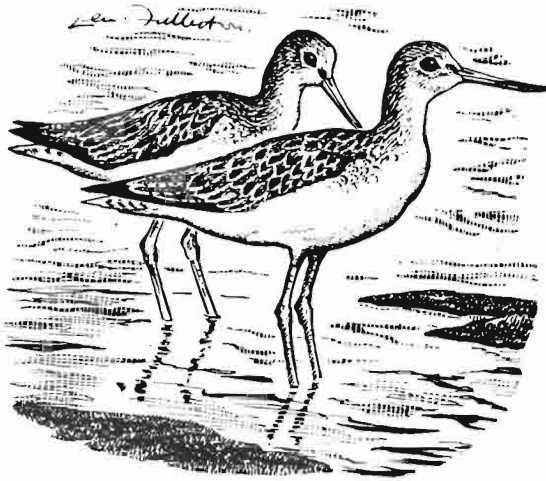


Scottish Birds



The Journal of The Scottish Ornithologists' Club

Vol. 3 No. 5

Spring 1965

FIVE SHILLINGS

Zeiss Binoculars of entirely new design:



Dialyt 8x30B



giving equal performance with or without spectacles

This delightfully elegant and compact new model from Carl Zeiss has an entirely new prism system which gives an amazing reduction in size. The special design also gives the fullest field of view—130 yards at 1000—to spectacle wearers and to the naked eye alike.

Price £55.50

Degenhardt

Write for the latest camera, binocular and sunglass booklets to the sole U.K. importers.

DEGENHARDT & CO. LTD · CARL ZEISS HOUSE
20/22 Mortimer Street · London, W.1 · LANgham 6097 (9 lines)

ZB.83

not the Kingfisher



Haith's are noted for the extent of their efforts to satisfy the needs of birds, ornithologists and aviculturists. Although the Kingfisher's staple diet is not part of our stock in trade we are able to satisfy the needs of most other species.

For two generations the Haith family has studied birds and their feeding requirements. The resulting knowledge backed by the advice of experts in avian nutrition enables us to offer an unrivalled range of foods and seeds which we are sure will satisfy the most demanding of ornithologists.

Just a few of our products are mentioned here. A comprehensive list of foods and seeds will gladly be sent on request.

HAITH'S WILD BIRD FOODS

WILD BIRD FOOD: 3½ lb 5/6, 7 lb 7/6, 14 lb 12/9, 28 lb 18/-, 56 lb 32/-, 112 lb 60/-.

FOOD for the TIT FAMILY: 3½ lb 6/9, 7 lb 11/-, 14 lb 19/3, 28 lb 31/9, 56 lb 60/-, 112 lb 115/-.

SONGSTER SOFTFOOD: 3½ lb 5/6, 7 lb 9/-, 14 lb 14/3, 28 lb 22/6, 56 lb 41/-, 112 lb 78/-.

SUNFLOWER SEEDS—MIXED: 3½ lb 6/3, 7 lb 10/-, 14 lb 16/9, 28 lb 26/9, 56 lb 49/-, 112 lb 95/-.

PEANUTS—Kernel and in shell—for bird feeding. Prices on application.

ALL POST OR CARRIAGE PAID

JOHN E. HAITH LTD., S.B., Park St., CLEETHORPES

**The definitive study of all birds of prey
and owls throughout the world**

**containing the most spectacular action colour photographs
in close-up of birds actually catching their prey**

BIRDS OF PREY OF THE WORLD

**"The most wonderful collection of photographs
of birds of prey I have ever seen"**

— JAMES FERGUSON-LEES

TO BE PUBLISHED 8 APRIL

**550pp. 12½ x 9½, 70 colour photographs, 283 monochrome photographs,
422 range maps, 644 flight diagrams, £6. 6s.**

Write now

**for a magnificent colour prospectus
with superb reproductions of birds in
action, a full-size specimen text page
and full details of the contents**

to the publishers:

**CASSELL & COMPANY
35 RED LION SQUARE · LONDON · WC1**

Scottish Birds

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

Contents of Volume 3, Number 5, Spring 1965

	Page
Editorial	217
Research at Culterty Field Station. By G. M. Dunnet, H. Milne, C. M. Young, J. D. Goss-Custard, I. J. Patterson and A. Anderson (plates 20-23)	219
Notes on the Corn Bunting in Sutherland. By D. Macdonald	235
Short Notes	
Cattle Egret in Dumfriesshire (W. Austin)	246
White Stork in Nairnshire and East Inverness-shire (K. Tuach; J. MacGeoch; L. MacNally)	246
Surf Scoter in Moray Firth (C. C. I. Murdoch, R. C. Parkinson)	252
Abnormal nesting behaviour of Eiders and Herring Gulls (J. L. S. Cobb)	252
Goshawk in Moray (J. R. Preston, P. E. Preston)	253
Little Bustard in Wigtownshire (F. W. Champion)	253
Dowitchers in Shetland and Dunbartonshire (E. A. Machell, M. Sinclair; R. S. Baillie)	254
Black-tailed Godwit breeding in southern Scotland (A. T. Macmillan)	256
White-winged Black Tern in Outer Hebrides. A new Scottish bird (G. Thomason)	258
Snowy Owl in Shetland (R. J. Tulloch)	258
Lesser Grey Shrike in Outer Hebrides (G. Thomason)	259
Current Notes	260
Reviews	
A New Dictionary of Birds. Edited by A. Landsborough Thomson. Reviewed by I. F. Stewart	269
The World of Birds. By J. Fisher and R. T. Peterson. Reviewed by W. E. Waters	272
The Oxford Book of Birds. By A. Watson and B. Campbell. Reviewed by O. T. Thompson	272
Proceedings of the First European Meeting on Wildfowl Conservation. Edited by J. J. Swift. Reviewed by G. Wat- erston	273
Biology of Birds. By W. E. Lanyon. Reviewed by P. J. B. Slater	274
Birds and Green Places. Edited by P. E. Brown and P. H. T. Hartley. Reviewed by D. Dewar	274
Scottish Wild Life. By D. Stephen. Reviewed by W. Brother- ston	274
Requests for Information	275
Official Section	276

Edited by Andrew T. Macmillan, 12 Abinger Gardens, Edinburgh 12.
Assisted by D. G. Andrew, T. C. Smout and P. J. B. Slater.
Business Editor T. C. Smout, 93 Warrender Park Road, Edinburgh 9.

ICELAND

AN ORNITHOLOGICAL TREASURE HOUSE

Some of the
200 species
which have
been observed
in Iceland:—

LITTLE AUK
PURPLE SANDPIPER
GREY PHALAROPE
BRUNNICH'S GUILLEMOT
SEA-EAGLE
SNOWY OWL
ARCTIC TERN
BARROW'S GOLDENEYE
HARLEQUIN DUCK

Spend the long summer days in this intriguing country. The enormity of the landscapes and the ever-recurring contrasts of the scenery are only now being discovered by the tourist. Its wealth in birdlife, not only in numbers but in the variety of the species has caused it to be described as "a real paradise for birdwatchers."

*Fly direct from RENFREW
by*

ICELANDAIR VISCOUNT

IN ONLY 3 HOURS

Daily Services Throughout the Summer

**SPECIAL REDUCED RATES
FOR GROUP TRAVEL**

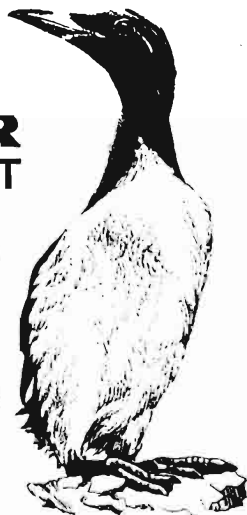
Consult your Local Travel Agent,
any Office of B.E.A., or,



ICELANDAIR

33 ST. ENOCH SQ., GLASGOW, C.I.

Telephone: CITY 3638



Scottish Birds

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB



Volume 3 No. 5

Spring 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 (Greenshanks) by LEN FULLERTON.

Editorial

Editorial arrangements. The principal difficulty in editing a scientific journal in one's so-called spare time is to find enough of that elusive privilege. When the present editorial team stepped into harness at the beginning of Volume 2 we were filled with good intentions about sharing the work. In practice, this is extraordinarily hard to arrange, in spite of everyone's willingness.

Domestic considerations have recently pressed to an increasing extent on editorial time. With each issue involving the writing of something like 250 letters or postcards to contributors—to say nothing of more time-consuming but more useful tasks—this creates a real risk of serious and inconvenient delays in publication, or of having to produce much simpler and abbreviated issues.

Therefore we are extremely pleased that we have been able to persuade P. J. B. Slater to join us as an assistant editor. At present doing post-graduate ornithological research at Edinburgh University, he has exactly all the qualities for which we hoped when we set out to find him—considerable ornithological experience, enthusiasm, some spare time, residence in Edinburgh, mastery of the written word, and a type-writer. Readers will have noted already his contribution to the Autumn 1964 issue, for which he compiled the Current Notes—undoubtedly the section which involves the greatest amount of work with the least to show for it.

Will contributors please note that the editor, Andrew T. Macmillan, has now moved to 12 Abinger Gardens, Edinburgh 12. Though in future Peter Slater will compile the Current Notes section, all observations should still be sent to Andrew Macmillan.

One simple way in which thoughtful contributors can help the editors very much is by submitting their everyday notes

at the correct time. Each quarter a large batch arrives immediately after the deadline. Consequently everything is held up while these notes are acknowledged, and they have then to be worked into the half-completed text; and so on for the best part of a week. Such notes should **reach the editor on or before the last day of March, June, September and December.** The worst possible time to send them is one day late, no matter whether the quarter ends on a Sunday or a Wednesday. Rarities are of course another matter: they should always be reported at once.

The B.T.O.—Birds and the Future. This is the title of a well produced appeal brochure (paid for anonymously by one of its members) issued recently by the British Trust for Ornithology. Complaint is sometimes heard that birdwatchers want their hobby on the cheap and are reluctant to put money into it. In part the reason could be that they really prefer not to be too organised. But if there are no birds there will be nothing to watch. Therefore there is good reason to support such central and influential bodies as the B.T.O. and R.S.P.B. The B.T.O. is seeking £25,000 in donations, covenants and legacies to pay for its essential new headquarters and to finance future work. The appeal has been directed mainly at members, but even if you have not yet joined, your money will be very welcome at Beech Grove, Tring, Hertfordshire.

“Highland Heronry.” Those who have to make up film programmes may like to know that they can now hire a copy of Charles Palmar’s prize-winning 16 mm colour film, with sound, from the Scottish Central Film Library, 16-17 Woodside Terrace, Glasgow C3, for £1.17.6d (see 2: 341).

Current literature. Recent publications include:

Report of the Nature Conservancy for the year ended 30th September 1964. London, H.M.S.O., 1964. Pp. vii + 173; map and 10 photographs. 13/-. Essential reading with plenty of Scottish interest.

Fair Isle Bird Observatory Bulletin. Vol. 5 No. 4, December 1964. Completes checklist of Fair Isle birds; also usual migration and other articles.

Predation and Red Grouse populations. David Jenkins, Adam Watson and G. R. Miller, 1964. *J. appl. Ecol.* 1: 183-195. Predation, by foxes and raptors, was mainly on dispersing surplus birds, and had little effect on numbers breeding or available for shooting.

The food of Ptarmigan (*Lagopus mutus*) in Scotland. Adam Watson, 1964 (published 1965). *Scot. Nat.* 71: 60-66.

Research at Culterty Field Station

(Plates 20-23)

1. Introduction

G. M. DUNNET

In 1957 the University of Aberdeen acquired Culterty, in Newburgh, Aberdeenshire, as a field station for the Department of Natural History (Zoology). Situated on the Ythan estuary, and with ready access to the Sands of Forvie National Nature Reserve, which forms part of its northern shore, the field station is ideally placed for ecological fieldwork. It consists of a large house standing in 5½ acres of ground, with salt, brackish and freshwater ponds. Part of the house is converted to laboratories, a temporary laboratory building has been added, and an additional new building is now under consideration. From 1935 onwards Culterty was well known to ornithologists as the home of Dr and Mrs H. Edgar Smith, who kept a large collection of captive waterfowl on the ponds. A small part of this collection remained when the University took over, and we still have about 40 geese and 30 ducks of several species. However, the emphasis has shifted from keeping birds in captivity to teaching and research, at undergraduate and post-graduate levels, within the general field of animal ecology. While in undergraduate teaching the whole of this field has to be covered, our research activities have necessarily to be more restricted, and at present we are concerned mainly with studies of populations of birds in relation to the communities in which they live. Even such restricted studies, however, require that a great deal of attention be paid to the invertebrate species which are the food of the birds, to plant communities and, as will be clear from what follows, to estuarine ecology. In addition to the studies outlined below, work is currently being done on water vole populations, and on the zoogeography of fleas.

Culterty is well endowed with a variety of interesting bird problems, and our ornithological investigations fall into two main categories, with one or two additional unrelated projects. The Ythan estuary (fig. 1) supports breeding populations of Eider and Shelduck and a smaller summer population of non-breeding waders. In winter there are growing numbers of Shelduck, about a third of the breeding population of Eiders, and a large and varied stock of waders. All of these birds feed on the invertebrates in the estuary, and we are trying to measure their demands for food and to relate them to the "standing crop" and "turnover" of the snails (e.g. *Hydrobia ulvae*), burrowing amphipods (e.g. *Corophium volutator*) and bivalves (e.g. *Mytilus edulis*, *Macoma balthica*) which seem to be the most important food items. The general problem can be understood only after prelim-

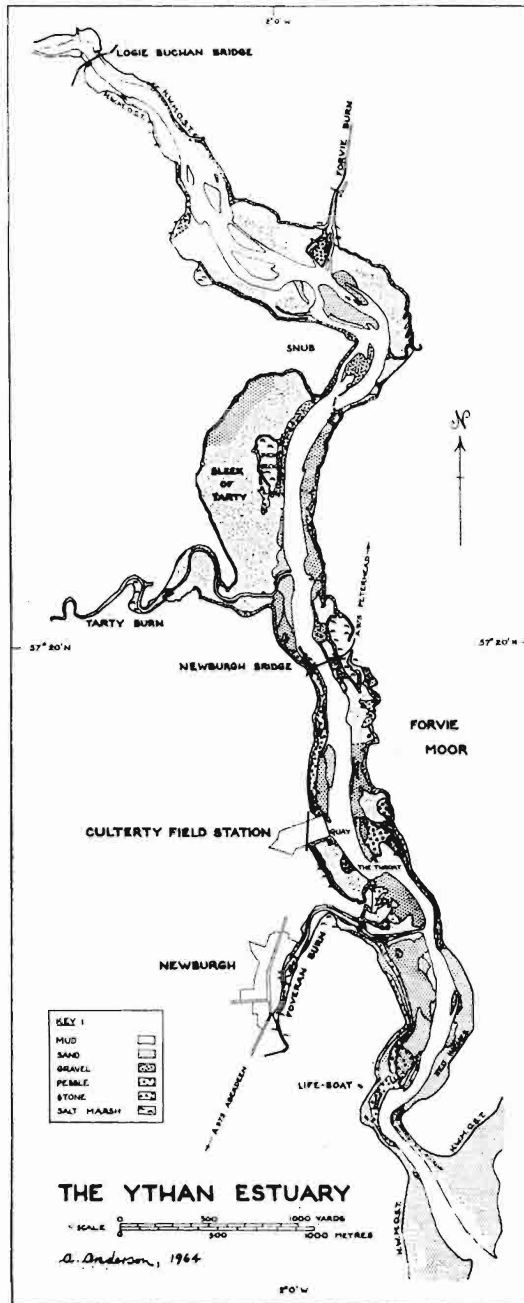


FIG. 1. Map of intertidal habits of the Ythan estuary.

inary studies have been carried out on the important elements, and coordination can come only later. The accounts given below of the estuary and its invertebrates, the Eiders, the Shelduck and the waders, are all parts of this long-term study of the estuarine community. In addition a study of flounders, which feed largely on the same food as the birds, is now under way.

The second group of projects relates to a study of the Rook which is being carried out with financial support from the Agriculture Research Council. This investigation is concerned with the population organisation and "natural" control of numbers in this very interesting species. It has been in progress for only one year, and now four people are involved in different aspects of the work.

Other unrelated investigations include a long-term study of Fulmars on Eynhallow in Orkney, and a study of Moorhens on the ponds at Culterty. Observations are made regularly on a colony of Starlings in nestboxes at the Field Station. In association with the Orkney Field Club, who now do all the fieldwork, a study of the dispersal of Cormorants from several colonies in the Orkneys has been in progress for some years.

In the following sections each investigator gives a brief account of his work and its more important conclusions. These accounts are summaries of work already published or to be published elsewhere. The full scientific data on which they depend are not included; these may be found in the more detailed papers. Much of the work is carried out by Ph.D. students, who require clearly defined projects which can be tackled independently, and this dictates to a large extent our general approach; but, especially with regard to the estuarine projects, it is more closely integrated than might appear.

2. The Ythan Eider population (Plate 21)

H. MILNE

Despite it being a widely distributed breeding species in the northern hemisphere, remarkably little detail is known of the breeding biology of the common Eider, and this project, which started in October 1960, was designed (1) to determine the seasonal distribution patterns of Eiders along the east coast of Scotland, and (2) to study their breeding on the Ythan estuary.

Previous observers (*e.g.* Smith 1960) had recorded that the population of Eiders on the Sands of Forvie was one of the largest on the mainland of Scotland and that part of this population was migratory, four ringed birds having been recovered in winter on the Firth of Tay.

Much of my work on distribution was based on regular

counts on the Ythan estuary and at various points on the coast south to the Firth of Forth. The counts on the Ythan showed a sedentary winter population of about 700-800 birds which is boosted to a summer level of about 3000 by immigrants. A breakdown of the total numbers into age and sex categories showed that there was a complete cross-section of the population present in both the migratory and sedentary flocks; genetic differences between them have been demonstrated (Milne and Robertson, in press). By means of ring recoveries and observations of wing-tagged (Anderson 1963) birds, the movements of Eiders from Forvie were readily followed. These showed that most of the migrants overwintered in the Firth of Tay, in the region of Lucky Scalp, where a large flock of Eiders was generally observed on every visit to that area, and confirmed the evidence from the earlier ring recoveries. The difficulties encountered, and the size of probable errors when counting sea ducks in such flat terrain as in the Firth of Tay, were adequately illustrated when counts made from the shore at low water were compared with counts made on the same day from a helicopter flying over the flocks on the water. For instance, on 13th February 1962 a count of Eiders roosting on Abertay Sands made from the shore at low water gave a total of 200-300 birds, whereas a count of the same flock by the same observer from the helicopter shortly afterwards showed a total of 5000-6000!

During the autumn moult into eclipse and the ensuing flightless period, Eiders were found on the east coast concentrated into two main flocks. One offshore at Murcar, near Aberdeen, consisted mainly of Forvie birds; the other was between Gourdon and Johnshaven, north of Montrose. The birds remained in these relatively undisturbed areas until their new flight feathers developed, and moved south in September-October to the Tay for the winter.

Breeding biology. The migratory birds remain in their winter quarters until the end of March, when they begin to move north again back to their breeding areas. In mid April there is a rapid increase in numbers, both in the Ythan estuary and along the sea-coast locally, most of the birds being already paired by the time they arrive at the estuary. Courtship behaviour within the flocks reaches a maximum towards the end of April and the birds start searching for nest sites on the moor usually in the third week of April.

