















p.v.17

201937

# The Scottish Naturalist

*A Magazine devoted to Zoology*

With which is incorporated  
"The Annals of Scottish Natural History"

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.  
*Keeper, Natural History Department, Royal Scottish Museum.*

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.  
*Formerly Keeper, Natural History Department, Royal Scottish Museum.*

ASSISTED BY

PROFESSOR JAMES RITCHIE, M.A., D.Sc.,  
F.R.S.E.  
EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.  
LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.

H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.  
C. H. O'DONOGHUE, D.Sc., F.R.S.E.  
ANDERSON FERGUSSON, F.R.E.S.  
A. R. WATERSTON, B.Sc.

1938



EDINBURGH: OLIVER & BOYD, TWEEDDALE COURT  
LONDON: GURNEY & JACKSON, 98 GREAT RUSSELL ST.

1938



S. 47



No. 229]

1938

[JANUARY-FEBRUARY 1



EDINBURGH: OLIVER & BOYD, TWEEDDALE COURT  
 LONDON: GURNEY & JACKSON, 33 PATERNOSTER ROW

*Price 2s. 3d. Annual Subscription, payable in advance, 12s. 6d. post free*

# The Scottish Naturalist

*A Magazine devoted to Zoology*

With which is incorporated

“The Annals of Scottish Natural History”

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

*Keeper, Natural History Department, Royal Scottish Museum.*

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

*Formerly Keeper, Natural History Department, Royal Scottish Museum.*

ASSISTED BY

PROFESSOR JAMES RITCHIE, M.A., D.Sc.,  
F.R.S.E.

EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.

LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.

H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.

C. H. O'DONOGHUE, D.Sc., F.R.S.E.

ANDERSON FERGUSSON, F.R.E.S.

A. R. WATERSTON, B.Sc.

All Articles and Communications intended for publication, and all Books, etc., for notice, should be sent to THE EDITORS, Royal Scottish Museum, Edinburgh.

Subscriptions and Advertisements should be addressed to the Publishers, MESSRS OLIVER AND BOYD LTD., Tweeddale Court, Edinburgh.

Authors of General Articles will receive 25 Reprints (in covers) of their Contributions gratis. Additional Copies, in covers, may be had from the Printers, at the ordinary prices ruling, provided such orders accompany the Manuscript.

---

## EVERY NATURALIST SHOULD READ

The following major articles which have appeared in recent numbers of *The Scottish Naturalist*:—

Scottish Insect Immigration Records.

Notes on Highland Diptera. (Illustrated.)

Ferrets and Polecats.

Notes on Whales stranded on the Scottish Coast. (Illustrated.)

Isle of May Bird Observatory.

The Natural History of South Rona. (Illustrated.)

The Occurrence of *Gammarus* in Scottish Waters.

Notes from Gairloch in Wester Ross.

Scottish Sand-eels.

Further Notes on the Parasites of the Magpie Moth.

Land Planarians of the British Isles.

Lesser Redpoll in Midlothian.

Isle of May Bird Observatory Report.

The Eider in Sutherland and Shetland.

Notes on the Birds of Loch and Forest. (Illustrated.)

Wild and Domestic Cat compared. (Illustrated.)

Kingfishers breeding in Juvenile Plumage.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.



# The Scottish Naturalist

No. 229]

1938 [JANUARY-FEBRUARY

## ISLE OF MAY BREEDING CENSUS, 1936.

By H. N. SOUTHERN.

THIS enquiry was carried out between the dates 2nd and 26th July, so there are certain limitations to its completeness. Figures given for wheatears, eiders, and to a less extent for starlings, house sparrows, pied wagtails and meadow pipits are based on the number of pairs seen about with their families, and so would fail to account for any birds that had already gone. In view of the date it is probable that the latter would be very few, and so the figures, though representing a minimum as far as is known, are likely to be fairly accurate.

The object of the enquiry was twofold: (1) to determine the number of passerines breeding on the island, thus forming a basis for judging the influx of migrants at a later season; (2) to determine the total population for comparison with previous and subsequent breeding censuses.

The results are given in tabular form together with any previous figures that have been published. The latter have been chiefly drawn from a paper by Rintoul and Baxter (*Scot. Nat.*, 1925, p. 175), and from various notes by the same authors subsequently. Private information on a number of points has also been received from H. F. D. Elder.

Finally, the author wishes to express his gratitude to the Commissioners for Northern Lights for permission to stay on the island and other favours; to the chief lighthouse-keeper and other members of the staff for their assistance in many ways; and to the members of the Midlothian Ornithological Club for their interest and co-operation.

*Note*—The full results of the investigation will be published in the *Journal of Animal Ecology*, May 1938.

GROUP 1.—*Passerines*. Birds obtaining all their Food on the Island.

Species.	Pairs breeding in 1936.	Previous Figures.
ROCK PIPIT ( <i>Anthus spinoletta petrosus</i> ) . . . . .	24	...
MEADOW PIPIT ( <i>Anthus pratensis</i> )	2	...
WHEATEAR ( <i>Enanthe æ. ænanthe</i> )	3	2 ; (R. and B. 1925).
STARLING ( <i>Sturnus v. vulgaris</i> ) .	6	25 (1924) ; "decreasing" (1925).
HOUSE SPARROW ( <i>Passer d. domesticus</i> ) . . . . .	6	2 (1924).
BRITISH SONG THRUSH ( <i>Turdus e. ericetorum</i> ) . . . . .	2	0 (1925) ; recommenced breeding 1931.
BLACKBIRD ( <i>Turdus m. merula</i> ) .	3	1 ♀ (1925).
PIED WAGTAIL ( <i>Motacilla alba yarrellii</i> ) . . . . .	2	"3 or 4 pairs" (1918)

GROUP 2.—*Shore Birds*. Birds obtaining their Food partly from the Island, partly from the Sea.

BRITISH OYSTER-CATCHER ( <i>Hematopus ostralegus occidentalis</i> ) . . . . .	7	7 (1921).
---	---	-----------

GROUP 3.—*Cliff Birds and the Ternery*. Birds obtaining all their Food from the Sea.

KITTIWAKE ( <i>Rissa t. tridactyla</i> ) .	2950	...
NORTHERN GUILLEMOT ( <i>Uria a. aalge</i> ) . . . . .	2080	...
BRITISH RAZORBILL ( <i>Alca torda britannica</i> ) . . . . .	500	...
PUFFIN ( <i>Fratercula arctica grabæ</i> )	50	...
SHAG ( <i>Phalacrocorax a. aristotelis</i> )	10	2 (1925).
FULMAR ( <i>Fulmarus g. glacialis</i> ) .	4	2 (1925).
EIDER ( <i>Somateria m. mollissima</i> )	32	83 (1925).
COMMON TERN ( <i>Sterna h. hirundo</i> )	3400	...
ARCTIC TERN ( <i>Sterna macrura</i> ) .	800	...
SANDWICH TERN ( <i>Sterna s. sandvickensis</i> ) . . . . .	4	...

GROUP 4.—*Partly Predatory Species*.

HERRING GULL ( <i>Larus a. argentatus</i> ) . . . . .	455	58 (1924).
BRITISH LESSER BLACK-BACKED GULL ( <i>Larus fuscus affinis</i> ) .	7	2 (1933).

## NOTES CONCERNING SOME ANIMALS OBTAINED FROM THREE GERMAN WARSHIPS RECENTLY SALVED AT SCAPA FLOW, ORKNEY.

By J. E. FORREST, B.Sc., Department of Zoology, Queen Mary College, University of London, and M. I. CRICHTON, B.Sc., Department of Zoology, University of Cape Town.

