Conference in the Ballroom. ADDRESS OF WELCOME by David J. Grant, Esq., Provost of Dunblane.
- 9.30 a.m. LECTURE, "Arctic Adaptations in Birds and Mammals" by Dr Finn Salomonsen (Universitets Zoologiske Museum, Copenhagen), followed by discussion.
- 11 a.m. INTERVAL for coffee and biscuits.
- 11.30 a.m. LECTURE, "Supplementary Notes on Arctic Adaptations" by Professor V. C. Wynne-Edwards (Natural History Department, Aberdeen University), followed by discussion.
- 1 to 2 p.m. INTERVAL for lunch.
- 2 p.m. EXCURSIONS by private cars leaving the Conference Hotel car park. Details will be posted on the Conference notice board.
- 3 p.m. MEETING for R.S.P.B. members in the Ballroom.
- 6 p.m. 29th ANNUAL GENERAL MEETING OF THE CLUB in the Ballroom.
BUSINESS:
(1) Apologies for absence.
(2) Approval of Minutes of 28th Annual General Meeting of the Club held in Dunblane on 24th October 1964 (see "Scottish Birds" 3: 213-214).
(3) Report of Council for Session 28.
(4) Approval of Accounts for Session 28.
(5) Appointment of Auditor.
(6) Election of new members of Council: the Council recommends the election of Miss Valerie M. Thom and William Brotherston to replace Dr J. W. Campbell and Alastair Macdonald who are due to retire by rotation.
(7) Any other competent business.
- 7.30 for 8 p.m. ANNUAL DINNER in the Diningroom of the Hotel Dunblane (dress informal).

Sunday 24th October

- 9.30 a.m. LECTURE. "Barnacle Geese in Spitsbergen" by Malcolm A. Ogilvie (The Wildfowl Trust, Slimbridge), followed by discussion.
- 11 a.m. INTERVAL for coffee and biscuits.
- 11.30 a.m. FILMS, "The Face of the High Arctic," describing the geological evolution, and "High Arctic," describing the fauna (National Film Board of Canada).
- 1 to 2 p.m. INTERVAL for lunch.
- 2 p.m. EXCURSIONS by private cars leaving the Conference Hotel car park.

Conference Office

Outwith the registration hours the Conference Office will also be open at intervals during the weekend for members to see the exhibits. A wide selection of new books from the S.O.C. Bird Bookshop will be displayed for purchase or orders. R.S.P.B. literature, Christmas cards, garden bird equipment and gramophone records will be on sale, and also a selection of B.T.O. literature and Christmas cards.

Film and Slide Programme

The programme from 8.30 to 9.30 p.m. on Friday evening is intended to give members and guests an opportunity of showing any new 2" x 2" slides or 16 mm films they have taken. These must however be submitted beforehand to the Conference Film Committee, and should be sent, **by 8th October at the latest**, to the Club Secretary, 21 Regent Terrace, Edinburgh 7. The slides should be titled and sent with brief notes on what will be said about them, to enable the Committee to make a selection and to form a good programme. It will not be possible to show material which has not been received by this date.

INFORMATION

(1) **Hotel Reservations.** All reservations must be made direct. Owing to the shortage of single rooms, members are urged to make arrangements to share a room with a friend.

(2) **Conference Post Card.** It is essential that members intending to be present should complete the enclosed printed post card and send it to the Club Secretary **not later than 18th October**. Because of limited seating accommodation, the Council regrets that members may invite only one guest each to the Annual Dinner.

(3) **Registration.** Everyone attending the Conference must register (10s each) at the Conference Office on arrival (for opening times, see Programme). Members wishing to attend only the Annual General Meeting do not require to pay the registration fee, which covers morning coffees and incidental expenses.

(4) **Annual Dinner.** Tickets for the Annual Dinner (price 25s inclusive of red or white wine or fruit cup, and of gratuities) should be purchased when registering. Members and guests staying in the Conference Hotel pay for the Annual Dinner in their inclusive hotel account, but must obtain a dinner ticket from the Conference Office, as all tickets will be collected at the Annual Dinner. No payments should be made in advance to the office in Edinburgh.