Nests are scattered throughout extensive areas of moorland and marram grass in the nature reserve, so a plot of 40 acres was chosen as an intensive study area within which the history of every nest could be recorded. In the years 1961-63 egg laying started during the last week of April, but in 1964 despite a mild winter and early spring the bulk of laying was delayed until the second week of May. In all four years

there was a similar degree of synchronisation, with most of the laying occurring within three weeks of the onset.

The number of clutches in the study area was similar in 1961, 1962 and 1963 (117, 112, and 116 respectively) but different in 1964 (72). Clutch size remained fairly constant in the first three years at 4.47, 4.75 and 4.46 respectively, but in 1964 was only 3.98. Hatching success, however, was similar each year with values of 61.6%, 70.2%, 56.1% and 67.4% respectively. The chicks leave the nest within 48 hours of hatching, and little if any mortality occurred between the nest and the water, but once on the water mortality was usually very high and varied from year to year. Estimates of chick mortality from first reaching the water to fledging (at about eight weeks of age) produced some interesting and unexpected results. After two years of poor chick survival, 5.8% and 1.9% in 1961 and 1962 respectively, there was a bumper year in 1963 with a survival of over 40%, or about 1400 juveniles. In 1964, following the pattern of a reduced breeding rate, came a period of extreme chick mortality, and only two individuals were thought to have survived to fledge out of an estimated total chick production of about 2000.

Total counts at the beginning of each breeding season showed that the population level remained fairly constant at about 3000 birds from 1961 to 1963 but that an increase to nearly 4000 had occurred in 1964. The number of breeding pairs, calculated during the incubation period, was about 1200 in 1961-63 but only about 800 in 1964, despite a larger total population.

Crèche behaviour. A feature of the Eiders on the Ythan is the extent to which crèching, or brood amalgamation, occurs. Such behaviour is well known in penguins and has been described in a variety of other species, such as Sandwich Tern, Australian Pelican, flamingoes, common Shelduck, scoters and Long-tailed Duck.

The classic interpretation of crèching in the Anatidae is that it has developed as an anti-predator device on the principle that one large group of chicks has a relatively smaller perimeter to be guarded by parents than a number of separate small groups. Two obvious points of interest arose during the first year of this study: (a) crèching apparently does not occur in every breeding "colony," and (b) even where crèching was highly developed (as on the Ythan) mortality due to predation still remained high.

Broods usually begin to amalgamate on the moor, before they reach the water, wherever a number of broods come in contact with one another; the presence of "maiden aunts" at that time may hasten this response. By means of marked broods and individual females, it has been shown that a

crèche is not merely an amalgamation of a number of broods being cared for by the parent females, but is a mixture of chicks from a number of broods with a number of females in attendance. There is a great deal of interchange of chicks and females between crèches, and breeding females frequently leave the crèches and join the flock of moulting males elsewhere. At any one time, therefore, the females of a crèche may not be "guarding" any of their own chicks. Such intermingling of chicks and adults occurs from the first day on the water, and there is little or no parent-young bond formed under these conditions. Chicks readily attach themselves to the nearest female, and vice versa. In years of high mortality crèches were frequently spread out over large areas of the mudflats while the chicks were feeding, and the chicks tended to wander too far from the adult females. This left them particularly vulnerable to attacks by avian predators during the first three weeks of their lives and predation was often so heavy that one could sit on the river bank and observe it taking place. In the year of good chick survival the crèches were never so widely spread out on the feeding grounds, and the scattering of the chicks was greatly reduced.

At other breeding localities, such as Culbin in the Moray Firth, and along the Norwegian coast, and even in the very large colonies in Iceland, where the densities of chicks on the feeding areas are not so great, crèching may not occur at all, or only to a limited extent. Sometimes crèching takes place in these localities only after the young are 3-4 weeks old, by which time they are virtually free from predator attacks, and under these conditions chick survival is usually better than on the Ythan. The suggestion is that crèching results from high densities in which chicks are crowded on to fairly confined feeding areas with no strong family bonds, and is not likely to be an inherited characteristic of the species.

That fledging success can vary so markedly from one year to the next suggests that environmental factors affecting the population also vary considerably from year to year. Weather factors in June and July, such as temperature, rainfall and hours of sunshine, have apparently remained fairly constant over the four years 1961-64, and no correlation was found between chick survival rates and local weather conditions. The numbers of predators (Carrion Crows and Herring Gulls) in the area do not appear to have altered appreciably between years, and although predation and disease may have been directly responsible for the deaths of the Eider chicks, both of these factors are considered to be secondary mortality factors. Chicks examined immediately after death, or when taken alive from crèches, were found to be in very poor physical condition and showed signs of starvation. Lack of

a suitable level of food abundance for the chicks on the estuary is thought likely to have been the primary mortality factor in those years of poor chick survival, and work is now in progress to test this hypothesis.

Circumstantial evidence does suggest that in 1963 (the year of good chick survival) there was a much higher level of food abundance for the young Eiders on the estuary than in the other three years. During the winter of 1963-64 the young birds-of-the-year were kept on the perimeter of the adult flock and prevented from feeding along with the adults on the mussel beds. Winter mortality was high among first-year birds but almost negligible among adults.

So far no detailed investigation of the food requirements of Eiders, or of the amount of food available to the Forvie birds throughout the year, has been undertaken, but this will be one of the main lines to be followed in the immediate future.

3. The Shelduck of the Ythan estuary (Plate 22)

*COLIN M. YOUNG

*Prepared by G. M. Dunnet from Dr Young's data.

From December 1961 to December 1964 a detailed study was made of the common Shelduck living in the Ythan estuary. This species is migratory: the adults go to the German coast in late June and early July to moult their flight feathers after first assuming eclipse body-plumage. Three Ythan breeders have so far been recovered in the Heligoland Bight. Having moulted their flight feathers they return to wintering grounds where the nuptial plumage is acquired. Details of these wintering grounds are not known, but there seems to be a gradual return up the east coast of Britain from December to April, with, in Scotland, concentrations in such places as the Eden estuary and Montrose Basin. Adults begin to reappear on the Ythan in December and numbers gradually increase, with the full complement of 200-250 birds being present in mid April.

When they return to the Ythan the Shelduck gather in a flock on the extensive mud-flats of the Sleek of Tarty. They remain there as a flock for some months before gradually dispersing in pairs to take up territories on the intertidal muddy areas bordering the estuary. A trap was erected on the Sleek of Tarty and baited with barley, and over 200 Shelduck were caught (plate 22). These were individually marked with colour-rings and their subsequent dispersal to their territories was studied in detail over the years.

For a territory, Shelduck require an area of mud-flat of suitable consistency and a supply of the small snail *Hydrobia ulvae* which forms the great bulk of their food. On the Ythan, in each of the three breeding seasons, there were about 70

such territories, each occupied by a pair of adult Shelducks. This number of territories was remarkably stable throughout the study. The additional 100 or so Shelducks, which included young birds as well as many adults, some of which had bred in previous years, had no fixed station on the estuary but moved around in small parties, largely utilising areas apparently unsuitable for territories. Such birds were "surplus" to the territorial population and made no attempt to breed.

Of the territorial pairs, all appeared capable of breeding: all the males exhibited the pronounced growth of the bill knob associated with gonad activity, and all the females took on a gravid appearance due to the enlargement of the ovaries and oviducts. However, regular observation of the numbers of pairs and of single drakes on the territories (assuming that the missing female was incubating), showed that in each of the three years, less than 50% of the territorial pairs made any attempt to breed. Further, some pairs which bred in one year did not breed in the following, though they occupied the same territory with just as much food present in it. This is a very unusual situation and has great significance. As yet no mechanism can be put forward to account for it, but it is suggested that the social organisation of the population, and particularly the unexplained social gatherings of mainly non-breeding territorial birds of both sexes on the nesting grounds—the so-called Shelduck parliaments—may have a role to play in bringing about a reduction of breeding effort as a population regulatory device.

Shelduck with territories on the Ythan estuary nest mainly in rabbit burrows in the sand dunes of the Sands of Forvie, often a mile or more away. The site is selected by the female when the pair fly to the dunes usually early in the morning. Clutches varied from 5 to 11 eggs and were laid from the third week in April to the second week in June. The eggs are incubated for 26-31 days by the females only, who left their nests to feed with the drakes on the territories, as often as six times per day and for a total time of up to seven hours. When the eggs are about to hatch, the male once more accompanies the female to the nest, and when the young are about a day old they are led by both parents down to the estuary to specially suitable sheltered bays—*not* the parental territories. The brood is actively guarded against other aggressive territorial Shelducks and against predators. Large-scale crèching did not occur on the Ythan, but dyeing the young birds by injecting vital dyes into the amniotic cavity of the eggs before hatching revealed that considerable mixing of broods did occur, sometimes leading to aggressive behaviour of the adults towards the strange young. Young Shelducks fledge about 50-65 days after hatching, and in the early stages are preyed upon by gulls and Crows.

This study is of particular interest from the point of view of the natural regulation of animal populations. Much of the evidence suggests that the most important factor in the regulation of this Shelduck population is the socially induced reduction in the production of young birds by both non-breeding of adults and juvenile mortality.

4. The food relations of waders on the Ythan estuary (Plate 20)

J. D. GOSS-CUSTARD

Although several studies on the relationship between birds and their food supply have been carried out, there is still a great deal to be learned from quantitative studies. A year's observations of the waders on the Ythan suggest that the situation is very well suited to this type of study. Particularly attractive is the fact that the density of the prey on the various intertidal habitats (fig. 1) can be measured and mapped, and the numbers and behaviour of the birds feeding there can easily be observed. This report gives a summary of the preliminary observations carried out during the winter 1963-64 and outlines the future plan of work.

Regular fortnightly counts of the waders over the whole estuary were made from October 1963 onwards. The following species showed relatively constant numbers present during the winter, the figure in brackets referring to the maximum numbers recorded: Redshank (654), Dunlin (310), Knot (206), Oystercatcher (282) and Turnstone (104). Small numbers of Bar-tailed Godwits (6) and Grey Plover (8) were present throughout the winter. Occasionally, large flocks of Golden Plover (1390) and Lapwing (1500) were seen on the estuary, sometimes associated with a period of hard weather. Similar infrequent influxes of Curlew occurred but much smaller numbers were involved (79). In mid May about 300 Ringed Plover arrived and stayed for a short time. Only Oystercatchers were numerous during June and a few Redshank and Ringed Plover were present. The autumn migration began in the middle of July.

During these counts, records were kept of the type of substratum upon which the birds were first seen, and these data give good information on the preferred feeding sites of the various species. Redshank, Dunlin and Knot were almost entirely restricted to mud and mud/sand areas; Oystercatchers occurred on both these substrates but also to a large extent on mussel beds; Turnstone were mainly found on mussel beds and stony areas covered with brown algae under which the birds searched for food. In spring, however, for some unknown reason, Turnstone became most frequent on muddy areas.

A few waders feeding at various places on the estuary were collected during the winter and their gizzard contents examined. Owing to the small size of the samples and biased collection it is not possible to give an exact description of the diet of these birds, but the results show that almost all the larger invertebrates living in the mud are exploited to some extent by one or other of the waders. Any assessment of the abundance of the food would therefore have to include all these organisms.

It soon became obvious that it would be impracticable to work in detail on all the species of waders frequenting the Ythan and that some selection was essential. Suitable data can be collected only from species which are regularly present throughout the winter in sufficient numbers. Of the five species which can be included in this category, Redshank, Dunlin and Knot were found to feed in the same areas, thus enabling them to be studied concurrently with relative ease.

It was also necessary to select small areas in which to work in detail and this required knowledge of the distribution of both the birds and their food. From the fortnightly counts Redshank were found to be distributed all over the estuary during the winter in a fairly constant pattern, while Knot and Dunlin, which both form dense feeding flocks, fed at various places on the estuary during the early winter but became restricted almost entirely to the upper reaches from January onwards. Hard weather conditions changed the distribution pattern of all these species. The distribution of the food in these areas was investigated by taking samples of mud from various places all over the estuary and sieving them to separate out the animals. Areas could then be selected which were likely to be populated by all three species of birds during the winter and which, between them, contained all the potential food organisms.

As Redshank are the most numerous and convenient for study, the greatest effort will be expended on this species. It is proposed to investigate the general feeding ecology of these birds and to try to relate the various types of feeding behaviour and feeding rates to differences in the quality and quantity of their food supply. The effect of weather on the availability of the food to the birds, and consequent changes in the Redshank behaviour, will be studied in particular detail. The conditions under which the birds feed at night and in the surrounding fields will also be investigated. The major problem of relating the density of Redshank to the density of their food supply can then be elucidated. Comparative observations on the diet and feeding behaviour of Dunlin and Knot will be made whenever possible.

5. A population study of Rooks in the Ythan valley

G. M. DUNNET and I. J. PATTERSON

This study is concerned with relating the size and changes in size of Rook populations to their environment. Such an approach involves concurrent investigation of Rook numbers and social organisation, and food resources and their exploitation. We have selected an extensive study area comprising the 270 square miles of the Ythan valley, which is almost entirely arable land, to provide adequate background data on distribution and abundance, with which to compare the more detailed observations made in an intensive study area of about 6 square miles at Auchmacoy near Newburgh. The first survey of the rookeries of the Ythan valley took place in the spring of 1963, and this will be repeated annually; and the area is regularly traversed on a 56-mile circuit during which the distribution, numbers and, when possible, age of the Rooks seen are recorded. Intensive studies of breeding biology, dispersion and social organisation in the five Auchmacoy rookeries began in 1964. In this intensive area we are investigating the discreteness of these rookeries, which are clearly separate geographically, to see if their populations remain distinct and if their feeding areas overlap. A detailed study of the relation between these birds and their food is being undertaken by D. Y. Evans.

Only a little data is available at this early stage, but some information on the abundance of Rooks in the Ythan valley may be given. Though it is sometimes difficult to distinguish between a cluster of independent rookeries and a large scattered one, we counted in 42 rookeries a total of 13,085 nests in 1963 and 15,496 nests in 1964—an increase over the year of 18.4%. In some of these rookeries spectacular increases occurred even though large numbers of young are shot each spring, e.g. the rookery at Arnage increased from 340 nests in 1963 to 1059 nests in 1964. Of the 42 rookeries, 8 had 0-100 nests, 15 had 101-250 nests, 9 had 251-500 nests, 5 had 501-1000 nests, 3 had over 1000 nests and another 2 had over 2000 nests. These data represent a density of 57.4 nests per square mile in 1964, which is higher than anything recorded by Williamson and Cowin (1940). It is important to note that the number of nests in each rookery was not constant throughout the nesting season, but reached a peak at the end of April before declining again. The number of nests at the South Artrochie rookery, for example, rose quite steadily from 12 in mid February to 256 on 21st April. The number then dropped to around 210 for all of May and June. Such variations add considerably to the error in the census data.

In 1964, counts of the proportion of juvenile birds in the flocks found along the standard circuit show a decline from

about 25% of young birds in late June to a steady level of about 5% in December. This proportion of young in the population appears unlikely to replace adult mortality, and changes in population size, and survival and movements of both young and old birds will be carefully investigated.

Perhaps the most detailed published account of Rook populations are the papers of Dr C. J. F. Coombs in Cornwall. Even our preliminary observations show that our Rooks behave quite differently from the Cornish birds. Whereas these spent almost all of their time close to their rookeries throughout the year, spending the night at a large communal roost in winter (Coombs 1961), only a small proportion of the Auchmacoy birds seems to frequent the rookeries in mid-winter. Whether the remainder spend the day close to their winter roost at Straloch, near Newmachar, or whether they move further south for the winter has yet to be determined. It may well prove necessary to concentrate our winter observations on the populations of these winter roosts, and since some tens of thousands of Rooks go to the woods of Straloch from October to February, this will pose some rather difficult problems.

6. Moorhens at Newburgh

A. ANDERSON

Although territorial behaviour and breeding of Moorhens have been investigated by Steinbacher (1939) and Howard (1940), no population of individually marked birds has so far been studied. This project was started in 1959 to investigate further the territorial activities and breeding biology of a small group of Moorhens resident on the ponds at Culterty, and individually marked with unique combinations of coloured leg-rings and a serially numbered ring.

At Culterty 4½ acres comprise three ponds and their surroundings of woodland, marsh and garden, and the Moorhens are readily caught in funnel traps baited with bread. In spring and summer about five breeding pairs are easily observed there from hides. There is an influx of overwintering birds from late September onwards, and several of these have also been caught, bringing the total number of birds marked to 85. Since 1961, 49 juveniles have been colour-ringed to show their year of hatching. From December 1960 patagial tags (see Anderson 1963) were used in preference to coloured leg-rings, and this new marking system has proved highly effective.

The sexes are not readily distinguishable in the field, or even in the hand, but males tend to be larger than females in bill length, wing length, weight, and the length of tarsus plus longest toe. My thanks are due to the Wildfowl Trust, Slimbridge, for having provided me with 64 freshly-killed specimens, from which data on sex differences were taken.

Nesting. In February and early March the males were seen building rough platforms of vegetation or other material, either near the water's edge or in a low bush or tree. Two or three platforms may be built and, from mid March onwards, one is chosen by the paired birds for conversion to a nest. The rejected platforms may be used later, either as nests in which the young are brooded or as nests for later clutches.

Egg laying. Moorhens are capable of breeding when about one year old. Attempts by these young, inexperienced birds to breed were often frustrated by the aggressive behaviour of the older territory-holders who conceded to them only small territories, or none at all. The nine that were permitted to breed in their first year, in 1961, 1962 and 1964, laid from 26th April to 31st May, and therefore about one month later than the established adults, which laid first clutches from 21st March to 5th May in the same years.

One inexperienced pair, and also an inexperienced female with an experienced mate, each laid only one clutch in their first season. Both clutches were lost and not replaced. Two pairs of inexperienced birds laid replacement clutches, in one case 4 days, and in the other at least 4 days after loss of the first brood. A replacement clutch was also laid by an inexperienced female with an experienced mate 11 days after losing the first clutch. A pair in which the male partner was inexperienced but the female had bred in a previous year reared two broods in one season. At Culterty pairs with previous breeding experience are generally triple-brooded, with 6 to 13 eggs per clutch (mean 7.6 for 37 clutches).

In a small population of Moorhens, such as this, comparisons of the mean dates of laying of first clutches between years (13th, 14th, 10th and 4th April respectively, from 1961 to 1964) are not very meaningful, more so because of the very wide spread in laying. It is of interest nevertheless that the mean date of laying in 1963 (10th April) was not late, despite the protracted cold spells of the preceding winter and spring and the resultant late growth of vegetation. A clutch started on 19th March that year is also the earliest record for Culterty.

Incubation. Both male and female took part in incubation, which began either after the first egg was laid, or when the clutch was complete. In 1963 the individual eggs of 4 clutches (29 eggs) were numbered consecutively at laying, and the progress of their hatching was noted. The spread of hatching in one clutch of 11 eggs was from 17 to 24 days after completion of the clutch, and from 20 to 23 days in a clutch of 8, the marked eggs hatching in sequence. In the two remaining clutches of 6 and 4 eggs, where hatching was more or less synchronous (the entire clutch hatching within 48 hours), the mean incubation period for the total of 10 eggs was 22.3 days,

including the day on which the last egg was laid. Witherby *et al.* (1941) give an incubation period of 19-22 days—the figures presumably having been derived from clutches in which incubation was begun at different stages of laying.