ON the 21st of June 1919, the vessels of the German Fleet, surrendered to Great Britain in November 1918 and at this time interned at Scapa Flow in the Orkney Islands, were scuttled and sunk. Save for the battleship "Baden" and five light cruisers—the only vessels which remained afloat—about thirty ships were lost. They sank in approximately seventeen fathoms of water, and the depth and conditions were such that most of the ships came to rest on the sea-floor keel uppermost. The vessels have remained submerged until recent times, when, in the past few years, extensive salvage operations have been carried out and many of the ships have been successfully brought to the surface and several of them subsequently towed to the Naval Dockyard at Rosyth in the Firth of Forth to be broken up for scrap.

It has been our pleasure and privilege to visit three of these vessels on their arrival in dry dock at Rosyth prior to being broken up, and the following notes are the outcome of some observations which we have been able to make on the animals which had settled and grown on the hulls during their sixteen or seventeen years of submergence.

The warships from which we made our collections were the "Bayern," the "König Albert," and the "Kaiserin."

### "BAYERN."

This ship was visited on the 4th of May 1935. The dock had already been drained and the hull was entirely dry. It was not possible to reach the middle of the ship's side where the growth of seaweeds and encrusting animals was thickest and had remained longest undisturbed. The vessel was docked keel uppermost and the animals which were collected were obtained solely from the rusty and dry bottom of the ship and were naturally only species which are encased

in an outer shell or which leave some recognisable remains on death. The following were taken:—

- BRYOZOA.—*Smittia landsborovii* (Johnston).  
*Smittia reticulata* (MacGillivray).  
*Membraniporella nitida* (Johnston).  
*Diastopora patina* (Lamarck).  
*Membranipora lineata* (Linné).  
*Mucronella variolosa* (Johnston).  
*Schizoporella linearis* (Hassall).
- POLYCHÆTA.—*Pomatoceros triqueter* Linné.  
*Serpula vermicularis* Linné.
- MOLLUSCA.—*Anomia ephippium* Linné.  
*Chlamys distorta* (da Costa).  
*Hiatella gallicana* (Lamarck).
- CRUSTACEA.—*Balanus crenatus* Bruguière.  
*Balanus hameri* (Ascanius).

#### “KÖNIG ALBERT.”

The “König Albert” was visited on the 4th of June 1936. This ship had also been docked keel uppermost. No specimens were to be obtained from the bottom, but, by sailing around the dock on a barge, a collection of animals was made from the sides as the water was being pumped out of the dock. The following list of species makes no claim to completeness, but it serves to indicate the commoner species which were present and which had remained attached during the journey from Scapa Flow to Rosyth.

- PORIFERA.—*Sycon coronatum* (Ellis and Solander).  
*Halichondria panicea* (Pallas).  
*Desmacidon fruticosum* (Johnston).  
*Chalina oculata* (Pallas).
- CŒLEENTERATA.—*Tubularia larynx* Ellis and Solander.  
*Halecium halecium* (Linné).  
*Clytia johnstoni* (Alder).  
*Lafoëa dumosa* (Fleming).  
*Sertularella polyzonias* (Linné).  
*Nemertesia ramosa* (Lamouroux).  
*Alcyonium digitatum* Linné, large colonies very abundant.



CŒLEENTERATA.—*Metridium senile* (Linné), very abundant. Three colour varieties were observed:—

- (1) Brown column, central region of disc reddish-orange, tentacles greyish with a central white ring; up to about ten cms. in height; the most abundant variety.
- (2) Brick red column, red disc, tentacles very light with a central white ring.
- (3) Entirely white.

POLYCHÆTA.—*Lepidonotus squamatus* (Linné).

*Harmothoe imbricata* (Linné).

*Lagisca extenuata* (Grube).

*Halosydna gelatinosa* M. Sars.

*Nereis pelagica* Linné.

*Chætopterus variopedatus* (Renier).

*Polymnia nebulosa* (Montagu).

*Sabella pavonina* Savigny.

*Dasychone bombyx* (Dalyell).

*Pomatoceros triqueter* Linné.

*Protula tubularia* (Montagu).

BRYOZOA.—*Scrupocellaria scruposa* (Linné).

*Bugula avicularia* (Linné).

*Tubulipora serpens* (Linné).

*Membraniporella nitida* (Johnston).

*Microporella violacea* (Johnston).

ECHINODERMATA.—*Antedon bifida* (Pennant), abundant.

*Antedon petasus* (Düben and Koren), very large numbers of young specimens and adults. According to Mortensen (*Handbook of the Echinoderms of the British Isles*, Oxford, 1927) this species is known in British seas only from south-west Ireland and the Orkney Islands.

*Henricia sanguinolenta* (O. F. Müller).

*Asterias rubens* Linné.

*Leptasterias mülleri* (M. Sars).

*Ophiothrix fragilis* (Abildgaard), very abundant.

*Psammechinus miliaris* (Gmelin).

*Echinus esculentus* Linné.

MOLLUSCA.—*Anomia ephippium* Linné, common and often very large.

*Monia patelliformis* (Linné).

*Monia squama* (Gmelin).

*Mytilus edulis* Linné.

*Modiolus modiolus* (Linné).

*Modiolus phaseolinus* (Philippi).

*Chlamys distorta* (da Costa), abundant and very large.

*Chlamys tigerina* (O. F. Müller).

*Kellia suborbicularis* (Montagu).

*Hiatella gallicana* (Lamarck).

*Emarginula reticulata mülleri* Forbes and Hanley.

*Patelloida virginea* (O. F. Müller).

*Calliostoma zizyphinum conuloide* (Lamarck).

*Velutina velutina* (O. F. Müller).

*Trivia monacha monacha* (da Costa).

*Nassarius incrassatus* (Ström).

*Sphærostoma hombergii* (Cuvier).

*Duvaucelia plebeia* Johnston.

*Archidoris britannica* (Johnston).

*Idulia coronata* (Gmelin).

*Eubranchus exiguus* (Alder and Hancock).

*Cratena aurantia* (Alder and Hancock).

CRUSTACEA.—*Balanus crenatus* Bruguière.

*Balanus hameri* (Ascanius).

*Galathea nexa* Embleton.

*Portunus puber* (Linné).

*Cancer pagurus* Linné.

*Hyas coarctatus* Leach.

PYCNOGONIDA.—*Pycnogonum littorale* (Stroem).

*Phoxichilidium femoratum* Rathke.

TUNICATA.—*Ascidia mentula* O. F. Müller.

*Ascidella aspersa* (O. F. Müller).

*Ascidella scabra* (O. F. Müller).

*Ciona intestinalis* (Linné).

*Boltenia echinata* (Linné).

#### “KAISERIN.”

A visit was paid to the “Kaiserin” on the 17th of October 1936. The dock had been drained the previous

day so that the hull was dry. It was therefore impossible to obtain many specimens, since most of them had already died, and the major part of the ship's side was inaccessible. No attempt was made to obtain a representative collection, but the following species were taken from the lower parts of the ship (*i.e.* the deck), a few being also scraped from the sides by the aid of a boat-hook.

*Chalina oculata* (Pallas), common, fine branched specimens up to twenty cms. in length.

*Alcyonium digitatum* Linné.

*Anomia ephippium* Linné, some specimens very large.

*Modiolus modiolus* (Linné), very fine large specimens, common, mostly attached singly with rich encrusting growth of barnacles; average length thirteen cms.