(5) **Other Meals.** Dinner on Friday evening is served in the Conference Hotel from 6.30 to 9 p.m. Non-residents will be able to obtain lunch on Saturday and Sunday by prior arrangement with the Hotel Reception desk.

(6) **Swimming Pool.** The indoor swimming pool in the Conference Hotel will be available during the weekend at no extra charge.

(7) **Excursions.** Members are asked to provide cars if possible and to arrange to fill their passenger seats; to avoid congestion in the car park the minimum number of cars will be used. Petrol expenses should be shared. The following maps cover the area: O.S. 1" Old Edition 62, 63, 66 and 67; New Edition 53, 54, 55, 60 and 61. Members wishing to go out on their own are particularly asked not to go in advance of led excursions to avoid disturbing the birds.

Hotel Accommodation in Dunblane

HOTEL DUNBLANE (HYDRO) (Tel. 2551). Special Conference charge: £7 (or £3 10s per day) inclusive of service charge. Details as follows: accommodation and all meals (except afternoon tea on Saturday) from Friday dinner to Sunday luncheon, after-meal coffees, and the Annual Dinner (inclusive of wines or soft drinks).

Residents for less than one full day will be charged as follows: bed and breakfast 40s per person, luncheon 13s 6d, dinner 17s 6d.

STIRLING ARMS HOTEL (Tel. 2156). Bed and breakfast 22s 6d to 25s.

***THE NEUK PRIVATE HOTEL**, Doune Road (Tel. 2150). Bed and breakfast from 21s.

***SCHIEHALLION HOTEL**, Doune Road (Tel. 3141). Bed and breakfast 18s 6d to 21s.

¶**ARDLEIGHTON HOTEL** (Tel. 2273). Bed and breakfast 17s 6d to 21s.

*These hotels are some distance from the Conference Hotel.

¶Situated near the Conference Hotel gates.

Hotel Accommodation in Bridge of Allan

ALLAN WATER HOTEL (Tel. Bridge of Allan 2293). Bed and breakfast from 40s.

ROYAL HOTEL (Tel. Bridge of Allan 2284). Bed and breakfast from 36s.

Members with cars who have difficulty in obtaining single rooms in Dunblane should find the above two hotels in Bridge of Allan have ample single accommodation. The distance from Dunblane is about 3 miles.

SUBSCRIPTIONS, COVENANTS AND BANKER'S ORDERS

Your subscription for the new session is now due and should be sent at once with the enclosed form to the Club Secretary or paid to Branch Secretaries. The winter number of the journal will only be sent to paid-up subscribers.

If you pay income tax at the full rate and have not already signed a seven-year Deed of Covenant, this is the way you can help club funds at no extra cost to yourself, as the tax we are allowed to reclaim on a subscription of 25s is nearly 18s. If only 50% of our members signed Covenants the club would gain an annual income of nearly £600, which could be used to give increased services through the journal and other publications, Conferences and lectures, more reference books for the Library, and in many other ways. May we invite you to use the enclosed form, which should be sent on completion to the Secretary, who will forward a Certificate of Deduction of Tax for signature each year.

A Banker's Order is also enclosed for the use of members who find this a more convenient way of paying the annual subscription; this should be returned to the Secretary and not to the Bank.

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 various centres and excursions are organised during the summer.

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 workers; (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 for members under twenty-one years of age and for University undergraduates. Joint membership is available to married couples at an annual subscription of 40/-. "Scottish Birds" is issued free to members but joint members will receive only one copy between them.

The Club-room, Reference and Lending Libraries at 21 Regent Terrace, Edinburgh 7, are available to members during office hours, and on Wednesday evenings from 7 to 10 p.m. during the winter months. The Club Bookshop is open during office hours for the sale of new books.

The official tie in navy or dark green (17/9, post extra) and Club badge (2/6) may be obtained from the Secretary, Mrs George Waterston, Scottish Centre for Ornithology and Bird Protection, 21 Regent Terrace, Edinburgh 7 (Tel. WAVERLEY 6042), who will also forward Membership Application forms, the Club Constitution and other literature on request.