Hatching success. Loss of the entire clutch was infrequent and usually resulted from flooding. Eggs were occasionally taken by rats, and possibly Crows, and at times eggs were kicked from the nest by an alarmed adult suddenly fleeing the nest. A few eggs failed to hatch because of infertility, and in some the embryo had died; other losses were due to desertion following disturbance. In 1962 nine clutches were completed and two of these were totally lost. The remaining seven had a 91% hatching success. Two out of 12 clutches were totally lost in 1963 and one out of 13 in 1964. The hatching success of the remaining clutches in those years was 75% and 82% respectively.

Territory. Observations on territorial behaviour were made from a hide; 11 consecutive hours on one day each month from early March to mid August 1963, and 9 consecutive hours per month from then till early June 1964.

In February males and females began to associate in pairs, became noticeably aggressive and claimed territories. These territories were actively defended throughout the breeding season, until about September, when the post-nuptial moult occurred. Each territory adjoined one or more neighbouring ones along parts of its perimeter. These boundary lines could be easily distinguished by observing particular displays which took place at points along their length. The display points were not recognised stances but occurred at any place along the boundary line, whether on land or open water, wherever contact happened to be made between two neighbours, whatever their sex. The remainder of the territory perimeter, on which no boundary displays were seen taking place, could be judged roughly by the extent of the movements of territory-holders within their territories, where the presence of other Moorhens was not tolerated. The size and shape of a territory changed only slightly from one month to the next. By mid September territorial displays by established birds were very infrequent and by early December they had ceased completely.

From the end of September onwards the breeding Moorhens spent much time together, along with the juveniles, in the most remote part of the grounds where cover was thickest. There they were joined by some adults and juveniles from the surrounding country and, given no human disturbance, all could wander freely over what had been breeding territories. At times during the winter resident Culterty birds were seen up to almost a mile away feeding in stubble fields

or pasture. By observing the movements of the marked resident birds at Culterty it soon became evident, however, that throughout the winter both males and females returned, often for several hours on some days, to their old territories.

During the course of observations made from the hide a tally was kept of the number of crows heard per hour throughout the day, to see if there was any correlation between crowing and territoriality. The data showed daily and seasonal variations in crowing rate. Crowing took place throughout the day and tended to be more intense at sunrise and sunset, as with song in many other species of bird. Crowing may therefore have some territorial function during the breeding season.

Unexpectedly, crowing intensity was greater during the non-breeding season than in the breeding season. Despite the Moorhens' continued association with territories in winter, winter crowing cannot, on the present evidence, be attributed to territoriality.

That the territorial behaviour of Moorhens limits the number of young birds breeding there for the first time is known (none was able to acquire a territory in 1963, for example); but it is not known what environmental factors are responsible for determining territory size, and hence the number of breeders, in any particular year. The availability of food, cover, or nest sites may, singly or together, be limiting factors. Only the importance of cover has so far been investigated, both by observation and experiment. Although further work requires to be done, it was found that the location of early nest sites was related to the spring growth of vegetation.

Ringling of Moorhens will continue at Culterty so that eventually a high proportion of the population will be of known age as well as individually identifiable. Data on longevity is meantime being accumulated.

7. A study of Fulmars on Eynhallow, Orkney (Plate 23)

G. M. DUNNET and A. ANDERSON

This long-term study which was begun in the summer of 1950 has continued, and still continues, without a break. It was initiated to investigate two problems in Fulmar biology—do Fulmars breed each year, and at what age do Fulmars first breed? The answer to the first question was quickly arrived at, but we are only now beginning to get answers to the second.

For long-term work of this kind we required a study area free from human disturbance, and were fortunate in getting permission from Miss J. Robertson of Kirkwall to study the Fulmars on Eynhallow, a small uninhabited island which has enjoyed the status of a local bird sanctuary for many years,

and where many of the Fulmars nest on the flat or on low cliffs, with very few of the nests inaccessible. Here, over the past 15 years, we have colour-ringed 335 adult birds and, with the aid of the Orkney Field Club in the last few years, over 2300 young Fulmars have been ringed in various parts of Orkney. Ringing long-lived birds, such as Fulmars, presents many problems relating to the durability of rings and the fading of colours. These have been discussed in detail by Dunnet, Anderson and Cormack (1963). We have also developed a method of sexing live Fulmars in the hand (Dunnet and Anderson 1961). With these two research tools, which enable us to know the birds as individuals and their sex, it has been possible to find out a great deal about the Fulmar's biology. Most of the findings have already been published (Carrick and Dunnet 1954; and refs. above) but they may be summarised here.

Some hundreds of case histories show that Fulmars do breed every year, and that this is normal in Orkney, rejecting the idea that they breed only in alternate years or at longer intervals (Wynne-Edwards 1939; Duffey 1950). The technique for sexing living birds has enabled us to investigate the behaviour of males and females in the early part of the breeding season—particularly in relation to the pre-laying exodus (when both birds are away from the island for about a fortnight immediately preceding egg laying) and the early incubation stints (the female sits for only a few hours after laying, while the male, when he takes over, usually incubates for about seven and sometimes 11 days without interruption; later stints of both sexes average about 5 days).

With about half the breeding adult Fulmars colour-ringed it is possible to estimate the survival rate of these birds from year to year, and the first analysis (Dunnet *et al.* 1963) gives a mean annual survival rate of 0.94, corresponding to a mean duration of adult life of 15.58 years. If young Fulmars do not breed until they are seven years old, as Fisher (1952) suggests (and see below), this means that the average age at which an *adult* Fulmar dies is about 23 years. This puts Fulmars among the longest-living birds.

Although from time to time over the years we saw birds which were probably ringed as nestlings, none was seen actually nesting, and none was caught and positively identified. However, this year (1964) we caught two such birds on the nest while they were brooding chicks. One was a 1956 and the other a 1957 nestling, and both *probably* males. Each occupied a site which had previously been used, and from which one of the previous owners was known to have moved elsewhere or to have disappeared. Neither site was used in 1963, so that it seems likely that both these birds, aged 7 and 8 years, were breeding for the first time.

This work is continuing in order to study the return of nestlings to the colony as breeding birds, and to obtain further evidence of survival and longevity in adult Fulmars. In 1964 four of the eleven breeding adults ringed in 1950 were seen again, and it will be useful to have data derived from a really long-term investigation.

References

- ANDERSON, A. 1963. Patagial tags for waterfowl. *Jour. Wildl. Mgmt.* 27, 2: 284-288.
- CARRICK, R. & DUNNET, G. M. 1954. Breeding of the Fulmar *Fulmarus glacialis*. *Ibis* 96: 356-370.
- COOMBS, C. J. F. 1961. Rookeries and roosts of the Rook and Jackdaw in South-west Cornwall. *Bird Study* 8: 55-70.
- DUFFEY, E. 1950. Non-breeding in the Fulmar *Fulmarus glacialis*. *Scot. Nat.* 1950: 111-121.
- DUNNET, G. M. & ANDERSON, A. 1961. A method for sexing living Fulmars in the hand. *Bird Study* 8: 119-126.
- DUNNET, G. M., ANDERSON, A. & CORMACK, R. M. 1963. A study of survival of adult Fulmars with observations on the pre-laying exodus. *Brit. Birds* 56: 2-18.
- FISHER, J. 1952. *The Fulmar*. London.
- HOWARD, ELIOT. 1940. *A Waterhen's Worlds*. Cambridge.
- MILNE, H. & ROBERTSON, F. W. Polymorphisms in egg albumen protein and behaviour in the Eider Duck. *Nature*, in press.
- SMITH, E. 1960. *Third Statistical Account of Scotland. The County of Aberdeen*.
- STEINBACHER, G. 1939. Zur Brutbiologie des Grunfussigen Teichhuhns (*Gallinula chloropus* L.). *Jour. fur Ornith.* 87, 1: 115-135.
- WILLIAMSON, K. & COWIN, W. S. 1940. The Rook in the Isle of Man. *The Naturalist* 15: 271-282.
- WITHERBY, H. F., JOURDAIN, F. C. R., TICEHURST, N. F., TUOKER, B. W. 1941. *The Handbook of British Birds*. London. Vol. 5.
- WYNNE-EDWARDS, V. C. 1939. Intermittent breeding of the Fulmar (*Fulmarus glacialis* (L.)), with some general observations on non-breeding in sea-birds. *Proc. Zool. Soc. Lond.* (A) 109: 127-132.

Notes on the Corn Bunting in Sutherland

DONALD MACDONALD

Introduction

The most detailed studies of the breeding habits of the Corn Bunting *Emberiza calandra* have been made by Ryves & Ryves (1934) in Cornwall, by Walpole-Bond (1938) in Sussex and by Woods (1950) in Hampshire. The following observations on the species were made in south-east Sutherland from 1957 to 1964, being rather more intensive during seasons 1960 to 1963. It may be worth mentioning that in the three southern localities the birds were found to be abundant, whereas in the present study area the species is very sparsely distributed. All times given are GMT.

Distribution, habitat and population

In south-east Sutherland the Corn Bunting is confined to a

narrow coastal strip extending from Skibo Estuary on the Dornoch Firth to Loch Fleet. This strip, which in only a few places exceeds half a mile in breadth, consists almost entirely of well cultivated farmland. Further inland where the arable countryside becomes intermingled with extensive areas of moorland and woodland the species ceases to exist. In the areas where the birds are established, however, they will hold territories right up to the edge of a wood. Corn Buntings haunt grassland, cereal and root crops without showing a preference for any particular crop. Generally, the habitat in south-east Sutherland agrees closely with that given for Aberdeenshire by Goodbody (1955).

Goodbody (1955) suggests as a possible reason why the Corn Bunting requires an open habitat, that it is an adaptation against predators as, owing to its clumsy flight, the bird is at a disadvantage when chased by a predator such as a Sparrowhawk. My experience has been that the Corn Bunting, when required to do so, can fly as fast as any other small passerine. Further, I have noted that when Sparrowhawks fly over Corn Bunting territories the male birds, instead of seeking cover, usually remain aloft on their song posts, where they continuously utter their raucous alarm notes until the intruder has gone. Moreover, there were one or two regularly-used song stances in the study area where a male Corn Bunting could easily have been captured unawares by a Sparrowhawk.

Corn Bunting flocks in south-east Sutherland rarely consist of more than 20 birds but in the adjoining area of Easter Ross, where the acreage of arable farmland is much greater, a flock of over 60 birds has been recorded. Throughout the period of this study the number of territory-holding males in the area remained more or less constant at about 30 birds.

Field characters

Plumage Several of the standard books omit to mention the dark "bib" or upper breast spot on adult Corn Buntings. When seen at fairly close range this spot is a prominent recognition feature and in some males it is so conspicuous as to appear like a smudge of black paint daubed on the bird's breast. One pied variety has been recorded in the area—a bird having its head feathers and several of its primaries flecked with white. Several albino and piebald varieties were listed by Walpole-Bond (1938).

Posture. The heavy flight and clumsiness of the Corn Bunting and its habit of flying short distances with its legs dangling have been referred to by several authorities (Coward 1920; Witherby *et al* 1938; Bannerman 1953; Peterson *et al* 1954). A close study of the species will show that these characteristics are true of the bird only during the breeding season, when observers are familiar with the male bird perched in a crouch-

ed attitude with drooping tail on some prominent stance. At other times of the year the species adopts a distinctly upright perching stance, the flicking of its wings and tail in a somewhat restless manner when disturbed being characteristic. Its posture or "gizz" then could well be described as sprightly. This change of posture appears to synchronize with the cessation of the flock call-note at the beginning of the nesting season and its resumption towards the completion of breeding. It is perhaps significant that I have not yet recorded a Corn Bunting flying with its legs dangling at any time during the period between late August and mid April.

Song

Song was heard in every month of the year except September. Autumn and winter song was infrequent and was usually heard in snatches on fine days while the birds were resting and preening in company. From February onwards, as the males began to seek territories, it became more frequent, and full song was attained with the permanent establishment of territories in late April. A considerable diminution occurred in late July and, apart from isolated cases, song ceased about the end of the first week in August. The latest date when song was recorded in the area was 24th August.

Witherby *et al* (1938) give the song rate as 6 to 8 deliveries per minute. This rate, however, can rarely be sustained for more than about two minutes. A more reliable indication of the average song rate was obtained by counting the number of songs delivered during 5-minute periods, when the rate, almost invariably, was found to range between 4 and 6 deliveries per minute.

The most remarkable singing performance was that given by a male which uttered 338 songs just within an hour on the evening of 5th July 1959. This bird delivered the first 209 songs without a break from the top of a drystone dyke; after a few seconds halt he added a further 63, and shifting a few yards along the dyke completed the remainder. It is perhaps worth mentioning here that a male possessing a thin squeaky voice, which was easily distinguishable from the normal song, remained unpaired throughout the 1962 breeding season.

Territory

Establishment and break-up. Howard (1929) found that male Yellowhammers and Reed Buntings first stake claims to a territory in February, when they visit selected areas at day-break and sing for short periods from their song posts. The Corn Bunting follows a similar pattern. The earliest date on which early morning song was heard in the area was 8th February. Visits to the territories at other times of the day were irregular until they were occupied permanently in late April.

Throughout the period of settling into their territories there appeared to be a marked absence of serious fighting amongst the male birds. What fighting there was consisted mainly of pursuits by rival males, occasionally followed by short scuffles. On one occasion, however, two males, whose song posts were only a short distance apart, were seen to buffet one another. Andrew (1956) states that conflicts are few and are mainly centred around song stances bordering two territories.

A sure indication of the break-up of territory was when some birds began to utter the flock call-note. The earliest date on which the resumption of this note was heard was 18th July.

Arrival of females. Although a female sometimes arrived in a male's territory by early May, the earliest recorded date being 2nd May, the majority of females did not come into the territories until June and others arrived even as late as July.

Song posts. The most favoured song posts were overhead wires such as electric cables and telegraph wires (where available), fences and drystone dykes. Trees, mostly isolated specimens, hay stacks and ricks, low bushes, and tall weeds growing in crops were also used extensively. More unusual stances recorded were the top of a molehill and the broad leaves of a turnip. Song was quite frequently uttered from the ground, but song in flight was a much rarer occurrence and was not observed more than half a dozen times in any one season.

Song posts in relation to nest sites. The distance between song posts and nest sites varied to a great extent, and ranged from 10 yards, or even less, up to 150 yards. Most males had two or more favourite stances, their distances from the nest sites often depending on the number of suitable posts available in the vicinity of the nest sites. Sometimes, however, a male regularly used a more distant song post although there were others available much nearer to the nest site.

Display

Courtship and posturing. The most conspicuous feature of the Corn Bunting's courtship is the male's display flight, which mainly consists of a short upward flight with fluttering wings and dangling legs, descending in a slow parachute-like manner. Males were also seen flying for short distances, rarely up to 50 yards, with legs dangling, but in my opinion these flights appeared to be lower-intensity variations of the parachute display flight and, as already stated, I have not observed these flights outside the breeding season. Wing fluttering with either one or both wings was quite frequent.

Toying with nesting material was another aspect of the male's courtship behaviour. On each of the few occasions when

it was observed a female was present. The male flits down from his stance and in a few seconds flies back again holding some nesting material in his bill; he then either drops the material after a few seconds or flies a short distance and drops the material before returning to his perch. On one occasion a male was seen to flutter his wings before picking up a wisp of dried grass and on returning to his perch dropped the grass and began to sing. Another male sang while still holding nesting material in his bill.

On 8th August 1960 I witnessed a form of display which, notwithstanding intensive observation, I have not seen repeated. The male bird of a pair whose nestlings had fledged three days previously was perched on an overhead wire near the nest site when the female came and alighted a short distance away on the same wire. The male, stretching out his head and neck with open bill parallel to the wire, fanning his tail, fluttering and drooping the nearer wing below his body and fluttering the other wing above his back, sidled up to the female. As he approached her she also lowered her head and opened her bill in a somewhat threatening attitude. Just as they were about to meet both birds quickly flitted apart. This unusual action was twice repeated in its entirety within the next few minutes.

Sexual flight and coition. The sexual flight or chase of the buntings has been vividly described by Howard (1929) who states that it takes place mainly in the early hours after day-break. Although no doubt it occurs with greater frequency in the early morning the sexual chase of the Corn Bunting was observed at various hours of the day. Normally it is of very short duration—a matter of seconds—but one particular chase which took place in the early evening lasted for well over a minute. The pair ranged over a distance of 200 yards, giving a superb display of turning and twisting, the male frequently overshooting the female in his frenzy, and even uttering a song in the middle of the chase.

In Cornwall and Sussex coition was noted frequently (Ryves & Ryves 1934; Walpole-Bond 1938). In south-east Sutherland, however, coition was much less often observed. The explanation may be that in south-east Sutherland, where the Corn Bunting confines its breeding to crops, the thick vegetation makes observation more difficult. Prior to coition females were sometimes heard to utter a rather low but penetrating *ist* note, the same as the "off-nest" note used during the incubation period. One female was seen rapidly fluttering her wings immediately following coition.

Injury feigning. Witherby *et al* (1938) refer to injury feigning as occasional. It was observed once only, when a female, flushed from her nest about midway through the incubation period,

instead of flying straight away as usual, fluttered slowly over the top of the corn stalks and alighted on a nearby fence.

Breeding

Nesting season. The peak period of nesting activity in south-east Sutherland was from early June until mid July. Four clutches were recorded as having been begun in May and in one of these the first egg could not have been laid later than 16th May, a date which would be regarded as early even in southern England (Macdonald 1960). In late July the number of new clutches laid dwindled considerably and there was one record only of a clutch begun in August. In Cornwall the nesting season begins in early June, July being the peak month, and a few fresh clutches being laid in August (Ryves & Ryves 1934). In Sussex it extends from about 20th May until late August (Walpole-Bond 1938), and in Shetland it does not begin until late July and continues throughout August (Venables & Venables 1955). Contrary to what one might expect, the nesting season in south-east Sutherland bears a closer resemblance to that of southern England than that of Shetland. In contrast to the other three areas, however, nesting in south-east Sutherland is almost finished by early August. There were no records of second broods and one only of a replacement clutch.

Nest site and nest finding. Of 35 nests found in the study area, all except one were sited in crops. The single exception was placed in a tuft of rank grass and thistles growing in a field of short grass where cattle were grazing. Twenty-two nests were in cereals (17 in oats and 5 in barley), 11 in hay or lush grass of a similar nature and one in a crop of tares. In Cornwall, where nesting in crops is infrequent, the Corn Bunting mainly nests in the low whin and bramble "jungles" adjoining arable land (Ryves & Ryves 1934). Although a constant lookout was kept, there was no indication that the species nests elsewhere than on farmland in south-east Sutherland. Quite often a nest was sited at the base of a prominent weed. Some nests were wonderfully concealed, particularly those built at the base of a thistle in hay and those screened by weedy undergrowth in corn crops. Nests built in cereal crops which had no undergrowth, usually had their foundations built into natural scrapes, but in a few cases the entire nest was placed on the flat surface between the narrow drills of grain.

Apart from chance discoveries when females were found in the act of building, the finding of nests was difficult. In a sparse breeding population it is useless to keep a lookout for females returning to their nests, as suggested by Walpole-Bond (1938). By far the better and more scientific method is to keep watch on the male bird (Ryves & Ryves 1934) because, if he is paired, one will sooner or later hear the distinctive

off-nest *ist* note of the female. Even when the location of a nest has been discovered it is another matter to find the actual nest in a growing crop, and one has usually to watch the female back two or three times before one can be fairly certain that a search will prove successful.