*Balanus hameri* (Ascanius), common, large specimens.

*Balanus porcatus* da Costa, common.

*Balanus crenatus* Bruguière.

The nomenclature of the polychæta is according to Fauvel, *Faune de France*, Paris, 1923 and 1927, and that of the mollusca according to Winckworth, "The British Marine Mollusca," *Journ. Conch.*, 1923, except in the case of the nudibranchs where O'Donoghue has been followed, "List of British Nudibranchiate Mollusca," *Proc. Malac. Soc., Lond.*, 1923.

As one might expect, in all three cases, sedentary and encrusting forms predominate. It is, however, interesting to note that, due largely to a fairly thick growth of seaweeds which must have afforded considerable protection, a goodly number of non-sedentary species had been transported from Orkney to Rosyth—examples are to be found in the worms, echinoderms, molluscs, crustaceans, and pycnogonids.

Only a few of the species here recorded are rarities, and these notes are not intended as a presentation of a representative picture of the marine fauna of the Orkneys. But if one considers that when the vessels were brought to the surface they were scraped as free as possible of algæ and encrusting animals to expedite subsequent transport to Rosyth, and further, that it is highly probable that many of the species became detached and lost during the somewhat

lengthy journey to the Firth of Forth, then these records become of considerable interest in that they seem to indicate an extraordinary wealth of animal life in the seas around the Orkney Islands—more particularly in the shallow water of Scapa Flow itself. This is borne out by accounts of the men who took part in the salvage operations and who saw the warships, covered with plant and animal life, as they reached the surface.

Our thanks are due to Lieut.-Col. V. Coates for his generosity in arranging the visit to the "Bayern"; to Dr C. H. O'Donoghue, of the Department of Zoology, University of Edinburgh, for suggesting and arranging the two subsequent visits to the "König Albert" and the "Kaiserin"; and, finally, in large measure, to Metal Industries Limited—and particularly Dr Pollock—for the facilities and help afforded us at Rosyth Dockyard.

We are also in debt to Dr C. H. O'Donoghue and Miss Dora de Watteville for their kindness in naming the Bryozoa from the "Bayern" and the "König Albert," and to Miss K. M. G. Fleming, of the University of St Andrews, for naming the polychætes from the "König Albert."

---

## NOTES

**Dark-breasted Barn Owl at Bothwell.**—On 28th March I had the good fortune to surprise a dark-breasted barn owl which sat blinking at me at close quarters before taking wing. I marked it down some distance up the glen and again flushed it, and came to the conclusion that its wing-spread was slightly greater than the white-breasted species, but of this one can't be quite sure. When flying away it looked quite a dull grey, and when sitting the rufous yellow of the upperparts as seen in the white-breasted species, was entirely replaced with dull grey. The breast and underparts were yellowish mixed with grey, while the face was less white than in the common species.—W. STEWART, Holytown.

**House Martins in Fife.**—My gardener and I saw two house martins on 11th November. They were flying rather low but seemed quite healthy.—PHILIP M. BOASE, Law Park, St Andrews.



ÆSCHNA CÆRULEA (STRÖM) AND OTHER  
DRAGONFLIES FROM MID-PERTH AND  
ARGYLLSHIRE.

By C. ETHEL EVANS, Edinburgh.

WHEN staying in the neighbourhood of Killin in June of this year (1937), I had the pleasure of seeing *Æschna cærulea* in its old home in Glen Lochay where it was first discovered by Mr K. J. Morton in 1895 (*Ann. Scot. Nat. Hist.*, 1899, p. 26) and taken again in the same spot in 1905 by my father, the late William Evans (*ibid.*, 1911, p. 18). Two individuals were seen on 14th June, one of which I secured; it proved to be a male. On 18th June one was flying up and down the road on the other side of the River Lochay, finally settling on the sun-warmed surface within a yard of me, so that it could be examined closely and was seen to be a female. The same day, at a small lochan near-by, several *Libellula quadrimaculata* L., *Pyrrhosoma nymphula* (Sulzer) and one or two *Enallagma cyathigerum* (Charp.) were noted.

On 16th June—a glorious day—I visited Loch Tulla and spent an hour or so on the old Glen Coe road beyond Forest Lodge. On a short stretch of this road (which is now closed to motors) sheltered by trees with moorland beyond, I saw at least five *Æ. cærulea*, catching one female when it alit on the stem of a fir tree, while two others were resting on a fallen trunk a few yards off. I understand that this is the first specimen to be actually taken in Argyllshire, the only previous record for the county being of one seen near Loch Nant in 1922 (*Ent. Mo. Mag.*, lix., 1923, p. 10). Many other dragonflies were in evidence; I counted two or three handsome *Cordulegaster annulatus* (Latr.), any number of *P. nymphula*, and watched with interest the antics of a pair of *L. quadrimaculata* chasing each other swiftly to and fro over a bog pool, occasionally meeting in mid-air with an audible clash of wings, while one of them forsook the chase every few minutes to alight on the bleached dead stump of a tree protruding out of the water, where it basked in the sun within a foot of my hand. There was another Libelluline

present, possibly *Leucorrhinia dubia* (Van der Linden), but I never got close enough to be sure of its identity.

On two days I joined Mr K. J. Morton in Glen Lyon for a dragonfly-hunt but with little success. On 21st June, however, we saw one *Æ. cærulea* on a path not far from Bridge of Balgie, which I was fortunate enough to capture when it settled on a fence-post. This specimen, a female, and the other two taken by me in Glen Lochay and at Loch Tulla, are now in Mr Morton's collection. I may mention that earlier in the month, on 6th June, I spent a whole day in Glen Lyon, going right up to the loch; although the day was brilliantly sunny there was a good deal of wind and only one dragonfly (unidentified) was seen on a sheltered part of the road above Meggernie, where on the 19th an *Æ. cærulea* was observed.

---

***Velella spirans* (Forsk.) in the Outer Hebrides.**—In connection with the notes which recently appeared (*Scot. Nat.* 1936, p. 27) relating to the occurrence of *Velella* at several localities on the west coast of Scotland during the summer of 1935, it seems of interest to record that this animal, which is seen comparatively rarely on our shores, was again observed in fair abundance off the coast of the Island of Barra during July 1937.

On the 4th and the 11th of July several specimens were seen drifting shorewards off the west coast of Barra. Both of these days were fine and calm with a light south-westerly breeze, but throughout the first half of the month the weather was variable and frequently stormy, with winds veering from north-east, through south-east, to south-west, and at no time were there prolonged periods of steady south-westerly winds. Occasional specimens were found washed up on the shore on other days during July even when the weather was much less favourable. They were never observed to the east of the island.

Some of the specimens were large and others appeared to be of average size. Three chosen at random measure 3.75, 4.5, and 5 cms. from end to end of the pneumatophore. Those which were collected from the shallow water inshore were alive and several were bearing medusoids.—J. E. FORREST, B.Sc., Queen Mary College, London.

THE NATURAL HISTORY OF THE ISLAND OF  
RAASAY AND OF THE ADJACENT ISLES  
OF SOUTH RONA, SCALPAY, LONGAY, AND  
FLADDAY.

(Continued from p. 172, 1937.)

VIII. NOTES ON THE BIRD LIFE OF THE ISLAND OF  
RAASAY, INNER HEBRIDES.

By GEORGE W. TEMPERLEY.

INTRODUCTION.