The London Natural History Society

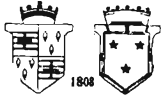
This Society, which covers all branches of natural history, has a strong ornithological section. Lectures, film shows, practical demonstrations and field meetings are arranged and research work is undertaken, most, though not all, of these activities taking place within the Society's area, that is within a 20 mile radius of St Paul's.

The Society operates a ringing station at Beddington and, jointly with the Kent and Sussex Societies, Dungeness Bird Observatory.

The London Bird Report, compiled by the Ornithological Section and published annually, includes papers, facts and figures of special interest to bird watchers in London.

Further details can be had from the General Secretary:

MRS L. M. P. SMALL,
13 Woodfield Crescent,
Ealing, London, W. 5.



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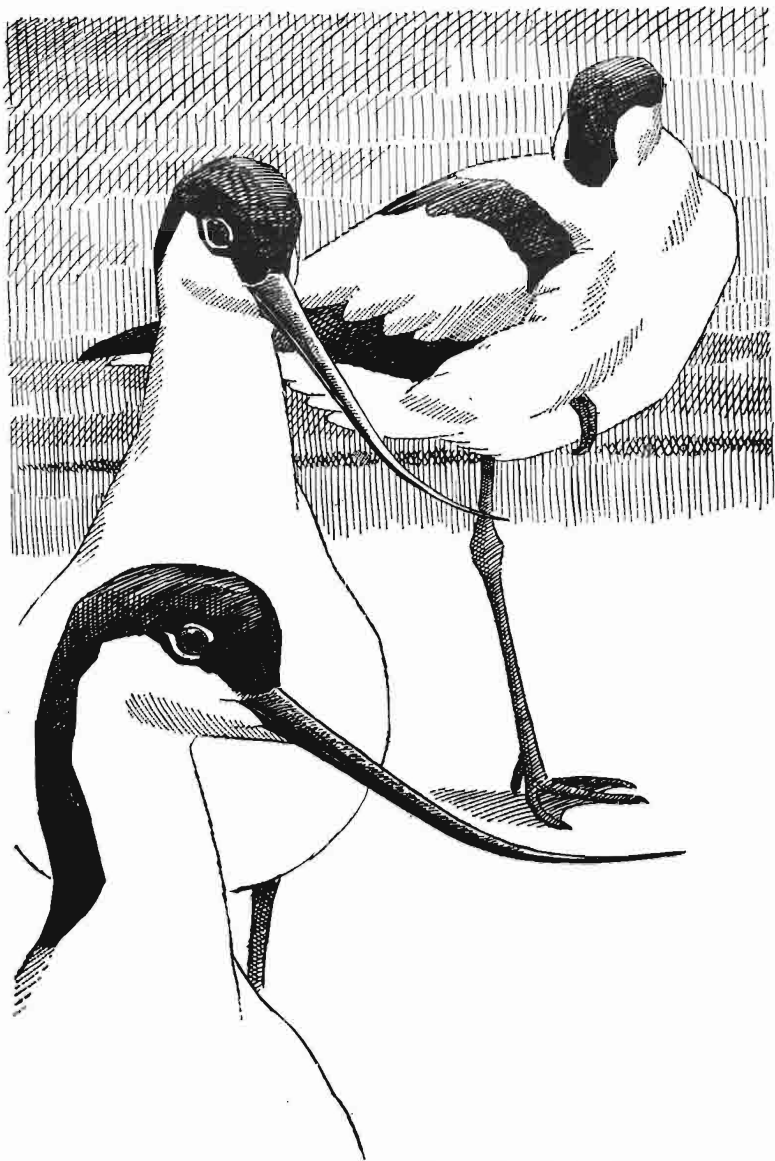
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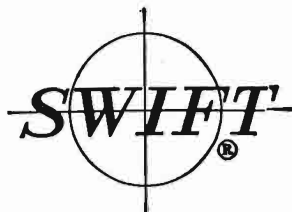
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