Nest building and the nest. Females were observed nest building at various times between 0700 and 1900 hrs. They sometimes carried what appeared to be excessive loads of nesting material, and on one occasion a female was seen flying with a long wisp of dried grass, more than twice her own length, which trailed behind like a banner. Male Corn Buntings often showed unusual activity and excitement while females were building. During an hour's watch at one nest site the male sang almost continuously, frequently shifting his stance, and building operations were twice interrupted by sexual chases. The female visited this nest site twelve times within the hour, bringing nesting material from an adjoining area of rough pasture about forty yards away. During each visit she remained down at the nest for one to two minutes. Another female brought material to her nest 13 times in 20 minutes, all the material being obtained about 12 yards from the nest site.

As nearly all the nests in the study area were situated in crops, and few could be searched for during the course of building, it was very difficult to assess the time taken in the building of nests and the time which elapsed between the completion of nest building and laying of the first egg. It did not appear, however, that nest building was a lengthy business in south-east Sutherland. At a nest where the female was watched carrying large wisps of nesting material on 19th July, and on the following day was again seen visiting the nest several times within a short period, presumably with nest lining, the first egg was laid on 23rd July. At three other nests the first egg was laid within five days or less after the females had been observed building. In Cornwall nests were completed in two to three days (Ryves & Ryves 1934), but in Hampshire the construction of nests took from 14 to 18 days, and five days sometimes elapsed between the completion of a nest and the laying of the first egg (Woods 1950).

The construction of nests showed considerable variation. Some were very well built and one particularly well made nest was $2\frac{1}{2}$ inches in depth. On the other hand, two nests, one of which was a replacement, built by the same female, were very flimsily put together, both being rather shallow and only $1\frac{1}{2}$ inches deep.

The clutch. The contents of 17 clutches consisted of four c/3, ten c/4 and three c/5. Out of a total of 52 eggs from clutches which hatched there were four infertile eggs, all from different clutches. In Cornwall addled eggs occurred in a number of nests but in Hampshire none was found (Ryves & Ryves

1934; Woods 1950). Notwithstanding the small number of clutches found in the study area the markings and ground colour of the eggs showed remarkable variation, and in shape, too, they varied, the eggs in some clutches being more elongated than in others.

Incubation and hatching. Corn Bunting females were found to be tight sitters and, although a bird would sometimes rise as one approached the nest site, the majority of females refused to leave until the surrounding vegetation was tapped one or more times. Females were flushed from incomplete clutches on several occasions. At a c/5 nest the female was flushed from two eggs at 1800 hrs on 10th July, and she was seen to leave the nest at 1730 hrs on 12th July when it contained four eggs. Another female was flushed from a nest with three eggs which held c/4 the following day, and a third female was flushed from a c/3 nest when it had only one egg. A fourth female was flushed from a c/4 nest at 1245 hrs on 23rd July, when it held one egg, and at 1500 hrs on 25th July, when it held 3 eggs.

Brooding periods usually lasted about an hour, but shorter intervals recorded were 30, 33, 38 and 43 minutes, and longer periods extended to 89, 90+, 108 and 117+ minutes. The off-nest feeding periods of females ranged from two to 29 minutes, but usually varied from 10 to 15 minutes. The females, which rarely fed less than 150 yards from the nest site, and frequently well beyond 200 yards, were usually accompanied on their feeding expeditions by the males.

On one occasion a male was seen to call the female off the nest. About 15 minutes prior to this occurrence the male became very restless, singing continuously and frequently shifting his stance. Eventually he fluttered low over the nest and the female came off. On another occasion when the same female having returned from feeding did not resume brooding for a further 21 minutes the male continuously uttered a raucous note, but immediately the female returned to incubate he began to sing.

Only one record of the full incubation period was obtained. The last egg of a c/5 was laid early on 13th July. Three nestlings hatched out before 1030 hrs on 24th July, a fourth between 1800 hrs on the 24th and 0730 hrs on the 25th, and the last later that day. Accordingly the period elapsing between the laying of the last egg and the hatching of the last chick was 12+ days, which agrees with Witherby *et al* (1938).

Out of a total of 56 eggs, 49 nestlings were hatched, which gave a hatching success of 87½%. Details were as follows: 3 clutches of c/3 produced 7 nestlings; 8 clutches of c/4 produced 27 nestlings; and 3 clutches of c/5 produced 15 nestlings.

Desertions. Five nests were found to have been deserted.

Three of the desertions were almost certainly due to the females having been flushed from their nests at an early stage of the incubation period. It was found that some females were very liable to desert when flushed. In Cornwall a female, flushed while lining her nest, deserted (Ryves & Ryves 1934), and in Hampshire females were found to be very liable to desert during the early stages of incubation (Woods 1950). During the later stages of incubation, however, females were found to put up with considerable interference. At a nest situated in a field of thick grass where iron hoops were erected around the nest to protect it from a herd of grazing cattle, the female on her return to the nest took no notice of the strange objects and resumed incubation without delay.

Feeding of nestlings and nest sanitation. The feeding of the nestlings was done almost entirely by the females. On only six occasions were males seen to bring food to nestlings, and two of these occurrences related to the same male on different dates. When a male did go to the trouble of feeding the young he really made a job of it, and one industrious fellow fed his brood nine times in 20 minutes. Feeding visits by the females generally averaged one every 5 to 10 minutes. During a two hour period one female fed her nestlings 13 times at intervals ranging from three to 25 minutes. Long breaks in the feeding routine were probably due to the female going in search of food for herself.

Females ranged from 20 to over 300 yards from the nest in search of food, but usually confined themselves to journeys of less than 200 yards. Occasionally a female made several successive trips to the same spot—doubtless a very productive one. The most frequent food items brought to nestlings were green caterpillars and an unidentified whitish substance which was carried in large billfuls. Late in the season crane-flies were often recorded. Some females were extremely suspicious and would not feed nestlings when one was within about 50 yards of the nest.

Up to at least the feathering stage of the nestlings females were often seen to carry away faeces, which they usually dropped some considerable distance from the nest.

At a nest found in late August, a few days before the young fledged, no male bird was ever seen. Owing to the lateness of the season he had probably gone to join up with the flock, leaving the female to take care of the young. Similar cases were recorded in Cornwall (Ryves & Ryves 1934).

Nestling mortality and fledging success. Some broods appeared to have been attacked by a disease, when few or none of the nestlings survived. These nestlings made normal progress for the first few days but then their growth became retarded and the members of a brood would disappear one by one, presum-

ably having died and been removed from the nest by the female, as occasionally a dead nestling was found in or near a nest. Ryves & Ryves (1934) refer to an insidious disease which sometimes attacks nestlings. It is possible, however, that starvation was the cause of the nestling mortality and that female Corn Buntings, at times when food is scarce, are unable to rear their broods unaided. At one nest a nestling became entangled in a long blade of grass and some hairs from the nest lining, and had it not been released it would almost certainly have perished.

Data for the fledging period was very meagre and in four broods where it was ascertained showed considerable variation, being 9, 11+, 12 and 13+ days respectively. In the 9-day period the one surviving nestling out of a brood of five was very scantily feathered and could progress only by jumps when it left the nest. The period of 13+ days was unusually long; the nest was situated in tall corn and held three healthy nestlings (Macdonald 1961).

Owing to nests being situated in growing crops fledging success was difficult to assess. Out of a total of 91 nestlings from 27 nests, 25 nestlings from 10 nests failed to survive, while 42 nestlings from 15 nests were considered to have fledged successfully. Data was lacking for the remaining 24 nestlings. Assuming that a portion of the latter also survived, a rough estimate of the fledging success might be reckoned to be between 50% and 60%.

Fledging period. It was difficult to make contact with young birds after they had left the nest as they remained in the crops and rarely showed themselves in the open. One brood of fledglings remained in the corn crop near the vicinity of their nest site for at least seven days after they had fledged, and when I flushed one of them on the sixth day after fledging it flew quite strongly over the top of the corn for a distance of 20 yards. One of the nestlings (age unknown) reared in the only nest which was not sited in a crop flew fairly well for a distance of about 15 yards a few hours after it had left the nest. The solitary nestling which left the nest on its ninth day was still in the vicinity of the nest twelve days later. When adults with fledged young were approached they more or less confined their notes to the *chit* call, constantly repeated.

Polygamy

Although polygamy had been suspected previously it was not until 1961 that a proven case was found, and two further cases were recorded in 1962 and 1963. Each of the three cases involved a male and two females and the nests in each instance were sited about 50 yards apart. As most of the nests were not found until the nestlings were partially grown the number of young hatched was not known, but out of a total of 14

nestlings which the nests were known to have contained, seven survived to the fledging stage. In two instances the male was seen feeding the nestlings of one of the broods.

It is evident that polygamy in the Corn Bunting in south-east Sutherland is on a small scale, probably similar to that recorded for Shetland (Venables & Venables 1955). Armstrong (1955), comparing the Shetland position with that in Cornwall, where two males had as many as seven females each (Ryves & Ryves 1934), suggests that there may be a correlation between polygamy and food supply, the richer productivity of southern England habitats being more conducive to polygamy than the bleaker habitats of the northern isles.

Nest predation and human interference

As far as could be ascertained, only two nests were destroyed by predators, the predator in each case being unknown. A nest containing three nestlings which was sited in corn was found destroyed and the remains of one of the nestlings lay nearby. The other case concerned the c/4 nest built in the tares. The nest was found empty, and the eggshells, which lay on the ground below, appeared to have been sucked by a predator.

The habit of the Corn Bunting of nesting almost exclusively in crops in south-east Sutherland would appear to be detrimental to the species, as quite a number of nests are liable to be destroyed by farming operations. Nests situated in grass and hay are particularly vulnerable in this respect owing to the present tendency to cut the hay crop earlier than in the past and the recent habit of cutting green crops for silage. One nest, despite protective measures to save it, was destroyed by being trampled upon by a large herd of cattle, and another nest in the same field escaped a similar fate through the nestlings having fledged just in time. Fortunately, the majority of Corn Buntings nest in cereal crops, where there is a better chance of nests escaping damage. At the time these crops are rolled the birds have not yet started nesting and, although an odd nest or two may be destroyed by the spraying of cereals, this operation is usually completed before the majority of the Corn Buntings begin to nest.

References

- ANDREW, R. J. 1956. Territorial behaviour of the Yellowhammer *Emberiza citrinella* and Corn Bunting *E. calandra*. *Ibis* 98: 502-505.
- ARMSTRONG, E. A. 1955. *The Wren*. London.
- BANNERMAN, D. A. 1953. *The Birds of the British Isles*, vol. 1. London.
- COWARD, T. A. 1920. *The Birds of the British Isles and their Eggs*, vol. 1. London.
- GOODBODY, I. M. 1955. Field notes on the Corn Bunting (*Emberiza calandra*): habitat and distribution in Aberdeenshire. *Scot. Nat.* 1955: 90-97.
- HOWARD, H. E. 1929. *An Introduction to the Study of Bird Behaviour*. Cambridge.
- MACDONALD, D. 1960. Early nesting of Corn Buntings. *Scot. Birds* 1: 277.
- MACDONALD, D. 1961. Prolonged nestling period of Corn Buntings. *Scot. Birds* 1: 495.

- PETERSON, R. *et al.* 1954. *A Field Guide to the Birds of Britain and Europe*. London.
- RYVES, LT.-COL. & MRS B. H. 1934. The breeding-habits of the Corn-Bunting as observed in Cornwall: with special reference to its polygamous habit. *Brit. Birds* 28: 2-26. Supplementary notes... *Brit. Birds* 28: 154-164.
- VENABLES, L. S. V. & U. M. 1955. *Birds and Mammals of Shetland*. Edinburgh.
- WALPOLE-BOND, J. 1938. *A History of Sussex Birds*, vol. 1. London.
- WITHERBY, H. F., *et al.* 1938. *The Handbook of British Birds*, vol. 1. London.
- WOODS, H. E. 1950. Notes on the breeding habits of the Corn Bunting in Hampshire. *Brit. Birds* 43: 82-83.

Short Notes

Cattle Egret in Dumfriesshire

In the early forenoon of 7th July 1964 I went to the farm of Mid Dargavel, 3 miles east of Dumfries, having just heard from the farmer, Duncan Wyllie, that he had seen an hour earlier a "white heron-like bird" in close company with his herd of Ayrshire cows. Coming to the edge of the field I quickly spotted the bird and was astonished to see that it was in fact a Cattle Egret.

The buffish feathers on the crown and mantle were clearly seen, and pinky-buff tufts were about the throat, though comparatively sparse. The dull yellow bill and pale brownish-yellow legs put the identification beyond doubt; and later it was noted that the bird had a dull yellow iris and barish patches of skin under the eyes.

A telephone call brought R. T. Smith quickly to the scene and he too had excellent views, as had James Maxwell. Both these observers, arriving separately, at once identified the bird as a Cattle Egret, RTS (whose notes are incorporated above) having the luck to see it fly up and alight on the back of one of the cows, typical behaviour of the species.

We left the bird feeding busily amongst the cows' legs; but, returning in the afternoon with a somewhat larger party, we were told that it had flown from the field in a southerly direction about 1 p.m. A prolonged search then and in the evening, of many neighbouring meadows and pastures where cattle were, proved fruitless.

WILLIAM AUSTIN.

(There is no previous record of the Cattle Egret in Scotland, and one therefore wonders whether this bird might have escaped from captivity. No possible source has been found in spite of enquiries, but the matter is still being investigated. What was probably the same bird was reported in Westmorland and Lancashire also, the dates of the reports ranging from 3rd to 26th July (*Brit. Birds* 57: 340)—ED.)

White Stork in Nairnshire and East Inverness-shire

On the morning of 17th April 1964 I saw a White Stork walking about in a grass field near Auldearn, Nairnshire.



PLATE 20. Research at Culterty Field Station (see page 227); Billy Murray sampling the mudflat fauna of the Ythan estuary.

Photograph by A. Anderson



PLATE 21. Wing-tagged female Eider on nest (see page 221). Some individuals may be handled like this at the nest without disturbance.

Photograph by H. Milne



PLATE 22. Colin Young with Shelduck trapped on the Ythan as part of his study of the species (see page 225).

Photograph by G. M. Dunnet



PLATE 23. George Dunnet recording identity of ringed adult Fulmar with egg on Eynhallow: part of a long-term study by Culterty Field Station (see page 233).

Photograph by John Warham

When I was quite close it rose and flew off in a westerly direction. I immediately told various people about it but the bird was not seen there again.

It was a large wading bird, quite different from a Heron; white with black wing feathers; with long pink legs and beak.

K. TUACH.

A White Stork was seen on 19th April 1964 at Dores, on the east side of Loch Ness about 8 miles from Inverness. I visited the area with Mr and Mrs William Fernie after receiving a telephone call from a local farmer, and we watched the bird in pouring rain stalking about and feeding in a ploughed field, accompanied by Black-headed Gulls. It fed from the surface, regularly raising its head, opening its beak wide, and swallowing hard. It must have arrived that day, as the observer had been in the fields every day during the past fortnight and had first seen it that afternoon in a nearby grass field.

There was no doubt that the bird was a White Stork. It was exactly like the illustrations in the *Field Guide* and *Handbook*: larger than a Heron, with long red legs and beak; plumage white, with jet black flight feathers and scapulars.

On 20th April it was at Antfield Farm, about two miles east of Dores, and it remained there until 11.30 a.m., when the farmer's dog chased it from the flooded ditch in which it was feeding.

What was thought to have been a stork was reported on the afternoon of 18th April flying past Ness Castle, just west of Inverness on the road to Dores. The movements of this bird are thus fairly well accounted for.

JAMES MACGEOCH.

About 8 p.m. on 21st April 1964 near Fort Augustus I identified a White Stork at roost on top of a dead oak tree—presumably the same bird that had been seen near Dores the day before. It remained in the area until 10th May.

During this period it frequented fields at Borlum and Culachy bordering the River Tarff and was rather wary and difficult to approach. When searching for food it would stalk slowly along, body bent forward and neck half looped up. When resting it often hunched its head between its shoulders, but at the least suspicion it would stretch its neck erect and if alarmed would extend it forward and take two or three steps preparatory to flight. It looked extremely untidy with widely separated primaries when taking off.

It was a large slightly off-white bird, larger and bulkier than a Heron, with black flight feathers, which gave it the appearance of having a black rump when perched in the tree;

it had long bright red legs and a stout red bill. Usually it went to roost near the top of a tree about 7.30 or 8 p.m. BST.

LEA MACNALLY.

(There is no previous record of a White Stork in Moray Basin, Nairn or East Inverness.—ED.)

Surf Scoter in Moray Firth

On the afternoon of 14th October 1964 while we were watching flocks of Common and Velvet Scoters a few hundred yards offshore on the Moray coast, RCP noticed one bird, an adult drake in a group of drake Velvet Scoters, showing two areas of pure white on the head. Its bill appeared paler yellow than the orange-yellow bills of the Velvet Scoters.

Examined through powerful binoculars and telescope the bird showed a conspicuous white patch on the nape and another smaller white area on the forehead. The eye showed as white. Through binoculars (CCIM) the bill appeared to be light yellow: through the telescope (RCP) it was seen as yellow at the tip, becoming paler yellow towards the basal half, with a black area at the base of the bill seeming to merge with the black feathering of the head—no margin being noticeable at the distance from which it was viewed. The rest of the plumage seemed to be entirely black, no white showing on the wing when the bird was swimming or diving. It did not fly or raise its wings, but the Velvet Scoters with it frequently showed white in the wing when swimming. It was larger than the Common and about the same size as the Velvet Scoters.

It dived constantly in the choppy water. In spite of deteriorating light, even when the bird had moved several hundred yards further off, the white at the back of the head and the paler bill were still clearly visible. We had no doubt that it was a drake Surf Scoter. This is the first record from anywhere in the east of Scotland between Angus and Orkney.

COLIN C. I. MURDOCH, R. C. PARKINSON.

Abnormal nesting behaviour of Eiders and Herring Gulls

During a visit to the Isle of May in June 1964 I noted three nests of special interest in the gull colony on the North Ness.

The first was a Herring Gull's containing two normal eggs and a dull red rubber ball about the size of a tennis ball. It seems likely that the ball came from the nearby winter high tide mark, and as the nest was well constructed it seems probable that it must have been actively brought in by the adults. The ball was being continuously brooded. It is interesting to note that red dummy eggs were the ones most consistently rejected by Tinbergen's Herring Gulls, but in the

present instance the complete roundness of the ball may have been the more important factor.

Another nest was that of an Eider brooding two Eider eggs and one gull egg in the middle of the colony. The eggs did not hatch before I left the island. This sort of situation is probably not very unusual, and it may happen in the same way as two gulls laying in the same nest (I found several nests with clutches of five eggs, but could not be sure whether these had arisen without human assistance).

The third and most interesting nest contained a single Eider egg brooded by a Herring Gull. Careful examination revealed the down of an Eider's nest beneath the grass and seaweed of the gull's, and a second Eider egg completely buried in the gull's nesting material.

The first egg hatched, and the Eider chick was still being successfully brooded by the gull when I had to leave the island two days afterwards. When the nest was approached the chick was not disturbed, and it could have been picked up, unlike most young Eiders, which immediately seek cover or the nearest water when approached. Possibly the alarm call of the duck Eider is necessary for the chicks to respond to threatening danger.

JAMES L. S. COBB.

Goshawk in Moray

On 20th July 1964 near Bridge of Divie, 8 miles south of Forres, we watched a Goshawk for about 5 minutes. It approached quite close at a height of 40 ft or a bit more, working over a potato field between pines and mixed woodland, and disappearing south-west over the trees.

Its flight was rapid, with three to five wing-beats followed by a long circular glide. At first we thought it was a Sparrowhawk, but we soon realised that it was larger and its actions were different. Full details, from which the following description has been prepared, have been submitted to the editors of *Scottish Birds*.