THE bird life of Raasay has been described by previous writers: what is here attempted is to chronicle the strikingly widespread and rapid changes which have occurred since the last records were published. In order that these changes may be fully appreciated I have quoted freely from previous records.

*Geographical.*—Raasay is the middle and largest island in a chain of three which lie between the Isle of Skye and the mainland of Ross. To the north of it is South Rona and to the south is Scalpay. In shape it is long and narrow; being slightly over thirteen miles from north to south and nowhere more than three miles in width. In area it is approximately twenty-seven square miles. For the most part the island consists of bare moorland, covered with heather or rough grass, sprinkled with many tiny lochs and set with rocky knolls and outcrops, to all appearances an ideal breeding ground for grouse, curlew, plover, snipe, and the like. The highest point, Dun Caan, rises to 1456 feet, while much of the central ridge is from 800 to 1000 feet in height. On the east side, the higher hills are buttressed by rugged precipitous cliffs; but as these do not rise immediately from the sea they are unsuited as breeding places for seafowl. The shores are rockbound; but sea cliffs are scarce and of inconsiderable height. In the neighbourhood of Raasay House, in the south west of the island, there are plantations of well-grown coniferous trees, while natural

woodlands lie in sheltered places round the coast. The latter consist mainly of silver birch, wych elm, hazel, rowan and willow ; but, as they are the main source of fuel available to the inhabitants, the trees are usually reduced to a mere scrub, sufficient however to shelter the smaller passerine birds. The lochs generally occupy rocky basins in exposed places, support little or no vegetation and are therefore mainly unattractive to breeding waterfowl.

*Historical.*—The changes which have occurred or are now occurring in the bird life of Raasay are most intimately bound up with the history of the island and its people. The recorded history of the birds may be said to have been begun by Boswell, who, in his "Life of Johnson," when describing the visit paid by Johnson and himself to Raasay in 1773, wrote: "There are black-cock in extraordinary abundance, moorfowl, plover and wild pigeons." The history of the island itself goes back into a remote antiquity ; but the fact that the MacLeods of Raasay were "out" in "The Forty-five" altered the whole of its subsequent history and consequently the history of its birds. After that ill-fated adventure the fortunes of the MacLeod family steadily waned and by 1846 the estate had passed into other hands. As Boswell's record shows, the MacLeods, for their own pleasure and profit, had maintained a considerable stock of feathered game upon the island, which was then well populated with crofters, who utilised every cultivable strip of land for their crops. The main idea of the new proprietor, however, was to turn the island into a sheep farm. Between 1852 and 1854 he evicted 94 families of crofters to make room for his flocks, and the cultivated land reverted to rough grass or heather. After changing hands two or three times, the island was next converted into a sporting estate. Game had been preserved naturally before, but it was now reared artificially ; fresh species, such as the pheasant and partridge, being introduced and hand-fed. Vermin was no longer tolerated ; the hen-harrier, which had previously bred on the island, the peregrine falcon and the merlin were exterminated and no visiting bird-of-prey was permitted to remain. Even the rookery and the heronry were destroyed in the interests of

“game,” while poaching was repressed with a strong hand. In order to provide shelter, trees were planted and in the neighbourhood of Raasay House large woodlands sprang up where only open moorland or meagre crofts had previously existed. This shelter, and the protection from vermin, attracted and encouraged many species of woodland birds which had not hitherto been plentiful on the island; so the bird life underwent its first considerable change. But this phase was not to last, for in 1912 the development of the iron-stone deposits was begun. Sport had to give way to industry, and the chief interest in the island was centred in its mines, which were worked largely by imported labour. Almost immediately came the Great War, when the inhabitants were “called up” to Army and Navy and large gangs of German prisoners replaced them in the mines. Gamekeepers and watchers were withdrawn, and for a period there was chaos. Artificially maintained stocks of game easily fell victims to rapidly increasing vermin of all kinds; not to mention poachers, who, during the meat scarcity, came over from the mainland and killed deer, grouse or anything else that had a food value. Soon after the end of the War the mines were closed and the population decreased suddenly. The Board of Agriculture for Scotland took over the island; but adequate game preservation was not resumed and birds-of-prey, crows and other vermin, which had found sanctuary and ample food, continued to multiply, ground-nesting birds became fewer and fewer, until now but a remnant remains. A single gamekeeper has the supervision of the whole area and is quite powerless to keep the vermin in check. The measure of this last change may perhaps be gauged from the fact that during my two visits I saw only one deer on the island, where, before the War, 600 head were maintained and thirty stags shot annually; while on the moorlands, where a hundred brace of grouse could at one time be shot in a day, I never put up more than a few pairs here and there. On the other hand, nowhere upon the whole island was I ever, for more than a few moments, out of sight or sound of the hooded-crow: it is now the dominant species and takes toll of other breeding species.



*Bibliographical.*—During the changes outlined above, the bird life of Raasay has been described by various observers. When J. A. Harvie-Brown and H. A. Macpherson compiled their *Fauna of the North West Highlands and Skye*, in 1904, they chiefly relied for their information about the Island of Raasay on a very inadequate list of birds made by Lionel Hinxman when on a brief visit in June 1896, so that few references to Raasay occur in that work. The *Fauna* was almost immediately followed by a very complete and interesting paper by Charles Collier, F.Z.S., M.B.O.U., on "The Birds of the Island of Raasay," which appeared in *The Ibis* of October 1904. Mr Collier was the shooting tenant, and lived for nearly seven years on the island during the period 1896 to 1902. He was a sound ornithologist, and his detailed catalogue of the birds describes the conditions prevailing in what might be called the heyday of the game protection period. He records 140 species in all, 89 of which were breeding on the island. The next written record is dated 1916, when Mrs J. H. Gaskell contributed an article to *The Scottish Naturalist* for November, entitled "Some Notes on Birds seen at Raasay," based upon her own observations made during a visit of six weeks from 16th June to 9th August 1916. It is a short paper and only refers to 39 species. The full effect of the War years was not yet apparent; but she points out several changes which had occurred during the fourteen years since Collier's time. I cannot find any published references to the birds of Raasay since that date. In the summer of 1935 Miss Dorothy Blackburn accompanied the Armstrong College Expedition to the island and compiled a list of the birds she observed there between 23rd July and 10th August. She has most kindly sent me a copy of this list, which contains the names of 52 species, with permission to make use of it.

My own personal experience of the Island of Raasay is limited to two visits; one of two weeks duration from 21st May to 4th June 1936; the other of nine days from 13th to 21st June 1937. These dates were selected in the expectation that it would be possible, within those periods,

to observe the present status of the resident species and to note what summer visitors are now using the island as a breeding station. This expectation was realised.

From the above dates it will be noted that, with the exception of Collier, all the observers, including myself, visited the island within a period extending over the three months from the middle of May to the middle of August. On the subject of the bird life during the other nine months of the year, therefore, there is no later information available than that of Collier (1896-1902); so any changes which may have occurred have yet to be observed and chronicled.

#### NOTES ON SPECIES.

##### RAVEN, *Corvus c. corax* L.

Resident: breeding on the higher cliffs. I distinguished at least three separate pairs. According to the keeper their number increases greatly in the autumn and winter.