Wings short and rounded, very broad for their length, with primaries separated like fingers; underside of secondaries barred brown; tail long and barred beneath, with white patch at base; underparts of body light with dark barring, giving black-and-white appearance; upperparts dark brown; we got the impression once of a light eye-stripe; legs yellow; size perhaps a sixth or seventh larger than nearby Rook.

J. R. PRESTON, P. E. PRESTON.

Little Bustard in Wigtownshire

On 29th April 1964 R. Nicholson of Kidsdale Farm on the south-east shore of Luce Bay near Burrow Head telephoned to say that there was a bird there such as he and his family

had never known before and that he thought it must be a Little Bustard. Would I come to see the bird?

When I reached the farm Mr Nicholson took me out in a Land Rover and we soon found the bird in a field of young winter wheat a short distance from the sea. It spent its time running about chiefly in this one large field except for short flights to a rough grassy headland when disturbed. We had excellent views of it on the ground and in flight, and Mr Nicholson and his father had also seen it a good many times before I arrived. We could not get much closer than 100 yds as the bird was distinctly shy, but there was no mistaking that it was a male Little Bustard in breeding plumage, exactly as pictured in Bannerman & Lodge's *The Birds of the British Isles* (Vol. XI, pl. 6). Although this is the first Little Bustard that I have seen I am familiar with several other species of bustards in India and East Africa.

The black and white collar was very conspicuous, the throat being grey and the black neck very markedly bordered by broad white bands on each side. The most striking field observation however was that when standing the bird was comparatively inconspicuous except for these black and white markings, but directly it flew, with short rapid wing-beats, it seemed to change colour largely to white except for black wingtips. Its flight was somewhat suggestive of a Blackcock but more swerving, and its size was about midway between Blackcock and Red Grouse.

Next day I returned with A. D. Watson to look for the bird but in spite of an extensive search it could not be found again. Nor has it been shot or seen since. *The Birds of Scotland* gives nine records of Little Bustards in Scotland but this appears to be the first recorded anywhere in the west of the country, as well as the first for Solway and Wigtownshire.

F. W. CHAMPION.

Dowitchers in Shetland and Dunbartonshire

On 23rd and 24th May 1964 in an area of rough heather moorland with numerous small marshy lochs near Uyeasound, Unst, we had good views of a dowitcher in summer plumage. It flew over with its bill angled downwards and descended in a fast glide to the side of a small loch. When flushed it rose rapidly and tended to fly in a direct way, not zig-zagging as a Snipe does nor twisting so much from wingtip to wingtip.

Standing beside a Redshank the dowitcher had a plumper body and short-necked appearance. It held its long, strong Snipe-like bill at an angle of about 45°. Its legs were shorter than the Redshank's on the ground and in the air, when they barely projected beyond its tail, but the two birds were

about the same total length in flight, the longer bill of the dowitcher making up for its shorter body. The most noticeable features were the long, straight bill and a long white "V" extending well up the back (much further than in Redshank).

The bird stood in a small loch with water up to its belly and fed with rapid stabbing vertical movements of the bill. At the bottom of the downstroke its forehead and chin were at times immersed in the water.

It called only in flight, and we flushed it several times in order to make a tape recording. The call was low, usually three syllables, occasionally two, and once fourteen or fifteen, the syllables very fast and almost run into each other. There is a good chance that this recording may enable someone familiar with American waders to say for certain whether our dowitcher was of the Long-billed or the Short-billed species.

Most of the following description was compiled on the 24th, when we were able to watch the bird for about half an hour under excellent conditions:

Forehead (very narrow on account of eyestripe), crown, nape and back of neck brown; broad white stripe above eye, extending from base of upper mandible to an equal distance behind eye; narrow eyestripe dark brown (as crown); mantle, scapulars, wing coverts and secondaries rich dark brown, heavily barred black and flecked white; dull whitish-grey tips to secondaries showing in flight as light trailing edge (much less obvious than that of a Redshank); primaries very dark, almost black; very long white "V" on back and rump; tail and upper tail-coverts barred dark brown and white, the brown predominating; chin white; throat, breast, belly, flanks and side of neck dull weathered brick red, lightly speckled white and black; underwing paler brown than above; long bill blackish viewed from side but showing dark greyish-green sheen viewed at close range from front; legs and feet dark green; eye dark brown.

We understand that this is the first spring record of a dowitcher in Scotland and that it is the first time one has been recorded in Shetland.

E. A. MACHELL, M. SINCLAIR.

Just after high tide on the evening of 15th August 1964 while walking along the shore at West Ardmore Bay I put up a bird which was feeding on the tide line. It rose with a Snipe-like alarm note, circled low down, and pitched among small seaweed-covered rocks at the edge of the water. For the next 30 minutes I observed it closely on the ground and in flight and identified it as a dowitcher still partly in summer plumage.

It was very approachable and I was able to sit against the bank at the edge of the shingle making notes and to consult the *Field Guide* when it pitched behind a small tussock only

4 yards away and remained there on the alert for fully 10 minutes with neck extended most of the time. At one point I was within 3 feet of it before it took flight, and even when flushed it circled only once and pitched again behind a tussock on the shingle 8 yards from me.

The bird was larger than a Snipe, about the size of a Redshank but with shorter legs. It kept to itself, closer inshore than the many other waders present. Although the *Handbook* describes the dowitcher as a plump stocky-looking bird it seemed more sandpiper-shaped than snipe-shaped to me. On the ground the reddish breast and head (much redder than a Snipe) and the longish bill were obvious, while in flight it showed a conspicuous thin white trailing edge on the wing and striking white tail, rump and wedge on lower back.

It circled several times in wide arcs, changing height as it did so, but not flying in the zig-zag manner of a Snipe. Once when flushed it gave a rapid Greenshank-like triple *tu-tu-tu* as it circled round, but otherwise it was silent. In flight its head was drawn in. The following plumage description is compiled from my field notes:

Crown and nape dark brown with reddish-brown streaks; fairly broad buff stripe above eye, and dark stripe through eye; sides of head and neck pale reddish-brown (almost terracotta) with a few darker streaks; throat and breast pale reddish-brown (terracotta) mottled with darker spots; flanks similar but more heavily marked with dark streaks; belly very pale buff, tinged pale pinkish-brown; under tail similar and mottled darker brown; mantle brown, with some light streaks; back mottled dark reddy-brown; rump white, barred dark brown but less heavily than upper tail, with pale pinkish-brown tinge here and there; white extending well up back in narrowing "V"; upperside of tail white, barred dark brown, with hint of pale reddish-brown in middle; at rest wings reached just short of tip of tail, their very mottled appearance contrasting strongly with white rump and pale belly; primaries brown with very pale buff edgings, secondaries similar but warmer tinged; wing coverts dark brown with pale reddish brown edgings; in flight showed very conspicuous thin white trailing edge on tips of secondaries and nearly halfway along primaries; bill about $1\frac{3}{4}$ times as long as head, not quite so long as a Snipe's, very dark, almost black; legs dark greenish-grey, a little shorter than Redshank's; eye dark, set further forward in head than Snipe's.

The bird could not be found again next day. It is the first dowitcher to be recorded in Dunbartonshire.

R. S. BAILLIE.

Black-tailed Godwit breeding in southern Scotland

A pair of Black-tailed Godwits nested in a marshy area in southern Scotland in 1964. In the interests of the birds this record is published over the editor's name in case the names

of those who patiently watched and guarded the birds might give a clue to the whereabouts of the breeding site.

A single bird first appeared on 12th April, and by the end of the month it had attained full male breeding plumage. On the 25th it was joined by a female—a slightly larger and duller bird with brown speckling on the chestnut head and neck—and display was observed on several occasions during the next few days.

The birds were watched at intervals during May, and their behaviour suggested that there was a nest in the vicinity. Usually the female was not seen unless there were people in the area, when both birds flew round and the male called loudly and frequently. After the danger had passed the female would land quickly and soon disappear from view. The male usually remained in view, often standing on a mound of earth or some similar eminence.

During the watches in early June it became quite evident that the female must be sitting, for with little disturbance she was hardly ever seen. At the approach of any likely predator during this period the male would leap into the air, calling almost continuously, and would dive rather like a Lapwing, chasing gulls and crows from the area.

On 14th June the male was standing on a mound in full view calling at frequent intervals and sometimes preening. After half an hour the female emerged from behind some tussocks of grass and both birds remained in view, standing about 5 yards apart, the male still calling frequently, but rather softly. The birds did not take to the air except for short low flights from one mound to another and their behaviour was reminiscent of Curlews with newly hatched young. Eventually patience was rewarded by the sight of two small chicks beneath the tuft of grass where the male was standing. Once the chicks had been located it was possible to see them as they moved about. Each time they wandered the male would fly to a new vantage point near them. It is possible that there may have been more than two chicks in the long grass but that was the maximum number seen at once.

Their subsequent fate is unfortunately something of a mystery. On 21st June the adult birds had disappeared from the breeding area, though one was seen nearby and one had been seen the previous day at another place not far away.

Black-tailed Godwits have been reported breeding in Shetland from time to time and also in Caithness, and in recent years they have nested also in England, but this is the first time they have done so in the southern half of Scotland.

ANDREW T. MACMILLAN.

White-winged Black Tern in Outer Hebrides A new Scottish bird

At 1855 hrs GMT on 23rd May 1964, R. P. Cockbain, E. Dimelow, K. Williams, G. Follows, R. Rhodes, and I found a White-winged Black Tern in full breeding plumage on a loch near Borve, Benbecula. In excellent light and a gentle easterly wind we watched it for 15 minutes at ranges down to 30 yards, until it circled up to about 150 ft and flew off south-east.

In size and shape it was similar to a Black Tern, a species with which we are all familiar. It behaved in exactly the same manner, hawking into the wind for insects and dipping to the surface, though we never saw it actually touch the water or attempt to take anything from the surface. No call was heard. The following description is compiled from notes made at the time:

Whole of head, mantle, back and underparts black; tail, rump and under tail-coverts white; tail slightly forked; primaries and secondaries grey, with greater coverts pale grey, and median and lesser coverts white, appearing whitest on leading edge—the white appeared most vivid as bird flew directly towards us, and the three shades of the wing (white, pale grey and darker grey) were very obvious as three distinct areas when the bird flew past; underwing coverts black, contrasting with grey primaries and secondaries; bill and eye apparently dark; legs and feet bright red, showing up well against white under tail-coverts at short range.

The White-winged Black Tern has not been satisfactorily recorded in Scotland before, although it might have been in 1932 had the observer not died at his desk when about to send in the details (*Scot. Nat.* 1932: 171).

G. THOMASON.

Snowy Owl in Shetland

In 1963 a Snowy Owl, possibly the same bird, was seen at various places in Shetland (Vord Hill, Fetlar, and Ronas Hill, Mainland) and Orkney, between at least 14th June and 18th July (and probably to the end of August) (*Scot. Birds* 3: 32).

There were a number of sightings in Shetland in 1964 and the following is compiled from reports collected from the various observers or submitted to the Rarities Committee of *British Birds*. The plumage descriptions all refer to a fairly mature white bird and it is not certain that more than one bird was involved as there is no proven overlap of dates. Even the furthest localities are only 20 miles apart.

There were no records until June except for one on 13th February. It is therefore worth noting that there were rumours, but no descriptions, of a bird that sounds very like a

Snowy Owl at three places in Sutherland and Caithness during February; and that a Snowy Owl in very white plumage was seen in Midlothian on 16th February and 1st March (3: 196).

The first 1964 sighting in Shetland was on 13th February on Vord Hill, Fetlar, exactly where the 1963 bird was seen (L. Brown).

It was not seen again until the forenoon of 10th June, when I had good views of one near Mid Yell harried by crows, skuas and gulls. At 8 p.m. the same day a Snowy Owl was back at the usual place on Vord Hill, chivvied by an Oystercatcher and a Common Gull (A. Gilpin, H. R. Lowes). Two days later it was still there and a photograph was obtained (Mr & Mrs L. Roberts); and it remained for approximately a week (LB).

One appeared on Whalsay about 20th June and was still there on 13th October (D. Coutts, V. Simpson, RJT). The exact dates when the bird was seen on this island were not always noted, but the odd times when it was reported missing were probably connected with reports of one seen on Fetlar on 17th July, 15th and 22nd September (LB), and of one in the Ronas Hill area in late August (B. Copeland).

The last known sighting was on 12th November when DC and myself watched a Snowy Owl for some time near Vord Hill on Fetlar.

R. J. TULLOCH.

Lesser Grey Shrike in Outer Hebrides

At 1230 hrs GMT on 29th May 1964, R. P. Cockbain, E. Dimelow, K. Williams, G. Follows, R. Rhodes, and I identified an adult Lesser Grey Shrike at Grogarry House, near Loch Druidibeg, South Uist. We watched it for about 30 minutes in bright sunlight and a light easterly wind at ranges down to 35 yards, and in the evening we returned with M. Nicholson, Lord Hawick and Dr J. Morton Boyd and saw it again.

It perched on a wire fence and on top of a wall, and regularly flew into a field to catch insects, which it ate on returning to the fence. Once it made a longer flight across the field to another fence, when its low, direct flight was noted. Five of us had seen Great Grey Shrikes in the past, and this bird seemed less heavy and more compact than that species. Its stance was much more upright, and it lacked the heavy-tailed appearance of the larger bird. The following description is compiled from our notes:

Crown, nape, back and scapulars pale grey, with rump slightly paler; broad black stripe through eyes, continuing across forehead and lower

part of crown (so clearly defined that we took the bird to be a male); underparts white with a definite pinkish flush on breast readily seen at all angles; wings black with broad white bases to primaries showing as white patch on closed wing; tail black with white outer pair of feathers; bill black and hooked; legs black; eye dark.

This is the first record of the species in the Outer Hebrides.

G. THOMASON.

Current Notes

Compiled by P. J. B. SLATER

(**Key to initials of observers** : R. S. Baillie, E. Balfour, D. Baty, H. Boase (HBs), H. Boyd (HBd), T. Boyd, W. Brotherston, K. Bruce, R. G. Caldow, S. J. Clarke, J. L. S. Cobb, D. Coutts, C. N. L. Cowper, H. G. Cree, G. M. Crichton, J. R. Cumming, Miss M. H. E. Cuninghame, E. Dicerbo, G. Dick (GDk), G. Dickson (GDn), R. C. Dickson, H. E. M. Dott, J. Dunbar, Dr G. M. Dunnet, W. M. M. Eddie, I. Edelsten, N. Elkins, M. J. Everett, F. Fergusson, H. A. Ford, R. W. Forrester, Miss P. Graham, Mrs J. A. R. Grant, I. Gunn, M. J. Henderson, R. Hewson, Dr G. Hope, J. Hoy, R. B. Hughes, D. C. Hulme, Miss R. S. Hunter, P. F. James, R. Job, Dr D. H. Lawson, D. G. Long, A. McConnell (AMcC), D. Macdonald, J. McEachern (JMCE), E. Machell, K. Mackenzie, Miss M. S. C. Mackie, A. T. Macmillan, A. MacRae (AMcR), R. W. Marriott, Prof. M. F. M. Meiklejohn, T. D. H. Merrie, T. Moncrieff, J. Morgan (JMg), Mrs J. Morrison (JMr), W. M. Morrison, Miss M. H. Murray, D. J. Norden, D. W. Oliver, J. S. Oliver, C. E. Palmar, Rev. J. S. Phillips, W. Porteous, J. Potter, C. A. Pountain, A. D. K. Ramsay, G. A. Richards, E. L. Roberts, J. R. T. Shanks, M. Sinclair, Mrs E. M. Smith, R. W. J. Smith, Dr T. C. Smout, T. Spence, D. M. Stark, D. Stewart, J. A. Stewart, J. H. Swan, C. Tait, I. Taylor, A. Temple, Miss V. M. Thom, R. J. Tulloch, G. Waterston, Mrs H. Watt, J. Watt (JWt), D. N. Weir, J. Weir (JWr), T. Weir, W. H. Wild, A. Wilson, M. G. Wilson, P. B. Wordsworth, W. Wyper, J. Young, I. Young, B. Zonfrillo.

Unless otherwise stated, all dates refer to 1964).

Distribution

The period dealt with in this section is from September to December 1964. Observations made before 1st September will be found under the next heading unless relevant to more recent topics.

Numbers of grebes and divers were seen on the east coast in mid October. There were 25 **Red-throated Divers** off Aberdeen esplanade on 17th (HEMD) and at least 40 in Gullane Bay, East Lothian, the following day. These latter were accompanied by the exceptional number of nine **Red-necked Grebes** (MGW), while nine **Slavonian Grebes** were present in Gosford Bay, East Lothian, also on 18th October (HAF). Records of Slavonians inland come from Lake of Menteith, Perthshire,

on 8th September (MFMM); Threipmuir, Midlothian, on 18th October; Cobbinshaw, Lanarkshire, on 24th October; and Morton Lochs, Fife, on 4th October (CT)—all refer to single birds.

Most **Great Crested Grebes** winter on salt water, and it is therefore worth recording that a pair was still present on Kilconquhar Loch, Fife, as late as 12th December (DWO). Rather more unusual inland was a **Shag** which was found exhausted near Moffat, Dumfriesshire, on 15th December, and which died the next day (ED).

Many readers will already have heard of the **Flamingo** which was first discovered by JRP at Whim Pond, near Leadburn, Peeblesshire, on 19th November. It was seen near Carstairs, Lanarkshire, on 22nd, and finally at Leadburn again on 24th. The strong possibility of such a bird being an escape cannot be ruled out although it had the characteristics of the European race rather than those of the pinker Chilean race which is often kept in Zoos (MJE).

Several records have been received of **Gadwall** away from their more regular haunts. Six were seen on Forfar Loch, Angus, on 22nd October (GMC), and there was at least that number there on 20th November (HBs). There were three at the mouth of the Endrick, Stirling/Dunbartonshire, on 2nd October (HGC); 15 at Barr Meadows, Renfrewshire, on 11th October (DHL, AMcC); and three on the River Cree at Newton Stewart, Wigtownshire, on 6th September (DHL, AMcC, AW).

High counts of waterfowl come from Stornoway estuary where a peak of 422 **Wigeon** was noted on 6th December (NE), and from Montrose Basin, Angus, where there were 123 **Pintail** on 17th October (GMC). A drake of this latter species was seen at Cramond, Midlothian, on 17th October (TCS).

A duck **Scaup** was seen on Linlithgow Loch, West Lothian, on 19th December (TB). The **Long-tailed Duck** is also uncommon inland: records are of one at Lindores Loch, Fife, on various dates from 31st October to 19th November (TS, VMT, JWt); three at Loch Flemington on the Nairn/Inverness-shire border on 31st October (WMM); and an immature at Possil Marsh, Glasgow, from 31st October to 7th November (DJN). A very large concentration of this species was seen on the sea near Stornoway, Lewis, on 1st December. Altogether 420 were counted and it was estimated that there were in excess of 500 in the area (NE).

Red-breasted Mergansers are unusual on fresh water during the winter and a count of about 27 as far inland as Camps Reservoir, Lanarkshire, on 8th November, is thus exceptional (WB, CNLC). A single brown bird was seen on Culter Reservoir in the same county on 6th December (WB, JY, LY).

Smew records are more numerous than usual. Single 'red-heads' are reported from Camps Reservoir, Lanarkshire, on 8th November (WB, CNLC); Endrick mouth between 16th and 21st November (DJN, GAR, TW); Linlithgow Loch, West Lothian, on 28th November (TB); Threipmuir, Midlothian, between 28th November and 20th December (TB, HEMD, HAF); and near Auchterarder, Perthshire, on 14th December (PFJ, VMT). In addition, two drakes were seen on Balgavies Loch, Angus, on 19th December (GMC).

Few reports have been received on the arrival of **Grey Lag Geese** but very early records—perhaps referring to Scottish birds—are of six flying over the Ythan estuary, Aberdeenshire, on 14th September (DHL); one flying south over Elie Ness, Fife, on 20th September (DWO); and at least 50 near Alvie, Inverness-shire, on 23rd September (DHL). This species was heard at Flanders Moss, Stirlingshire, on 3rd October (RCD), and 22 had arrived at Hule Moss, Berwickshire, by 10th (SJC, DGL). They were more numerous than usual on passage in Shetland, with parties of up to 14 being observed from 12th October onwards (RJT). This impression is reflected in the annual count on 8th November, which showed about 43,000 present in Scotland—an increase of some 9000 over last year (per HBd).

White-fronted Geese reported from unusual localities are 32, no doubt on migration, flying over Cairngorm, Inverness-shire, on 4th October (DNW), and one at Threipmuir, Midlothian, on 8th November (TB); while singles were seen in Perthshire near Blairgowrie on 7th November (VMT), at Tibbermore on 15th November (TCS) and near Forteviot on 14th December (VMT). Unusual geese which seem to be becoming a regular feature are the blue-phase **Lesser Snow Goose** which was seen at its regular haunt near Libberton, Lanarkshire, on 13th December (RSB, GDn, JMg, AT) and the two probable **Ross's Geese** (see 3: 138) which were seen at various places in Perthshire during November and December (per VMT).

The earliest first-hand records of **Pink-footed Geese** are of 22 flying in from the north over Gladhouse (EMS, RWJS) and 19 at Hule Moss, Berwickshire (SJC, MJH, DGL), both on 12th September. During the following week they were seen in good numbers over Cupar, Fife (DWO); 55 were reported at Browhouses, Dumfriesshire, on 17th (KB); and there were 40 at Caerlaverock, Dumfriesshire, by 18th (ELR). There were 600 on the Tay by 23rd (HBs) and the same number at Loch Leven two days later (TCS). About 1000 were seen at both Hule Moss (SJC, MJH, DGL) and Morton Lochs, Fife (TCS), on 26th. The count of this species on 8th November indicated about 56,000 present in Scotland as against about 44,000 last year (per HBd).

A **Bean Goose** was seen in a large flock of Pinkfeet and Greylag at Meikle Loch, Slains, Aberdeenshire, on 17th October (GMD).

Single **Brent Geese** are reported from Perthshire at Balgowan on 11th October (JWr per VMT) and near Carsebreck on 23rd October (HBd per VMT). Three other individuals seen were definitely of the pale-bellied race: these were at Caerlaverock, Dumfriesshire, on 19th September (ELR); Stornoway estuary, Lewis, on 1st and 2nd October (NE); and Aberlady Bay, East Lothian, on 20th November (CAP). The first **Barnacle Geese** to arrive at Caerlaverock, Dumfriesshire, were 28 on 22nd September—the earliest for at least eight years (ELR). Seven, presumably migrating, flew over Tynninghame, East Lothian, on 17th October (DB per RWJS). Other records of this species away from its usual wintering grounds are as follows:

- Blairgowrie, Perth—1 on 8th Nov (VMT).
- Bridge of Earn, Perth—2 on 24th Nov (VMT).
- Forteviot, Perth—3 on 14th Dec (VMT).
- Moonzie, near Cupar, Fife—1 with Pinkfeet on 14th Dec (DWO).
- Morton Lochs, Fife—1 on 17th Oct (DWO).
- Baddingsill, Peebles—1 with c. 5000 Pinkfeet on 8th Nov (JAS).
- Bogside, Ayr—2 on 20th Oct (GAR).
- Hule Moss, Berwick—1 on 20th Dec (SJC, DGL).

Three **Whooper Swans** were seen at the Beaully Firth, Inverness-shire, on various dates between 27th June and 4th October (WMM). High winter counts of this species for the particular localities come from Loch Flemington, Inverness-shire, where there were 19 on 23rd November (JMr); Glenbuck Reservoir, Lanarkshire, with 176 on 9th December (MSCM); and on stubble near Mawcarse Station, Kinross-shire (see 2: 314), where 250 were noted on 14th November (TCS). A single **Bewick's Swan** was present at Pitfour, Aberdeenshire, on 12th October (JE), and there were no less than eight, five adults and three immatures, near Rowbank Reservoir, Ayrshire, on 20th December (BZ).

A **Buzzard**, the first there in the observer's experience, was seen at Tynninghame on 15th November (RWJS). Another was found shot at Kingsbarns, Fife, on 18th December (JLSC).

Now that predators are accepted as being in danger from toxic chemicals, there is an increased tendency for observers to send in their records of them, so that it is difficult to arrive at a true picture of any change in their status. Observations of **Sparrowhawks** include a male at Dougalston, near Milngavie, Dunbartonshire, on 21st November (CEP); a female on Flanders Moss, Stirlingshire, on 22nd November (MFMM, CEP); and a male at Gavinton, Berwickshire, on 13th December (DGL).

Hen Harriers have been seen at the following places away from their breeding grounds:

Dunalistair, Perth—male on 3rd Oct (VMT) and brown bird at about the same time (GH).

Findogask, S. Perth—male on 15th Nov (TCS).

Peppermill, Fife—brown bird on 1st Oct (GDk, JP, IT).

Threipmuir, Midlothian—1 brown bird on 18th Oct (CT) and 2 on 22nd Nov (TB).

Lockerbie, Dumfries—male on 28th Nov (JHS).

Amongst a number of reports of **Peregrines** is one of a bird seen in Holyrood Park, Edinburgh, on 27th November (MJE). On 8th October a **Merlin** was seen flying down the High Street in Elie, Fife, with two Jackdaws in hot pursuit. The departure of one of these birds was enough to turn the Merlin to the offensive and it then chased the remaining Jackdaw for its life (DWO).

A movement of **Water Rails** into Kilconquhar Loch, Fife, was noted on 1st October and birds were recorded regularly thereafter (DWO). One of two Short-eared Owls flushed from Insh marshes, Inverness-shire, on 29th September had been feeding on a **Spotted Crake** which was identified from a wing which was still intact (DNW).

An inland record of **Grey Plover** is of six with Lapwings at Peppermill, Fife, on 14th October (JH, JSP): single birds had previously been noted at the same place on 1st and 11th October (GDk, JP, IT).

Further reports of **Black-tailed Godwits** (see 3: 200) are of four at Skinflats, Stirlingshire, on 18th October; four near Kincardine Bridge, Stirlingshire, on 22nd November (GDk, JP, IT); and eight at Eden estuary on 22nd November (CT).

A **Green Sandpiper**, first reported on 22nd August (3: 201), was still present at Peppermill on 20th December (GDk, JP, IT). Others seen were two at Barr Meadows, Renfrewshire, on 4th October (RWF) and four at Eden estuary on 18th October (JLSC).

Additional **Spotted Redshank** records (see 3: 201) are from:

Skibo estuary, Dornoch Firth, Sutherland—1 on 12th Nov (DM).

Eden estuary—4 on 4th Oct, 3 on 22nd Nov (CT).

Peffer Burn, Aberlady—1 on 3rd Oct, 4 on 21st Nov (CT).

Caerlaverock—9 on 4th Oct (ELR).

The numbers of **Knot** at Aberlady have been high all autumn but an estimate of at least 5000 on 6th December is quite exceptional for the area (MGW). A count of six **Curlew Sandpipers** at Montrose Basin on 4th October exceeds the numbers reported from there earlier in the autumn (3: 202) (GMC).

A late **Arctic Skua** flew past Elie Ness on 15th November (DWO).

A count of 261 **Great Black-backed Gulls** at Monifieth, Angus,

on 21st December is very high for the area (HBs). **Lesser Black-backed Gulls** of the Scandinavian race have been seen at Barassie, Ayrshire, on 23rd October (GAR) and at Garelochhead, Dunbartonshire, on 30th October (RCD). Individuals of the British race are reported from Ayr harbour and Irvine, Ayrshire, both on 23rd October; at sea off Ayr on 12th November (GAR); and from Bridge of Weir, Renfrewshire, on 8th November (WHW). Yet more records of **Glaucous Gulls** come from Ayrshire: one at Barassie on 6th November; one at sea off Ayr on 12th November; one at Ayr harbour on 26th November and 4th December (GAR); and an immature at Troon on 2nd December (AMcR). An **Iceland Gull** was seen at Clyde Street, Glasgow, on 28th November (RWF), and one was back on the *Carrick*, moored on the Clyde in Glasgow, on 16th December (see 3: 89) (RSB). An immature is reported from Arbroath, Angus, on 22nd November (JD).

Odd **Little Gulls** were seen at Kilconquhar Loch during October but there was a sudden influx on 31st October when 58 were present. None was present after 21st November although they were noted at Elie Ness up to 28th (DWO). Elsewhere, two immatures were at Peppermill on 14th October (JSP) and 15 birds, including three adults, were at Buddon Burn, Angus, on 16th November (HBs). A **Black Tern** was seen at Eden estuary on 24th September (DWO). Two late **Common Terns** flew south over Cobbinshaw Reservoir, Midlothian, on 10th October (TB, EMS, RWJS). A **Black Guillemot**, the first the observers had seen there, was offshore at Tynninghame on 15th November (TB, RWJS).

Considering the sad decline of the species in Scotland, it is interesting to know that odd **Kingfishers** have been seen on the River Annan, near Woodfoot farm, Dumfriesshire, during the autumn (ED). In contrast, the **Green Woodpecker** has been spreading northwards into Scotland since the war, and one at Dunkeld, Perthshire, on 2nd November was at just about the current northern limit (FF per VMT).

A peak in **Skylark** passage was noted at Elie Ness on 31st October, when birds were travelling south at a rate of about 200 an hour (DWO).

Single **Swallows** were seen at a number of places during November: on 1st at Kilconquhar Loch (DHL, AMcC, AW), Cramond (TCS) and Tynninghame (TB, EMS, RWJS); on 8th at Kingoodie, Perthshire (HBs); on 9th at Belhaven, East Lothian (SJC, PG); on 11th near Crail, Fife (JARG); and on 22nd at Gullane Bay, East Lothian (KM, JSO, MGW).

Records of **Hooded Crows** outside their normal range are of one at Peppermill on 28th November (GDk, JP, IT), and two at Tynninghame on 13th December (EMS). The large numbers of Corvidae reported passing over Cupar, Fife (3: 90), have

been seen again this year. About 30,000 were regularly noted from 16th November onwards, apparently moving to a roost at Ramornie Estate, near Ladybank. A **Jay** in an unusual locality was one at Loch Leven, Kinross, on 20th December (DWO).

A **Great Tit** was present in Castle woods, Stornoway, between 17th October and 4th December (NE): this is a rare species in the Outer Isles. A **Marsh Tit** was seen at Yetholm, Roxburghshire, on 5th December, only a mile from the locality of the first for the county (3: 204) (RSB).

The **Nuthatch** reported last winter in North Perthshire (3: 83) was seen again on 21st October in the same area (per GW).

The first **Fieldfare** reported was at Exnaboe, Shetland, on 8th September (TM). Odd birds were seen in various parts of the country during the ensuing fortnight, but the first flocks were of about 20 at Lindores Loch on 28th September (JWt), and 18 going east at Muir of Ord on 1st October (DCH). The main arrival seems to have occurred during the last week of October, with regular passage at Elie Ness after 24th (DWO); 37 at Inverness on 25th (WMM); 35 near Milton, Dunbartonshire (RCD), and 70 at Brechin, Angus (JD), both on 26th. Large falls were noted at Mid Yell, Shetland, on 29th and 30th (RJT), and there was an increase in Lewis on 31st (NE), on which date there were also 100 near Borthwick, Midlothian (TCS).

In contrast to the last species, the arrivals of **Redwings** were more clear cut, the main passage taking place earlier:

23 Sept—first report: 2 at Walls, Shetland (JRC).

3 Oct—1 at Mid Yell (RJT).

4 Oct—first at Butt of Lewis (NE); about 300 at Loch an Eilean, Inverness (DNW); 4 at Buchanan estate, Stirling (WMME, DJN).

10 Oct—1 at Roslin, Midlothian (ADKR).

11 Oct—over 100 at Loch Lomond, Dunbarton (RCD); 1 at Siccar Point, Berwick (ADKR).

12-14 Oct—falls at Mid Yell (RJT); 3 at Beattock, Dumfries, on 12th (ED); first 4 at Biggar, Lanark, on 13th (RSH); 70 at High Valleyfield, Fife, on 14th (JH, JSP).

17 Oct—first at Brechin (JD), Hule Moss (DGL) and calling over the Meadows, Edinburgh (TCS).

A late **Sedge Warbler** was seen at Possil Marsh, Glasgow, on 3rd October (DJN). A male **Blackcap** was in Castle woods, Stornoway, from 17th October to 1st November and there was a female there from 8th to 15th November (NE). Wintering cocks have been seen at Turriff, Aberdeenshire, between 3rd and 7th December (MHM); in Aberdeen on 14th December (HW); and at Aberdalgie, Perthshire, on 11th December (PFJ). A **Chiffchaff** was seen beside the River Dee in Aberdeen on 21st October (RWM) and another was singing at Longside, Aberdeenshire, on 27th October (JE). Several were present

in the woods at Stornoway at the beginning of November—2 between 7th and 15th, with three on 10th and 13th (NE). A **Lesser Whitethroat** was recorded at Sandwick, Lewis, between 7th and 10th October (NE). Several **Yellow-browed Warblers** were seen in Shetland in early October: one at Seafield, Lerwick, on 7th and 8th (DC, WP); one at Haroldswick on 11th (EM, MS); and two at Tresta on 14th (RJT).

A **Red-breasted Flycatcher** found at Elie Ness on 11th October was already ringed and had therefore probably come from Fair Isle or the Isle of May (RBH, DWO).

A **Grey Wagtail** in an unusual environment was one which landed briefly in an unpromising area of muddy car parks and crumbling buildings in the Cowcaddens district of Glasgow on 31st October (ATM).

In sharp contrast to last year (see 3: 180), there has only been one report of **Waxwings**. This was of two in St Andrews on 11th November (MHEC). Four **Great Grey Shrikes** have been seen: one in pines on Balloch Hill, Keith, Banffshire, on 4th October (RH); two in Fife, on the East Lomond on 9th October, and near Falkland on 13th November (JRTS); and one at the mouth of the Endrick on 21st November (JMCE, DS).

Exceptional numbers of **Goldfinches** were present at Shell Bay, Fife, in September, there being at least 100 on 6th and about 80 on 26th (DWO). In Dornoch, Sutherland, two were seen on 5th December and three on 25th (DM). Further reports of **Siskins** (see 3: 205) are of one at Morton Lochs on 1st November (DHL, AMcC, AW); two at Siccar Point, Berwickshire, on 11th October; at least nine in Roslin Glen, Midlothian, on 25th October, and three at Carrington, Midlothian, on 3rd November (ADKR). A flock of at least 60 **Redpolls** was seen at Gladhouse, Midlothian, on 23rd and 30th August (EMS, RWJS), and there were 80 at Barr Loch, Renfrewshire, on 15th October (RGC) (see 3: 205).

High counts of **Bramblings** are of 50 in a finch flock at Gladhouse, Midlothian, on 18th October (MJE, TDHM); at least 100 with other finches at Amulree, Perthshire, on 31st October (DHL, AMcC, AW); and over 200 at Lockerbie on 8th November (JHS). Unusually large flocks of **Tree Sparrows** in Fife, were of about 60 birds at Newburgh from early October (TS), and of 70 at Elie estate on 25th December (DWO).

Earlier observations—before 1st September 1964

A **Black-necked Grebe**, earlier seen swimming in Sandside Bay, was found shot at Reay on 29th January. The skin was preserved and was examined by various people at the S.O.C. Conference. There is no previous record for Caithness (JG per DMS).

An interesting record is of a **Manx Shearwater** which landed and called twice near the Castle cliffs, St Andrews, at 10.45 p.m. on 14th March (JLSC).

Water Rails bred at Caerlaverock Nature Reserve in 1964 and four young were seen from 8th August onwards (ELR).

An adult female **Marsh Harrier**, the first for Argyll, was observed at close quarters at Loch Sween on 18th May (PBW).

Wood Sandpipers were scarce during the autumn (3: 201) and so it is worth adding that one was seen at Buddon Burn, Angus, on 10th August (RJ). A peak of at least 12 **Spotted Redshanks** was recorded at Caerlaverock on 31st August (ELR).

Subsequent to our mention of the **Kittiwake** breeding on Fidra for the first time (3: 203), it has been reported that two nests, each with a well grown chick, were found on the island on 18th July (WW, BZ). Autumn numbers of **Little Gulls** at Carnoustie, Angus, reached a peak of 28, including nine adults, on 5th August (RJ).

A pair of **Garden Warblers** was seen carrying food in Binscarth wood, Orkney, on 15th and 16th July (EB). This appears to be the first suggestion of breeding in the county.

Tree Sparrows were recorded nesting at Newburgh, Fife, in 1964 for the first time in 30 years—there were at least four pairs (TS per ATM).

General observations—behaviour, etc.

A report of **Mallard** breeding very late comes from St Andrews, where six newly hatched young were found on 9th November: only one survived the first night (JLSC). On 16th November there were about 70 **Kittiwakes** sitting in pairs on the old nests at the harbour colony in Dunbar, East Lothian. "Love-pecking" and "Kittiwaking" were observed and the birds were seen to fly out from the cliff in a cloud as they do during the breeding season (MFMM). Occasional occurrences like these two are usually attributed to a mild spell of weather bringing the birds back into breeding condition at an inappropriate time.

As there are few records of the longevity of eagles, it may be of interest to record that "Wilhelmina," the **Golden Eagle** at Edinburgh Zoo, died recently at a fairly accurately estimated age of 52 (per GW). It is of course a well known fact that animals tend to live longer in captivity than they do in the wild.

RWJS has some interesting comments on the recent record of **House Martins** building on flats only a year old (3: 206). He writes: "There is one temporary habitat in Midlothian where this is not uncommon. On new building sites one or several

pairs may nest, often on uncompleted buildings, and the obvious attraction is the mud which is almost invariably present at some part of the site. When the building site has been cleared up the birds will disappear with the mud.

'This same factor operates detrimentally with some long-established nest-sites. House Martins nested for many years at a school in Loanhead but ceased to do so several years ago. During the same period some local stables were pulled down and the area rebuilt. Possibly part of the decline in numbers of this species could be linked with the difficulty of getting good, old-fashioned mud.' It has been suggested by a number of people (see *British Birds* 52: 146) that the distribution of nesting sites of this species is correlated with the proximity of water and thus food. The suggestion that mud is a determining factor is interesting, and it would be useful to know of any other cases in which the rise or fall of this species in an area is linked with the availability of mud for nest-building.

Following an influx of **Robins** on the coast of East Fife on 11th October, some of the birds set up territories along the beach which they were still defending at the end of December (DWO).

Reviews

A New Dictionary of Birds. Edited by Sir A. Landsborough Thomson for the British Ornithologists' Union. London, Nelson, 1964. Pp. 928; 48 plates (16 in colour) and many text figures. 105/-.