##### HOODED-CROW, *Corvus c. cornix* L.

Resident in great abundance: breeding on the cliffs and in trees. These birds are the curse of the island, for they have multiplied so rapidly as to have overrun the whole of it, and the gamekeeper is quite unable to keep them in check. During my visits a roosting flock of well over sixty birds gathered each evening in a sheltered crag near Raasay House, and this was only a small proportion of the total crow population. The keeper holds the hooded-crows mainly responsible for the practical extermination of the pheasants and blackgame, and for the great reduction in the number of red grouse, all of which were once so plentiful, and they are without doubt also responsible for the very small number of other ground-nesting birds now breeding on the island. There are no foxes or weasels, and stoats are not plentiful, so the hooded-crow must take the blame alone for most of the destruction; indeed, considering the number of crows, it is surprising that any eggs or young birds escape them. A hooded-crow that I flushed disgorged a pellet consisting wholly of the elytra and other fragments of beetles, showing that, if needs be, they can support life on very "small game."

In Collier's time they were most in evidence in winter, when, as he said, they came over to feed on dead rabbits. According to Mrs Gaskell they were "common" in summer-time even in 1916.

(The hooded-crow completely replaced the carrion-crow, *Corvus c. corone* L., which is only a rare accidental visitor.)

ROOK, *Corvus f. frugilegus* L.

A regular visitor, but does not now breed. There was at one time a large rookery in the trees above Raasay House, but it was destroyed between 1890 and 1902 in the interests of "game" and has not since been recolonised. Rooks are now only visitors, appearing in July and remaining throughout the winter. I did not meet with any, but Miss Blackburn records seeing a few in July 1935.

JACKDAW, *Colæus monedula spermologus* (Vieill.).

In 1904 Collier recorded a small colony breeding on the island; but the keeper tells me that they are now altogether absent and I saw none myself.

STARLING, *Sturnus v. vulgaris* L.

Resident and breeding in small numbers. I saw a few pairs about the houses at Suisnish and Inverarish and a few more at Eyre, but none elsewhere. One pair was nesting in the jib of the pier crane. Collier described them as "not very plentiful in summer."

GREENFINCH, *Chloris c. chloris* (L.).

Not found by me; but Collier described it as "rare," usually met with in winter, though a few occasionally bred.

GOLDFINCH, *Carduelis carduelis britannica* (Hart.).

Not observed by me. Collier found single pairs nesting in 1897 and 1898, but not in subsequent years.

TWITE, *Carduelis f. flavirostris* (L.).

Resident. I observed small colonies at Eyre, Fearn, Oskaig, etc., but nowhere were they numerous, the largest colony being on the east side of the island. They were never seen far from the cultivated crofts. Hinxman found the twite upon the west side only. Collier described it as nesting "in sparse numbers."

LESSER REDPOLL, *Carduelis flammea cabaret* (Mull.).

Resident. A small colony inhabits the scrub and young plantations above Inverarish, while a few birds were observed near Oskaig also.

LINNET, *Carduelis c. cannabina* (L.).

I saw none on either visit. Collier recorded some half-dozen pairs breeding annually in one patch of gorse.

BULLFINCH, *Pyrrhula pyrrhula nesa* Math. and Ired.

Resident, but in very small numbers, in the woods about Raasay House. Collier noted that the species was "decreasing



in numbers," though it had previously been very plentiful. Mrs Gaskell recorded it as "common" even up to 1916.

CHAFFINCH, *Fringilla c. coelebs* L.

Resident. The most abundant species on the island, inhabiting every plantation and woodland, even to the merest scrub. Hinxman found it "fairly abundant" in 1896.

HOUSE SPARROW, *Passer d. domesticus* (L.).

Resident. Common about the houses at Inverarish and Suisnish, but not noted elsewhere. Collier described them as "very numerous." Mrs Gaskell as "remarkably scarce."

TREE SPARROW, *Passer m. montanus* (L.).

I saw none on either visit. Collier recorded a few pairs resident and breeding (1896-1902).

CORN-BUNTING, *Emberiza c. calandra* L.

I did not see a single individual of this species; nor did Miss Blackburn in 1935. Collier, however, states that in his time it was "extremely abundant during the nesting season, a pair breeding close to nearly every small patch of cultivated ground."

YELLOW-HAMMER, *Emberiza c. citrinella* L.

Resident. A few pairs were seen scattered about the island.

REED-BUNTING, *Emberiza s. schœniclus* (L.).

Resident in small numbers. I noted a few pairs about damp places on low-lying ground near the coast, as at Fearn's. Hinxman found it on the west side of the island only.

SKYLARK, *Alauda a. arvensis* L.

Resident in very small numbers. A remarkably scarce bird. I saw two birds only, one near Fearn's and another on the moors north of Dun Caan and Miss Blackburn saw none in 1935. Harvie-Brown wrote "a few pairs frequent the moors."

TREE-PIBIT, *Anthus t. trivialis* (L.).

Summer visitor. Frequently noted about the outskirts of the woods and the larger birch-scrub, but less abundant than the other species of pipit.

MEADOW-PIBIT, *Anthus pratensis* (L.).

Chiefly a summer visitor, everywhere common on the moorlands and pastures.

ROCK-PIBIT, *Anthus spinoletta petrosus* (Mont.).

Resident. Common all round the coast.

YELLOW WAGTAIL, *Motacilla flava rayi* (Bp.).

No longer a regular summer visitor, for I saw none in 1936 and 1937, though Collier had recorded two pairs breeding annually.

GREY WAGTAIL, *Motacilla c. cinerea* Tunst.

I searched the burns diligently for this species, but failed to find a single bird. It is difficult to account for the disappearance of this once common species, for Collier wrote "in the summer nearly every stream has its pair of birds and one stream in 1899 had three pairs on it." Mrs Gaskell saw "several pairs" in 1916.

PIED WAGTAIL, *Motacilla alba yarrellii* Gould.

Summer visitor. This, the only species of wagtail that I met with, was not very plentiful; but several pairs were seen about old walls and in stony places near the coast. In 1936 a pair was feeding young in a nest on the sea-cliff a very few feet above high-water mark.

TREE-CREEPER, *Certhia familiaris britannica* Ridgw.

Resident in small numbers. Collier in 1904 described it as a "very numerous resident," but it is certainly not so now, for I very seldom met with it.

GREAT TIT, *Parus major newtoni* Prazak.

A well-established resident; fairly common in the woods and scrub. Collier described it as uncommon, but the ageing and consequent decay of the timber may perhaps account for its increase.

BLUE TIT, *Parus cæruleus obscurus* Prazak.

Resident and fairly well distributed, but much less common than the coal tit.

COAL TIT, *Parus ater britannicus* Sharpe and Dress.

A plentiful resident and by far the commonest tit upon the island. I found it nesting in holes in old tree-stumps and in the ground throughout the woods and scrub.

LONG-TAILED TIT, *Ægithalos caudatus roseus* (Blyth).

Resident and breeding in very small numbers. Probably more abundant in winter. Mrs Gaskell recorded a flock of twenty in June 1916.

GOLD-CREST, *Regulus r. anglorum* Hart

Chiefly a winter visitor, but also resident, though only in small numbers. Several pairs haunted the coniferous plantations about Raasay House, but not elsewhere.

SPOTTED FLYCATCHER, *Muscicapa s. striata* (Pall.).

I saw none, nor does Miss Blackburn include the species in her list; yet in 1901 Collier knew of five pairs nesting and in 1916 Mrs Gaskell saw a great many with young after the middle of July.

CHIFFCHAFF, *Phylloscopus c. collybita* (Vieill.).

Summer visitor. I heard several singing regularly in the woods and plantations about Raasay House, but not elsewhere.

WILLOW-WARBLE, *Phylloscopus t. trochilus* (L.).