This great work fittingly marks the Centenary in 1959 of the British Ornithologists' Union and is the just successor of Professor Alfred Newton's 19th Century *A Dictionary of Birds*, published in 1896. It is the joint effort of more than 170 acknowledged experts and a selection of prominent artists and photographers, but above all is the creation of its Editor, who composed by far the biggest share of leading articles and wrote and arranged the shorter entries.

The layout is similar to that of its predecessor, being strictly alphabetical and having text figures, maps, diagrams, and comprehensive cross-references; but in addition this book is graced by prints of photographs and of paintings in colour to illustrate certain topics of bird biology.

Besides the prefaces there are two lists to guide one's general reading; one having all the major articles on bird groups (at the family level) presented basically in Wetmore order, and one having all the other major articles logically grouped under the main headings—"General," "Form and Function," "Systematics and Evolution," "Distribution and Ecology," "Ethology," and "Birds and Man." A list of contributors gives separate credit for the longer essays and adds interest with personal information about the widely dispersed and formidable galaxy of talent which produced this landmark in ornithological literature. At the end of the book is an alphabetical list of all the genera mentioned therein, with the names of the articles containing them.

The title 'dictionary' is a little misleading, for the book is as much an encyclopaedia. While definitions and shorter entries are indeed in the tradition of lexicography, the principal headings cover essays more suited to the expanded text of an encyclopaedia. This in no way detracts from the book which is able thereby to meet all but the most detailed enquiries. The leading articles are most elegantly written, and are illustrated where necessary by text figures and diagrams, for instance on anatomical and distributional matters, on aerodynamics and on meteorology. At the end of each is a short bibliography listing the more recent authoritative publications. Older writings are quoted if classics or where there is a dearth of more modern material.

Nine of the coloured plates have been prepared specially to show plumage similarities and differences involving age, sex, the seasons, polymorphism, and geographical range; one illustrates evolutionary radiation; one the extremes of egg coloration and marking; four are of characteristic Northern, African, Australian, and Neotropical birds; and one contains two examples of modern colour photography. The 32 black and white photographs, many of them classics of their kind and instantly recognisable to the discerning reader of illustrated bird books, have been selected to show the most characteristic activities of birds—flying, running, wading, swimming, climbing, preening, feeding and nesting habits (including nest sanitation and parasitism), display and posturing, nocturnal activities, fledging, and gregariousness. The field of ornithology is indeed well covered by these fine plates, and by the text figures; but one key bird has been left without a portrait. That is *Archaeopteryx*. The omission will be unimportant to most people but the writer would have liked to see a plate depicting at least one of the beautiful fossils of this earliest known bird.

There has long been a need to bring definitive writing of this kind on all bird topics within the covers of a single volume because in the past anyone taking more than a superficial interest in ornithology has been faced with the difficult problem of gathering an adequate library. Identification books and field guides have proliferated, various works have been published on bird biology, others on behaviour, and many monographs have appeared dealing with single species, genera, and families. Anatomies of merit also are available, but mostly from the antique book shops. The result is that those of modest means have had to remain without coverage of many aspects of the subject. However, it can now fairly be said that one may approach the study of birds very efficiently possessing two, at most three, works: a field guide, the detailed handbook of the birds of the region, and this dictionary, which at first will satisfy all queries and later will serve as the starting point of any chosen specialisation.

The standard of accuracy, as can be expected from such contributors, is so very high that there will be few occasions to act upon the Editor's invitation to notify him of errors. On the other hand there is limitless scope to suggest additions, especially of definitions, terminology, and bird names. Cases in point are: 'Haeckel's law,' 'urohydrosis' and 'niltava.' There is also the Editor's problem in deciding how far to go in making separate entries to explain terms appearing in the longer articles. The claim he makes is that words available in an ordinary dictionary and having no special ornithological application will be excluded, but he is not fully consistent. Thus he includes, for example, 'longitude,' 'latitude,' 'femur,' 'tibia,' and 'humerus,' all very well known and appearing in ordinary dictionaries, but leaves out 'ossicles,' 'trabecula,' and 'coxal joint,' much less well known though having mention in the *Shorter Oxford English Dictionary*.

Cross-references directing the reader from definitions to the essays where they appear in context are almost universally employed, and are a valuable feature of the work. However, some have been left without, and while adequate in themselves, would be of greater help to the less experienced reader if they had been given references to context, or failing any, one or two examples. Thus many bare ethological definitions have no link with an article on behaviour. They are: aerophaneric, allelomimetic, drive, facilitation, gamosematic, intention movements, kronismus mood, overflow activity, specific action potential. Much the same applies to the ecological rules (Allen's, Bergmann's, and Gloger's) for, although the first two are referred to the articles on the wing, no examples of any can be found by consulting the named entries. The following also is a list of words explained but given neither cross-reference nor example: allocryptic, atresic, chronocline, cladistic, decomposed, diapsid, ecotone, ecotype, edaphic, endaspidean, euryoecious, eusyanthropic, exanthropic, exaspidean, fissipalmate, heterogynism, niche, plantar, polytopic, racket, relict, sesamoid bones, sibling species, stenoecious. There are also, of course, adjectives of obvious application such as 'proximal' and 'distal' that need no reference and rightly have none.

Alternative spellings, equivalents in terminology, and multiple entries are inevitable concomitants of lexicography, adding to the compiler's burdens. All accepted forms should be present in a dictionary or it cannot fully meet its obligation to lead the enquirer to his goal with the minimum of searching. Variations of spelling are few and do not invariably need separate entries, because of close similarity, but if first letters are different, a word may not be easily found. There is one instance of this in 'Caspar Hauser,' which appears in the dictionary as 'Kaspar Hauser,' although even the German text of Wassermann's novel uses the letter 'C.' Equivalents in terminology, another cause of duplicated explanations, arise freely in anatomical description, and result from historical change, earlier names being superseded by later ones, and from regional preference, workers in one place using different names from workers elsewhere. It must be a matter of the greatest difficulty to include them all. Thus we find 'radiale,' 'ulnare,' and 'proventriculus' in the dictionary but not their equivalents 'scaphoid' (or scapholunare), 'cunciform,' or 'glandular stomach,' though 'cubital,' the obsolescent equivalent of 'secondary,' is present. Multiple entries to cover an expression of several words are very desirable, but are not always made. Ecological rules are listed only under 'rules' and zone of secondary hybridisation only under 'hybridisation.' The essay on the latter subject would be difficult for many to locate, as it is widely known as 'zone of secondary intergradation' (see Mayr 1959, *Ibis*, 1959: 101).

The man who said he could not abide dictionaries on account of their very poor plots could never have met one like this, for it is a most fascinating book. Its bulk consists largely of the leading articles which are most interesting, even for sporadic reading, and the more severely technical material is lightened by dissertations on ancillary bird lore such as heraldic birds, Shakespeare's birds, birds of the Bible, birds as omens, and birds in art, music and poetry. Notwithstanding the earlier detailed criticisms, which are intended only to be constructive and are really very few for a work of this magnitude, the Editor cannot be too highly praised for his efforts. His enterprise and scholarship, and those of his collaborators, have produced a volume which, besides current success, is assured of an honoured place in the annals of biological literature.

The undersigned has read and acquired a great many birds books over the last thirty years, but not one better than this.

IAN F. STEWART.

The World of Birds : a Comprehensive Guide to General Ornithology.

By James Fisher and Roger Tory Peterson. London, Macdonald, 1964. Pp. 288; 92 pp. colour plates, 96 pp. colour maps, many photographs and diagrams. 105/- (pre-publication 84/-).

Eight years ago James Fisher and Roger Tory Peterson completed their successful *Wild America*. Now after five years research they move from continental to global level with a magnificent comprehensive guide to ornithology treated as a branch of biology. This is at once a most striking and beautifully produced book.

The first six chapters cover distribution, anatomy, how birds live, their society and migrations, their fossils and evolution. These subjects can rarely have been presented so attractively. The seventh chapter on techniques of the ornithologist includes sections on recording, photography, censuses, ringing and radar. With the aid of maps of suitable scale and projection, chapter eight records the present world distribution, and fossil remains, of the two hundred bird families. The number of genera and species in each family is given along with the probable region of origin. Chapter nine roams widely over the exploitation, domestication and protection of birds. A "red list" gives 143 species whose world populations may be below 2,000, and a "black list" details all species that have become extinct since 1600.

Dr Peterson's paintings, in eight-colour litho, are an integral part of the book. In places they illustrate the text; elsewhere the text seems to amplify the pictures; and throughout, the two are complementary. They range from lavish plates covering whole pages, to small drawings overflowing attractively into the wide margins. Birdwatchers on both sides of the Atlantic have had cause to be grateful to Dr Peterson for the accuracy of his illustrations in field guides. The present work allows scope to justify the claim that he is America's most celebrated bird painter since Audubon.

This book contains much information difficult to locate elsewhere. The serious student will however often regret the lack of references for many of the statements made. This is a frequent criticism of popular works, but it is because *The World of Books* is so obviously out of the ordinary that this omission is particularly deplored. Eight pages of bibliography guide further reading but are seldom mentioned in the text. For bibliophiles there are several plates of book spines and title pages. The book measures 12½ x 9½ inches, and though necessary for a few illustrations this precludes an upright posture on the average bookshelf. A transatlantic influence in spelling and nomenclature is frequently evident and readers in this country are assumed to know their loons and murre. The numerous photographs, maps, figures, charts and diagrams are mostly of a high standard although the figure on p. 74 and table 2 on p. 241 are confusing.

This is a clearly and interestingly written, superbly illustrated and well produced guide to ornithology. Anyone interested in birds will browse through its pages with delight.

W. E. WATERS.

The Oxford Book of Birds. Illustrated by Donald Watson. Text by Bruce Campbell. London, Oxford University Press, 1964. Pp. xvi + 207; line drawings and 96 coloured plates. 35/-.

This new book is of special interest to Scottish ornithologists. The text is by Bruce Campbell and illustrations by Donald Watson, and those of us who have been eagerly awaiting the result of this most interesting partnership will certainly not be disappointed.

It is most readable and highly informative, avoiding both the super-scientific and the superficial approach. The text covers all the birds which have ever been recorded in Britain; and though the salient characteristics of each bird are given briefly, the accent is on habitat, and, for our breeding birds, nests and eggs. The habitat preference of different species is a fascinating subject, too often passed over in a few words, but here Bruce Campbell gives it due prominence. Nest sites, eggs and clutch size are also dealt with clearly and concisely and the whole text is lucid, with references well marked and easy to follow.

To illustrate an entire series of British birds is a tremendous undertaking, and in this book our own Scottish artist, Donald Watson, joins the very few who have achieved it. Each species is painted with characteristic skill against its natural background, and Scottish readers will soon spot the well known shape of the Isle of May far out on the horizon of one of the plates.

It is almost inevitable in painting such a lengthy series that there should be a certain unevenness of execution. My own preference is for his water birds, in which I think he is unsurpassed, though I am less happy about some of the smaller birds. There is however no doubt that in this book the marriage of text and illustration is a particularly happy one.

To round off the main part of the book there are a number of articles of particular interest—a very absorbing one on classification, and shorter ones on breeding behaviour, migration and British observatories. The anatomy of birds, their different types of flight, and their breeding display, are all analysed in considerable detail and clearly illustrated with line drawings.

It would be difficult to think of any book of this size which gives so much information so clearly yet so briefly. Certainly a must for all who are interested in birds in all their many aspects.

OLIVE T. THOMPSON.

Proceedings of the First European Meeting on Wildfowl Conservation.

Edited by J. J. Swift. London, Nature Conservancy, 1964. Pp. xvii + 289; 28 figures and maps, 14 photographs. 24/-.

The First European Meeting on Wildfowl Conservation was held at St Andrews from 16th to 18th October 1963. It was sponsored by the International Wildfowl Research Bureau, and the Nature Conservancy was responsible for organisation and administration. It was attended by 72 research biologists, naturalists, wildfowlers, and administrators, representing 17 different countries and various international bodies. Forty-five of the participants were from abroad, and attendance from Great Britain was limited in order to keep the group compact enough for effective discussion.

Research workers in different European countries reported on "The Wildfowl Situation"; W. F. Crissey (U.S.A.) spoke on "Future of Wildfowl Reports and Information"; there were various papers on "Wildfowl Conservation Laws" in different countries; a paper by Dr Luc Hoffmann on "Wildfowl Refuges"; another by E. M. Nicholson on "Improved International Co-operation"; and various papers on "Relationship between Conservationists and Shooting Interests" and "Adverse and Beneficial Developments."

The success of the Meeting was undoubtedly due to the policy of circulating all papers in advance. Following a brief introduction by each speaker, a full discussion ensued. The discussions were invaluable and are reported in full in the *Proceedings*.

Everyone interested in wildfowl and conservation will find this work full of valuable information.

GEORGE WATERSTON.

Biology of Birds. By W. E. Lanyon. British edition. London, Nelson, 1964. Pp. x + 163; 64 line drawings and diagrams. 21/-.

As Associate Curator of Birds at the American Museum of Natural History Dr Lanyon has found himself continually besieged with questions from enthusiastic amateurs on the more basic aspects of the biology of birds. This little book is an attempt to satisfy the demands of the layman by scanning the whole field in the simplest possible language: for those whose curiosity carries them further, a useful list of references is given for each chapter.

Despite the brevity of the book, nearly every major aspect of avian biology is touched upon and dealt with in a manner both informative and concise. Some may accuse the author of over-simplifying and over-generalising but the necessity that a book of this kind should be short and inexpensive if it is to be widely read makes such errors excusable. Otherwise, my only complaint is that the diagrams are poorly labelled and often difficult to understand.

At a time when biologists are realising more and more the value of the amateur ornithologist, while the amateur is becoming increasingly interested in the scientific aspect of his subject, I feel that books such as this have a very useful purpose to serve. I have no hesitation in recommending it to the attention of all birdwatchers whose interest goes further than identification and classification.

PETER J. B. SLATER.

Birds and Green Places. A Selection from the Writings of W. H. Hudson. Edited by P. E. Brown and P. H. T. Hartley. Illustrated by Robert Gillmor. Sandy (Bedfordshire), Royal Society for the Protection of Birds, 1964. Pp. 131; 17 line drawings. 11/- post free.

William Hendry Hudson, naturalist and writer, was born in South America, and of the twenty or so books which he wrote a number were inspired by his early experiences in the Argentine. In producing this anthology however the selectors have confined themselves to his descriptive writings of the English scene and its flora and fauna, chosen from books written in his middle and later life which he spent in England.

The book is in six parts, the first two forming more than half of it and being devoted to birds and bird song, and the remainder dealing with animal, insect and plant life.

The charm of the passages selected for this anthology lies in the almost poetic quality of Hudson's writings and in the brilliant word pictures which he paints of wildlife and the countryside. Perhaps not a "textbook" from which the experienced ornithologist or naturalist is likely to glean fresh knowledge of his subject, but certainly a book which will have a quiet appeal to all who love nature and the outdoors.

DAVID DEWAR.

Scottish Wild Life. The *Scottish Field* Series No. 2. By David Stephen. London, Hutchinson, 1964. Pp. ix + 183; 94 colour photographs. 63/-.

This is an excellent book in which pocket essays filled with first-hand knowledge gathered direct in the field about a representative range of

our Scottish wildlife are illustrated with a series of colour photographs taken by the author. Most of them are exceedingly good and some outstandingly so, and with those which fall short of the general high standard this appears almost always to be due to the difficulties of colour reproduction.

Seventy-seven species are dealt with in this sample of our national fauna—12 mammals, 64 birds and one amphibian—and about each of them David Stephen writes with the authority of personal and usually long and close study. In the few instances where my own range of experience differs from his the difference is usually attributable to geographical or local difference of behaviour. For example, in parts of south-east Scotland the Common Gull is the commonest gull in winter and the Great Black-backed Gull is to be found foraging the upland country far inland. Also, at the Blackcock lek I have watched through recent years, the main purpose of the exercise would appear to be dominance, with territories or positions not fixed but mobile within the area of the lek. Incidentally, has there not been a textual slip at the plate of the Golden Plover which I would have placed as a fairly normal male of the Southern form?

While the Introduction has not for me the same attraction as the text and photographs, with their store of first-hand knowledge, this may not be the same for other readers. I did however feel that some portion might well have been devoted to a brief mention of the danger, present and potential, to our fauna—particularly the birds—from toxic chemicals and the like, the threat presented by which forms perhaps a graver risk to many species than all the attrition they have suffered at the hands of man since the start of game preservation.

WILLIAM BROTHERSTON.

Requests for Information

Golden Eagle Survey. In view of the disquieting report by Dr J. D. Lockie and Dr D. A. Ratcliffe (*Brit. Birds* March 1964) of a marked infertility trend in Golden Eagles breeding in a West Highland area which they attributed to the use of dieldrin sheep dips, the R.S.P.B. co-operated with the Nature Conservancy last summer in carrying out a survey of breeding Golden Eagles over a wide area.

In order to make comparisons with the situation in the past the Society is most anxious, as a matter of urgency, to obtain any unpublished data on breeding success. Notes would be welcomed by the R.S.P.B. Scottish Representative, George Waterston, 21 Regent Terrace, Edinburgh 7.

Rock Dove Enquiry. No information has been received from the south west coast between Dumfries and Bute, or the east coast from Berwick to Aberdeen. Many of the pigeons may be feral birds of domestic origin, and parts of the coast may not have any pigeons. But information on both points would be very welcome, and enquiry forms are available from Raymond Hewson, 170 Mid St., Keith, Banffshire. Further information from islands would also be welcome.

Official Section

THE SCOTTISH ORNITHOLOGISTS' CLUB

Summer Excursions

Important Notes

1. Members may attend excursions of any Branch in addition to those arranged by the Branch they attend regularly.
2. Where transport is by private cars please inform the organisers if you can bring a car and how many spare seats are available. All petrol expenses will be shared.
3. Please inform the organiser in good time if you are prevented from attending an excursion where special hire of boats or buses is involved. Failure to turn up may mean you are asked to pay for the place to avoid additional expense for the rest of the party.
4. Please bring picnic meals as indicated (in brackets) below.

ABERDEEN

Apart from the April date, full details of excursions will appear in the "Club Column" of the local "Evening Express" on the Saturday prior to the Sunday excursion.

Sunday 25th April

VISIT to a L.E.K.—Leader, N. Picozzi. This must be a small party. Further details on request to A. Anderson (Tel. Newburgh 260).

Sunday 16th May

INVERCAULD: FELAGIE, MEALL ALVIE, CRAIGLEEK (subject to permission)—Leader, Professor V. C. Wynne-Edwards. Meet Old Bridge of Dee at 10.30 a.m. (lunch and tea).

Sunday 20th June

FOWLSHEUGH—Leader, D. W. Garvie.

Sunday 22nd August

YTHAN ESTUARY AND LOCHS—Leader, A. Anderson.

Sunday 31st October

LOCH STRATHBEG—Leader, J. Edelsten.

AYR

Saturday 24th April

CULZEAN CASTLE, MAYBOLE (by kind permission of the National Trust for Scotland)—Leader, Dr M. E. Castle. Meet Wellington Square, Ayr, 2 p.m. or at car park, Culzean Castle, 2.30 p.m. (tea).

Saturday 8th May

BARR MEADOWS, RENFREWSHIRE—Leader, R. M. Ramage. Meet Howwood Station yard 2 p.m. (tea).

Wednesday 19th May

AUCHINCUIVE ESTATE (by kind permission of the Principal, West of Scotland Agricultural College)—Leader, Dr M. E. Castle. Meet near bus shelter at main gates of College on the Mauchline road 7 p.m. prompt.