Summer visitor. At this season of the year the willow-warbler shares with the chaffinch and meadow-pipit the distinction of being one of the most abundant species on the island. Every woodland, down to the most meagre scrub, rings with its song. Harvie-Brown also recorded it as "abundant."

WHITETHROAT, *Sylvia c. communis* Lath.

Summer visitor. I saw a few pairs only, in scrubby places and evidently settling down to breed. Collier described it in 1904 as "only a stray visitor" which did not remain to breed, and Mrs Gaskell saw "very few" in 1916.

MISTLE-THRUSH, *Turdus v. viscivorus* L.

Resident. Common in the woods around Raasay House, but not nearly so plentiful or so well distributed as the next species.

SONG-THRUSH, *Turdus e. ericetorum* Turt.

Resident. Very plentiful indeed in the woods round Inverarish and Raasay House; also about Brochel, Arnish, Torran and other wooded areas. Collier wrote—"Large numbers breed on the island, mostly by the seashore, their nests being placed on rocks or ledges where there are no suitable bushes or shrubs." There was less cover on the island in those days.

RING-OUZEL, *Turdus t. torquatus* L.

A summer visitor in very small numbers. Not noted by Miss Blackburn in 1935 nor by me in 1936, but once seen, below Dun Caan, in 1937. Recorded by Collier as "quite common on the high ground" from mid-April to July. It is difficult to account for the change in the status of this species.

BLACKBIRD, *Turdus m. merula* L.

Resident. Very common about the more wooded portions of the island, but not so plentiful or so well distributed as the song-thrush.

WHEATEAR, *Ænanthe æ. ænanthe* (L.).

Summer visitor. Common on bare rocky places and amongst ruined walls from the shore to the summit of Dun Caan.

WHINCHAT, *Saxicola r. rubetra* (L.).

Summer visitor. Fairly well distributed though not so common as the next species. Collier described it as "very scarce."

STONECHAT, *Saxicola torquata hibernans* (Hart.).

Probably resident. Common on open places and frequently met with far out on the heather. Many pairs feeding well-fledged young in May. Collier described it as quite a common bird and resident.

REDSTART, *Phœnicurus ph. phœnicurus* (L.).

Irregular summer visitor. Not observed by Miss Blackburn or by me. Collier found three pairs nesting in 1896 and a few in subsequent years.

ROBIN, *Erithacus rubecula melophilus* Hart.

Resident. One of the commonest birds on the island wherever there is the least cover. Described by Collier as "not very numerous," but that is certainly not its status to-day.

HEDGE-SPARROW, *Prunella modularis occidentalis* (Hart.).

Resident. Well distributed in woodland and scrub. A few pairs were seen nesting far out on the heather, reminding one that the accentors are a mountain-living genus.

WREN, *Troglodytes t. troglodytes* (L.).

Resident. Common all over the island in all sorts of situations, often far out on the moorlands.

DIPPER, *Cinclus cinclus gularis* (Lath.).

Resident, but evidently in very small numbers. Miss Blackburn saw none in 1935; I saw one adult with a juvenile on a stream near Storab's Grave in 1936; but none at all in 1937. Collier, writing in 1904 said there were then "one or two pairs on every stream." That is certainly not the case now; like the grey wagtail it has vanished from the stream-sides.

SWALLOW, *Hirundo r. rustica* L.

Now an occasional visitor only. None was seen by Miss Blackburn or by me. One inhabitant told me he had never seen swallows on the island in his life, while another said that they visited some of the crofts in late summer. In Collier's time five or six pairs bred in the ruins of Brochel Castle—they are not there

now. (A pair was breeding on the neighbouring island of Pabbay in 1937.)

HOUSE-MARTIN, *Delichon u. urbica* (L.).

Not seen by me; but recorded by Collier as an occasional visitor not remaining to breed.

SAND-MARTIN, *Riparia r. riparia* (L.).

Another occasional visitor. Not seen by me.

SWIFT, *Micropus a. apus* (L.).

Not seen by me in 1936 or 1937; but described by Collier as an irregular passage migrant.

NIGHTJAR. *Caprimulgus e. europæus* L.

Not seen or heard in 1936 or 1937. Collier knew it as a "sparse but annual visitor."

CUCKOO, *Cuculus c. canorus* L.

Abundant summer visitor. In May and June continuously heard and seen all over the island, but particularly out on the moors.

LONG-EARED OWL, *Asio o. otus* (L.).

Not observed by me; but Collier described it as occasionally breeding.

SHORT-EARED OWL, *Asio f. flammeus* (Pontopp.).

Once resident; now said to be an occasional autumn migrant. Collier recorded that it had bred regularly prior to his time.

TAWNY OWL, *Strix aluco sylvatica* Shaw.

Resident, but not common. I very occasionally heard it at night.

BARN OWL, *Tyto a. alba* (Scop.).

Recorded by Collier as an occasional visitor; but I did not meet with it.

PEREGRINE FALCON, *Falco p. peregrinus* Tunst.

Probably still a resident. The keeper tells me that in ancient times Raasay was famous for its falcons, which were much in demand for falconry. Collier recorded one pair as breeding there. I saw a hen bird once or twice near Hallaig in 1937, and once two birds passed over Raasay Woods; but I could not obtain proof of their breeding.

MERLIN, *Falco columbarius æsalon* Tunst.

Probably not now more than an occasional visitor. Not noted

by Miss Blackburn or by me; but the keeper tells me he once found a nest out in the heather.

KESTREL, *Falco t. tinnunculus* L.

Resident. A few birds were seen in the woods and on the crags, but it is not a common species.

GOLDEN EAGLE, *Aquila c. chrysaëtus* (L.).

Collier recorded it as an occasional visitor, attracted by the hares and rabbits. It may still be so; but by those unfamiliar with the larger birds-of-prey the common buzzard is often mistaken for an eagle, which may account for most of the more recent reports.

COMMON BUZZARD, *Buteo b. buteo* (L.).

Resident. Being a protected species it has been allowed to increase. Five or six pairs breed. In Collier's time only one pair bred, but numbers visited the island in the autumn.

HEN-HARRIER, *Circus c. cyaneus* (L.).

Previous to Collier's residence on the island this species had been common, as many as six pairs nesting regularly on the moors; but it was exterminated in the interests of the game and by 1899 had become merely an occasional visitor.

SPARROW-HAWK, *Accipiter n. nisus* (L.).

Occasional visitor. The keeper tells me that it is now a rare visitor. Miss Blackburn identified two birds in 1936, but I never met with it. Collier recorded it as "common" and breeding regularly; it is certainly not so now.

HERON, *Ardea c. cinerea* L.

Visitor: occasionally resident. Solitary birds may often be seen fishing round the shore or in the lochs and burns. A pair is reported to breed occasionally in the woods above the Home Loch, but they were not there in 1936 or 1937. The permanent heronry in these woods was destroyed some years ago in the interests of the game.

MALLARD, *Anas p. platyrhyncha* L.

Resident, but not plentiful. Ducks with young were seen on one or two of the small lochs.

EIDER-DUCK, *Somateria m. mollissima* (L.).

Resident in small numbers. A few pairs breed, but, on account of "vermin," frequently unsuccessfully. In 1937 two ducks were sitting on eggs on Holoman Island; but further up the coast I



found a deserted nest containing a recently broken fresh egg, and on Griana Sgeir the remains of a nest which had been rifled. Harvie-Brown in 1904 described the eider as a "winter visitor of irregular occurrence," and pointed out that it had recently shown signs of extending its breeding range on the west coast of Scotland. Its breeding on Raasay shows that this process has been continued.