Saturday 22nd May

DRUMLANRIG CASTLE, THORNHILL, DUMFRIES (by kind permission of the Duke of Buccleuch)—Leader, J. F. Young. Meet Wellington Square, Ayr, 1 p.m. or Queen's Drive, Drumlanrig Castle, 2.30 p.m. (tea).

Saturday 5th June

GIRVAN, BALLANTRAE and GLEN APP ESTATE (by kind permission of Lord Inchcape)—Leader, Miss M. H. Shanks. Meet Wellington Square 2.30 p.m. or Shalloch Corner, $\frac{1}{2}$ mile south of Girvan, 3.15 p.m. (bring substantial picnic tea as excursion will finish late; it is hoped to see and hear Nightjars).

Saturday 19th June

MEIKLE ROSS, SOLWAY COAST, KIRKCUDBRIGHTSHIRE—Leader, R. M. Ramage. Meet Wellington Square 9 a.m. (lunch).

Saturday 18th September

FAIRLIE FLATS—Leader, G. A. Richards. Meet on road opposite Hunterston Nuclear Power Station 11.30 a.m. (lunch).

DUMFRIES**Sunday 16th May**

DRUMLANRIG GROUNDS (by kind permission of Major Fox)—Leaders, J. Maxwell and J. Young. Meet at Queen's Drive entrance 2 p.m. (tea).

Sunday 30th May

MULL OF GALLOWAY—Leader, A. D. Watson. Meet Drummore Harbour, Wigtownshire, 12 noon (lunch and tea).

Sunday 27th June

HORSE ISLAND (by kind permission of the R.S.P.B.). Limited number. Applications to H. M. Russell, Nara, Dalbeattie Road, Dumfries. Boat leaves Ardrossan Harbour 12 noon; fare about 5s. (lunch and tea).

Sunday 15th August

CAERLAVEROCK NATURE RESERVE (by kind permission of the Nature Conservancy)—Leader, E. L. Roberts. Meet at East Park Farm, Caerlaverock, 2 p.m. (tea).

Saturday 25th September

ABERLADY BAY NATURE RESERVE—Leaders, W. Austin and R. T. Smith. Meet at timber bridge, Aberlady, 12 noon (lunch and tea).

DUNDEE

Applications for all excursions should be made one week in advance to Jack Scobie, 11 Nevill Street, Dundee (Tel. 86209).

Sunday 25th April

AMULREE DISTRICT—Meet City Square 10 a.m. (lunch).

Weekend 14th-17th May

ROTHIEMURCIUS and CAIRNGORMS—Provisional booking made at Dell Hotel for party of 12. Individuals to confirm their own booking direct. Transport to be arranged.

Sunday 27th June

ISLE OF MAY—Number limited to 12. Details of departure will be notified to those attending.

Sunday 22nd August

MONTROSE BASIN—Meet City Square 10 a.m. (lunch and tea).

Sunday 26th September

EDEN ESTUARY—Details of departure to be made known when Tay Ferry sailings confirmed.

EDINBURGH**Saturday 15th May**

ABERLADY BAY NATURE RESERVE (spring migrants)—Leaders,

C. N. L. Cowper and K. S. Macgregor. Meet at timber bridge 2.30 p.m. (tea).

Saturday 29th May

THE HIRSEL, COLDSTREAM (by kind permission of Sir Alec Douglas Home)—Leader at Hirsell, Major The Hon. Henry Douglas Home. Excursion by private cars. Applications by 22nd May to W. Brotherton, 3 Craiglea Place, Edinburgh 10 (Tel. MORningside 5431), stating number of seats available. Meet at Hirsell 12 noon at spot arranged by leader (lunch and tea).

Saturday 12th June

ISLE OF MAY—Numbers limited to 12. Applications by 5th June to W. Stair Macdonald, Hadley Court, Haddington (Tel. 3204). Party meets and sails from West Pier, Anstruther, 11.40 a.m. prompt. Cost of boat, about 9s. (lunch and tea).

Sunday 13th June

ISLE OF MAY—arrangements as for 12th June. As excursion will be by private cars on Sunday, please inform leader if spare seats available.

Sunday, 27th June

LOCH LEVEN and ST SERFS ISLAND, FIFE (by kind permission of the Nature Conservancy)—Applications by 19th June to Miss N. J. Gordon, 12 Hope Terrace, Edinburgh 9 (Tel. MORningside 4784, or evenings WAVErley 6042). Meet at the Sluices, Scotlandwell, 11 a.m. Private cars; please state number of spare seats available (lunch and tea).

Saturday 10th July

BASS ROCK (by kind permission of Sir Hew Hamilton Dalrymple)—Leader, Ian V. Balfour Paul. Applications by 3rd July to Miss O. T. Thompson, Bruntsfield Hospital, Edinburgh. Boat leaves North Berwick harbour 2.30 p.m. returning about 7 p.m. Tickets (approx. 8s) must be purchased at Harbour Office before embarking (tea). If weather unsuitable for landing, an alternative excursion from North Berwick will be arranged.

Saturday 11th September

ABERLADY BAY NATURE RESERVE (autumn migrants)—Arrangements as for 15th May.

GLASGOW

Saturday 8th May

BARR MEADOWS—Leader, R. G. Caldow. Meet at Lochwinnoch Station Yard 2.30 p.m. (tea).

Saturday 29th May

THE HIRSEL, COLDSTREAM (by kind permission of Sir Alec Douglas Home)—Joint excursion with Edinburgh Branch. For arrangements see Edinburgh excursion list.

Saturday 5th June

LITTLE CUMBRAE (by kind permission of Little Cumbrae Estate Ltd.)—Leader, Miss W. U. Flower. Boat leaves Fairlie 12 noon; fare about 5s (lunch and tea). Applications by 22nd May to G. L. A. Patrick, 11 Knollpark Drive, Clarkston, Glasgow.

"The permission to visit Little Cumbrae is granted on condition that the Company does not warrant the safety of the premises and is under no obligation to protect you from injury or damage by reason of the state of the premises. By entering the said premises you will be deemed to have accepted these conditions."

Members participating in this excursion will be expected to sign an acknowledgment that they have read and agree to the said conditions.

Saturday 12th June

MILSA CRAIG—Leader, W. M. M. Eddie. Meet at Girvan Harbour 11 a.m. (lunch and tea). Applications by 29th May to G. L. A. Patrick (address above).

Wednesday 16th June

HORSE ISLAND (by kind permission of the R.S.P.B.)—Leader, D. J. Norden. Boat leaves Ardrrossan Harbour 6.30 p.m. Fare approx. 5s. Applications by 22nd May to G. L. A. Patrick (address above).

Saturday 26th June

HORSE ISLAND (by kind permission of the R.S.P.B.)—Leader, G. L. A. Patrick. Boat leaves Ardrrossan Harbour 2.30 p.m. Fare approx. 5s (tea). Applications by 5th June to G. L. A. Patrick (address above).

INVERNESS

For details of excursions apply to Branch Secretary, James MacGeoch, 11 Damfield Road, Inverness.

ST ANDREWS

For all excursions, inform Miss M. M. Spires, 2 Howard Place, St Andrews (Tel. 852), at least one week before each excursion.

Saturday 15th May

TAYFIELD (by kind permission of Dr John Berry)—Leave St Andrews Bus Station 2 p.m. (tea).

Saturday 22nd May

KILCONQUHAR LOCH (by kind permission of Nairn Estates)—Meet at North Lodge, Kilconquhar, 2.15 p.m. (tea).

Sunday 6th June

ST SERF'S ISLAND, LOCH LEVEN (subject to permission from Kinross Estates and the Nature Conservancy)—Boats leave the Sluices, Scotlandwell, 11 a.m. (lunch and tea).

Saturday 19th June

TENTSMUIR—Leave St Andrews Bus Station 2 p.m. (tea).

THURSO

For further information, please apply to D. M. Stark, 2 Harland Road, Castletown, Thurso.

Excursions

June 4th-7th—Island of Stroma.

July 16th-19th—Cape Wrath Peninsula.

Summer Field Work

15th March-30th April—Sea watches at Noss Head at weekends in conjunction with Observatory watches.

Summer: Census of seabird cliff-nesting colonies. Boat trips most weekends.

June: Arctic Skua Census. Excursions to breeding areas.

July: Ringing excursions at weekends to Ord of Caithness, Isle of Roan, Rabbit Islands and Handa.

A REPORT ON THE DUMFRIES WEEKEND EXCURSION

The Dumfries weekend this year maintained its high reputation as one of the most popular of the S.O.C. Excursions. Very high winds on Saturday 13th February meant a rather disappointing lack of small birds. But the bright weather and excellent company led by Willie Austin and

Langley Roberts made the visit to Caerlaverock Reserve well worth while. As always, the Barnacle Geese showed themselves to their best advantage in the clear sunlight. The huge flock of black and white geese grazed quietly, unconcerned by the large number of visitors, who eagerly climbed through barbed wire fences and over brooks to watch and photograph them.

After lunch at Glencaple a visit was made to Carsethorn where we saw many of the waders and sea duck. A most thrilling glimpse of flying Knot made an impressive finish to the short visit. The most exciting find of the weekend was seen late in the afternoon at Southernness—a drake Surf Scoter swimming in a raft of Common Scoter. 'Early birds' on Sunday who had missed seeing the Surf Scoter before, were lucky in seeing it, but late arrivals had to put up with only a Peregrine catching a wader.

Later, with Donald Watson's able assistance, we chased the elusive Bean Geese unsuccessfully, but made up for this by seeing Greenland White-fronted Geese quite well. Loch Arthur and Loch Ken provided several other attractive birds, with fine views of Long-tailed and Willow Tits, Pintail, Shoveler and Goldeneye.

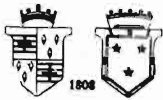
On Saturday evening an informal reception with members of the Dumfries Branch provided us with an interesting film show, by Bobby Smith and Jim Young, about nesting Swallows and the local avifauna. Donald Watson gave an extremely good talk on the different hybrid geese seen in the Galloway area, accompanying it with an excellent painting of the types seen over the past few years. Mrs Waterston made many sales from a varied selection of the most up to date bird books brought from the S.O.C. Bookshop.

Although the high wind managed to keep many of the small birds 'at home' the weekend was eminently successful and will be remembered by all for some time to come.

G. L. A. PATRICK

GREAT CRESTED GREBE ENQUIRY

Coverage for this B.T.O. national enquiry is urgently needed throughout Scotland at the end of May. The principal aim is to find out whether the species has been affected by toxic chemicals. Anyone willing to help should write at once to the Scottish organiser, Dr D. H. Mills, Salmon Research Laboratory, Contin, Strathpeffer, Ross-shire.



SUTHERLAND ARMS HOTEL

GOLSPIE
SUTHERLAND
SCOTLAND

Telephone : Golspie 216

Situated on the main North Road near the sea, Golspie offers invigorating open air holidays to all.

In addition to its unique golf course, it has fine loch fishings, sea bathing, tennis, bowls, hill climbing, unrivalled scenery including inexhaustible subjects for the field sketcher and artist and is an ornithologist's paradise. It is, indeed, impossible to find elsewhere so many natural amenities in so small a compass.

The B.T.O. Regional Representative, who lives in the village, will be pleased to offer local advice regarding the astonishing diversity of bird life in the vicinity and to receive lists of birds from visitors.

The Hotel is fully modern, but retains its old world charm of other days, and enjoys a wide renown for its comfort and fine cuisine.

Fully descriptive brochures, including birdwatching, will gladly be forwarded on request.

Proprietor, Mrs F. HEXLEY

Central Heating
A.A. R.A.C. R.S.A.C.
GARAGE AND
LOCK-UPS AVAILABLE

Cliff House Residential Club Dunwich

In walking distance of
Minsmere Bird Sanctuary

Open from Easter till the
end of September

Good food Packed lunches
Comfortable rooms, H. & C.
Club Licence

Telephone: Westleton 282

Small Advertisements

2/6 per line — minimum 7/6

Personally conducted bird-watching tours in Angus. Apply to **G. M. Crichton, 2 St Ninians Pl., Brechin, Angus.**

Highland Safaris — Write for brochure on our exciting inclusive holidays for naturalists. Sutherland Week includes visit to Handa and Cape Wrath cliffs. Ross-shire Week includes Summer Isles cruise and 3 Nat. Nature Reserves. **Kyle & Glen, Muir of Ord, Ross-shire.**

S.O.C. Bookshop — Please support the Scottish Ornithologists' Club by buying all your bird books from the club bookshop: the profits help to maintain facilities at the Scottish Centre. Terms, strictly cash with order. Write to **21 Regent Terrace, Edinburgh.**

PITMAIN BEAG
Kingussie

The
Naturalists' Centre

Accommodation for individuals and small groups from colleges, clubs, etc. Expeditions and study of Highland wildlife and country.

All outdoor people welcome and ski facilities in season.

Highland and Overseas
Field Holidays

Bird-watching and general Natural History holidays in Scotland and on the Continent including:

Scandinavia

France

Holland

Austria

For all information, apply:

Mr & Mrs COLIN MURDOCH

Pitmain Beag, KINGUSSIE, Inverness-shire. Tel. 300



Bird-life
abounds
in

ORKNEY &
SHETLAND

HOLIDAY CRUISES
from Leith & Aberdeen

Study, at close hand, an extraordinary variety of birds which never come South. Company ships, approved hotels, unforgettable scenery. All inclusive cost from about £14 to £44.

Write for free illustrated booklet to:



NORTH OF SCOTLAND, ORKNEY
& SHETLAND SHIPPING CO LTD
Dept. 14, Matthews' Quay,
Aberdeen.

COLOUR
SLIDES
of **BIRDS**

Incomparable Collection of British, European and African birds. Also views and places throughout the world. Send stamp for list. Sets of 100 for hire.

BINOCULARS

Our "Birdwatcher 8 x 30" model is made to our own specifications—excellent value at 15 gns. Handy and practical to use.

Ross, Barr and Stroud, Zeiss, Bosch Binoculars in stock.

W. Cowen - Keswick

Birds and Green Places

*A selection from the works
of W. H. Hudson*

In choosing examples for this volume P. E. Brown and P. H. T. Hartley have confined themselves to his descriptive writings of the English scene; the birds and beasts, insects and flowers. In addition, the spirit of the author's prose has been beautifully captured in 17 delightful drawings by Robert Gillmor.

A companion volume to the Bird Notes Bed-side Book.

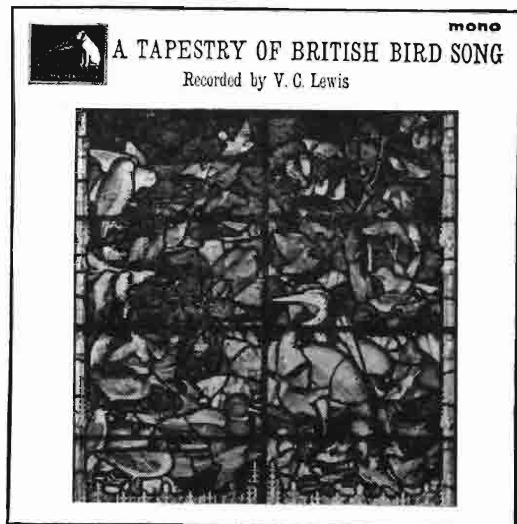
Price 11s post free

ORDER NOW FROM

Dept. 18

**The Royal Society for the Protection of Birds
The Lodge, Sandy, Bedfordshire**

A unique and wonderful record



A TAPESTRY OF BRITISH BIRD SONG

First-Ever Full-Length LP of British Bird Song

The dawn chorus... 'recitals' by more than 50 birds... song of the nightingale—all this is wonderfully captured for you by Victor C. Lewis. With the record comes a 4-page leaflet giving notes on each of the species heard.

JAMES FISHER writes of this record: "All the top songsters are really beautifully done, and all the birds' voices are woven into an accurate and heart-warming evocation of the wild."

HMV CLP1723 (mono)



HIS MASTER'S VOICE

*Available from all His Master's Voice
record dealers.*

E.M.I. Records Ltd., E.M.I. House, 20 Manchester Square, London W.1

The Scottish Ornithologists' Club Tie

Illustrated is the Official Club Tie, of which R. W. Forsyth's are the sole suppliers. The tie is made from 'Terylene' with a blue or green background, and the bird motif in silver. 17/9.



Forsyth's also provide warm clothing for bird watchers: gloves, scarves, underwear, shoes, caps, weatherproof trousers, jerkins, raincoats and overcoats.



R. W. Forsyth Ltd.

R. W. FORSYTH LTD, PRINCES STREET EDINBURGH AND AT GLASGOW

A Mosaic of Islands

KENNETH WILLIAMSON and J. MORTON BOYD

Islands have always attracted the traveller and the naturalist. The authors, both well-known naturalists, have recorded here many of the interesting experiences which they had while studying the wild life in some of the most inaccessible places in and around the British Isles.

21s.

A Guide to the Birds of Sussex

G. DES FORGES and D. D. HARBER

This guide summarises the status and distribution of all birds which the authors admit to the Sussex List and also gives information on migration under each species.

30s.

OLIVER & BOYD

New

ROSS BINOCULARS

10x40 Ross Solaross. This is probably the best buy in the Ross Solaross range and we would be inclined to think that it represents the best value obtainable today in a British glass of good quality. It is beautifully balanced and streamlined, weighs only 26 oz. and is fairly compact with a height of 6½ in. We are supplying with this binocular a first quality English-made hide case. Inclusive cost £21 2s 10d. Where high power is required, we would suggest the Ross 16x60 at £32 8s 8d with hide case.



The pick of the world's great instruments on 14 days' free trial

SEND FOR NEW ILLUSTRATED CATALOGUE
CHARLES FRANK LTD.
67-75 Saltmarket Glasgow C1.
Phone. BELL 2106/7 Est. 1907

Britain's greatest stocks of New, Used and Ex-Govt. Binoculars, Telescopes and Navigational Equipment.

Accredited agents for ROSS, BARR & STROUD, WRAY and ZEISS (both East and West zones)

LEITZ TRINOVID 10x40 Revolutionary in design, this new featherweight binocular is unbelievably compact. Its performance is positively brilliant and at £70 15s 9d. it is well worth the money.

JAPANESE BINOCULARS

If they are good, they can be very, very good and we have selected certain models which we can recommend with the utmost confidence and which we market under our own name:

8x30 centre focus and coated £12 10s
10x50 centre focus and coated. £15 10s

6x30 ARMY BINOCULARS

An excellent general-purpose binocular of good performance, which will stand up to a great deal of rough usage (cost approximately £20). With waterproof web case £7 15s 0d and £9 15s 0d, according to condition.

For wildfowling or when extremely high light transmission is required, we would suggest the Canadian Naval 7x50 binocular at £24 or the new Russian 7x50 at £18 10s. Both glasses are exceptionally good and it would be difficult to decide which is the better buy. The West Zone Zeiss 8x30B is possibly the 'ideal' wildfowling glass and it is available at £107 12s 0d.

TELESCOPES

We have a host of models from which to choose and can recommend the following:

Ex-Admiralty 16x40 single-draw micrometer focusing, £5 18s 6d.

Pocket 3-draw telescope, magnification 25x; an excellent auxiliary to your binoculars, with case £2 2s 0d.

Nickel Supra 15 to 60x; a tremendous advance in portable telescope design, £36 12s 0d. Pre-tax increase price while present stocks last.

Three-draw ex-Army telescope 22x50 mm. £7 17s 6d.

The Charles Frank 22x OG 50 mm. PRISMATIC with tripod. £22 10s 0d.

From Russia we have a MAKUTOV triple turret telescope of fantastic power and performance. Wt. 32 lb., price £250. Details on request.