RED-BREASTED MERGANSER, *Mergus serrator* L.

Resident: perhaps still breeding occasionally, but I could not prove it. I saw pairs fishing round the coast now and then, but they were never on the lochs. They must have been extraordinarily plentiful at one time, for Collier, in 1899, found eight nests in the space of 200 yards, besides dozens along the coast-line and others on fresh-water lochs.

CORMORANT, *Phalacrocorax c. carbo* (L.).

Resident: but not in large numbers. A few were always to be seen fishing along the coast, but I could not find them breeding.

SHAG, *Phalacrocorax a. aristotelis* (L.).

Resident. Commoner than the cormorant and breeding. I found several nests with eggs or young on rock-ledges and in the Sgathlan caves along the north-west coast.

GANNET, *Sula bassana* (L.).

A casual summer visitor, often to be seen fishing off the coast.

STORM-PETREL, *Hydrobates pelagicus* (L.).

Probably only an occasional summer visitor. Not observed by me; but Miss Blackburn records seeing two at sea in a storm on 10th August 1935. Collier stated that it did not breed.

MANX SHEARWATER, *Puffinus p. puffinus* (Brünn.).

Not observed by me. Collier said it was not a resident though it appeared in spring and summer.

FULMAR PETREL, *Fulmarus g. glacialis* (L.).

Occasional visitor only. I saw a couple of birds off the cliffs at Hallaig on 30th May 1936, but they passed on and I never saw another.

LITTLE GREBE, *Podiceps r. ruficollis* (Pall.).

Resident in very small numbers. In 1937 a pair was feeding young on Loch a Chadhacharnaich; but most of the lochs are unsuitable for breeding purposes for lack of vegetation.



GREAT NORTHERN DIVER, *Colymbus immer* Brünn.

Occasional visitor, usually in winter. On 25th May 1936 I saw a pair in full breeding plumage fishing off Hallaig—surely an unusually late date.

WOOD-PIGEON, *Columba p. palumbus* L.

A plentiful resident, breeding in the coniferous trees around Raasay House. Flocks of a dozen or more could be seen feeding on a single small croft.

ROCK-DOVE, *Columba l. livia* Gm.

Resident; but apparently not so plentiful as formerly. I only saw two birds—at Sgathlan caves, where they were reported to breed in some numbers. Hinxman met with many on the west side of Raasay.

OYSTER-CATCHER, *Hamatopus ostralegus occidentalis* Neumann.

Plentiful resident, breeding freely. The commonest species along the shore; nesting above the tide-line and on rocks and islets.

RINGED PLOVER, *Charadrius h. hiaticula* L.

I looked for this bird all round the coast, but never saw one. Collier recorded it as nesting on the shore “wherever there is any shingle.” Another ground-nesting species which no longer breeds on the island.

GOLDEN PLOVER, *Charadrius a. apricarius* L.

Irregular summer visitor: a pair or two attempt to breed occasionally. In 1936 I found three birds, obviously breeding, north of Meall Damh. In 1937 they were not there and I could find none elsewhere.

LAPWING, *Vanellus vanellus* (L.).

Resident; but now in very small numbers. I found two pairs near Eyre in 1936, but none in 1937.

DUNLIN, *Calidris alpina schinzii* (Brehm.).

According to Collier it used to breed “sparingly in marshy places on the open moorland.” I did not meet with a single bird.

COMMON SANDPIPER, *Tringa hypoleucos* L.

Summer visitor; very plentiful and breeding all round the coast and on some of the lochs; one of the few ground-nesting birds that is really common. All the nests that I found were exceptionally well concealed, which probably accounts for their escaping the

notice of the hooded-crows, while exposed eggs, like those of the ringed-plover, are destroyed.

CURLEW, *Numenius a. arquata* (L.).

Autumn and winter visitors for the most part; though an odd pair may still attempt to breed. In 1936 I saw one single bird only on the shore near Oskaig, while in 1937 there were, on one occasion only, six birds near the same place. Collier stated that they bred "on the lower ground both on the south and the west of the island."

COMMON SNIPE, *Capella g. gallinago* (L.).

Resident and winter visitor. The keeper tells me that they have some snipe-shooting in the winter and that a few pairs breed; but I made a careful search of likely places and failed to flush a single bird on either of my visits. This is in contrast to Collier's experience, for he recorded snipe as breeding "in all places suited to its habits."

WOODCOCK, *Scolopax r. rusticola* L.

Resident in small numbers, but chiefly a winter visitor. I saw a few roding at dusk, but as a breeding species they are not plentiful now. Harvie-Brown wrote: "Raasay is the great resort of the species on the Skye coast . . . and many breed there." Collier records that in the winter of 1894-95 nearly 900 were shot and in 1901-02, 496.

COMMON TERN, *Sterna h. hirundo* L.

Summer visitor, in very small numbers. I noted a striking absence of terns, and most of those I saw were passing too far out to sea to enable me to identify them. The few identified were common terns, a small colony of which were nesting on a rocky islet near Oskaig, where they bred in Collier's time.

ARCTIC TERN, *Sterna macrura* Naumann.

Summer visitor. Miss Blackburn recorded a large colony breeding on Holoman Island in July 1935; but this island was tenantless in 1936 and 1937. Collier described this species as very common and Hinxman found a colony on Griana Sgeir. I visited Griana Sgeir in 1936 and found no birds there.

BLACK-HEADED GULL, *Larus r. ridibundus* L.

Reported to be a non-breeding visitor in early summer; but I never saw one.

COMMON GULL, *Larus c. canus* L.

A common resident, breeding here and there on the west coast.

HERRING-GULL, *Larus a. argentatus* Pont.

Resident. The commonest gull on the island, breeding in some numbers along the west coast. The eggs of this species, and perhaps others, are collected by the islanders for food.

LESSER BLACK-BACKED GULL, *Larus fuscus grællsii* (Brehm).

Summer visitor; but less plentiful than the last species. Numbers bred in Collier's time, and a few still do so.

GREAT BLACK-BACKED GULL, *Larus marinus* L.

A common visitor; but few actually breed. I found a single nest on Griana Sgeir.

KITTIWAKE, *Rissa t. tridactyla* (L.).

Summer visitor in small numbers, but not observed to be breeding. In Collier's time about six pairs nested annually on a cliff on the east coast; but there are none there now.

RAZORBILL, *Alca torda* L.

GUILLEMOT, *Uria aalge* (Pont.).

PUFFIN, *Fratercula arctica grabæ* (Brehm.).

These three species are summer visitors to the neighbouring seas; but I could find none breeding on the island.

BLACK GUILLEMOT, *Uria g. grylle* (L.).

Resident: numerous in the breeding season. Two or three colonies inhabit the cliffs and caves on the west coast.

CORNCRAKE, *Crex crex* (L.).

Summer visitor. Two or three pairs on meadows between Inverarish and Oskaig but none elsewhere. Collier described them as very plentiful—"every small field has its pair, and even on the moor and sea-shore there are scattered couples." This is far from being the case now.

MOOR-HEN, *Gallinula c. chloropus* (L.)

I was informed that a pair bred near Inverarish and fed with the village fowls; while another pair was on one of the lochs. Collier only knew of two breeding pairs.

BLACK GROUSE, *Lyrurus tetrrix britannicus* With. and Lönn.

Once plentiful; but now generally admitted to be extinct. I saw none. Even in Collier's time they were decreasing in numbers.

RED GROUSE, *Lagopus s. scoticus* (Lath.).

Resident. Once very plentiful indeed, but now much reduced by vermin and poaching.

PHEASANT, *Phasianus colchicus* L.

Introduced. Once reared and hand-fed in large numbers ; now almost if not quite extinct. The keeper tells me that there are still a few, though I never saw them. At one time as many as 500 were shot in a day.

## SUMMARY.

The bird life of the Island of Raasay has experienced many fluctuations in the past. A detailed comparison between the bird life of to-day (1937) and that of only thirty-five years ago shows what remarkable changes have taken place in a comparatively short time. These changes have been brought about through the following causes:—

- (a) the abandonment of game preservation after a period of strict enforcement, which has led to a rapid increase in vermin and the consequent reduction and, in some cases, the extinction of game-birds, as well as of most of the other ground-nesting species :
- (b) the steady decrease in the amount of land under cultivation due to depopulation, which has adversely affected seed-eating species, such as the corn-bunting and tree-sparrow, and meadowland species like the corncrake :
- (c) the growth of artificial plantations, which provide shelter for more small birds and breeding sites for hooded-crows, wood-pigeons, and the like, in an area previously consisting of bare moorland with, at most, a few scattered patches of stunted natural woodland.

*Note.*—Since writing the above I have had the opportunity of consulting a hitherto unpublished list of Raasay birds compiled by Mr J. H. B. Munro and Mr A. G. S. Bryson, who stayed on the island from 28th June to 4th July 1932. They noted sixty-one different species and their observations on the status of each of these agree very closely indeed with my own. The only species mentioned in their list which I had not met with were the following :—Grey Wagtail, “two pairs seen.” Spotted Flycatcher, “one or two around Raasay House.” Swift, “a party flying south, probably not breeding.” Golden Eagle, “one seen, apparently resident, but probably not breeding.” Snipe, “one heard at the south end.” Diver, “one bird . . . almost certainly a Red-throated.”

I am much indebted to the authors of this list for permission to refer to it here.

IX. THE EPHEMEROPTERA, PLECOPTERA, MEGALOPTERA, NEUROPTERA AND MECOPTERA OF RAASAY AND THE ADJACENT ISLANDS OF SOUTH RONA, SCALPAY, AND PABBAY.

By J. W. HESLOP HARRISON, D.Sc., F.R.S.

THE species listed below were taken by my son, Dr G. Heslop Harrison, and myself during the period 1933-1937, and in some cases represent long periods of very hard work. I do not, therefore, anticipate that many additional species remain for detection.

EPHEMEROPTERA.

EPHEMERELLIDÆ.

*Ephemerella ignita* Poda.—Not rare on the Arish, Raasay, and on the burns on Scalpay.

BAËTIDÆ.

*Centroptilum luteolum* (Müll.).—On South Rona, Raasay, and Scalpay.

*Chloëon simile* Etn.—Rare, on Raasay only.

ECDYURIDÆ.

*Rhithrogena semicolorata* (Curt.).—On Raasay and Scalpay.

*Ecdyonurus lateralis* (Curt.).—On the upper parts of the Storab and Arish Burns, Raasay.

PLECOPTERA.

PERLIDÆ.

*Isoperla grammatica* Poda.—Common on South Rona, Raasay, Scalpay, and Pabbay.

*Chloroperla torrentium* Pict.—Also abundant on the same islands.

TÆNIOPTERYGIDÆ.

*Tæniopteryx risi* Morton.—Beaten out of alder on the Arish, Raasay, and along the Allt Liath, Scalpay.

## LEUCTRIDÆ

*Leuctra geniculata* Steph.—Not uncommon on Raasay.

*L. inermis* Kmpny.—Along the swifter brooks on South Rona, Raasay, and Scalpay.

## NEMURIDÆ.

*Protonemura meyeri* Pict.—On the Arish, Raasay.

*Amphinemura cinerea* (Oliv.).—Found on all the islands but not really plentiful.

*Nemoura variegata* (Oliv.).—Common everywhere.

## MEGALOPTERA.

## SIALIDÆ.

*Sialis lutaria* L.—Beaten from alders, etc., on all the islands.

## NEUROPTERA.

## CONIOPTERYGIDÆ.

*Conwentzia psociformis* (Curt.).—Rare on various shrubs, etc., on Raasay.

*Coniopteryx tineiformis* Curt.—Beaten from birch, etc., on Raasay and Scalpay.

*Semidalis aleyrodiformis* (Steph.).—Rare near Raasay House.

## SISYRIDÆ.

*Sisyra fuscata* (Fab.).—Rare on Raasay.

## HEMEROBIIDÆ.

*Hemerobius humulinus* L.—The commonest species of *Hemerobius* on Raasay and Scalpay.

*H. stigma* Steph.—Beaten from pines along the Allt Camas na Gedaig, Scalpay.

*H. pini* Steph.—Very rare on conifers in Raasay House Woods.

*H. atrifrons* McL.—With the preceding and also on conifers in North and South Scalpay and Pabbay.

*H. micans* Oliv.—Not plentiful but found near Balachuinn and in Raasay House Woods, Raasay.



*H. lutescens* Fab.—Found sparingly on South Rona, Raasay, and Scalpay.

*Boriomyia betulina* (Strøm).—Thinly scattered on birch and alder on Raasay and Scalpay.

*Wesmælius quadrifasciatus* (Reut.).—Once in Raasay House Woods.

#### CHRYSOPIDÆ.

*Chrysopa vittata* Wesm.—Odd specimens in the Raasay House Woods.

*C. carnea* Steph.—A little more plentiful and found on Raasay and Scalpay.

*Nathanica capitata* (Fab.).—Captured in the pine-wood in the south of Scalpay.

#### MECOPTERA.

#### PANORPIDÆ.

*Panorpa germanica* L.—Not rare on Raasay and Scalpay; in both cases in the south of the island.

(To be continued.)

## NOTES

**Dusky Redshank in Fife.**—Since the Dusky Redshank is rarely recorded in the East of Scotland, I think it is worth mentioning that I saw one at Edenmouth, St Andrews, on 24th September 1937.—D. I. MOLTEÑO, Fortingal.

**Great Crested Grebes on the Town Loch, Dunfermline.**—A pair of these interesting birds was seen on 21st November, following a spell of severe weather. Part of the loch was frozen, but in the open water were several species in addition to the grebes, e.g., pochard, tufted duck, coot and swan. The last named breeds every year on this water, and on the date mentioned two cygnets were present in addition to the pair of swans. Three species of gulls were standing on the ice, viz., black-headed, common, and herring.—NORMAN M. JOHNSON, Dunfermline.



## BOOK NOTICES

**The Call of the Koala.** By AMBROSE PRATT. 120 pp., 20 illustrations. Melbourne: Robertson and Mullens. Price 6s. To all who are interested in this fascinating little animal this book should have an instant appeal. The subject is studied from all possible angles, *e.g.* classification, genesis, anatomy, food trees, psychology. A beautiful series of twenty illustrations make up the complete album of the Koala. All three varieties are represented and the personality of these appealing little bears is caught in every illustration.

**Giant Fishes, Whales and Dolphins.** By J. R. NORMAN and F. C. FRASER. Illustrated by Lieut.-Col. W. P. C. Tenison. xxvii + 361 pp., with 97 black and white figures and 8 coloured plates. London: Putnam. 1937. Price 15s. net. Popular interest in the sea and its inhabitants is ever fresh, as the recent enthusiasm for cruising bears witness. To those who have enjoyed such an experience, oft-recurring questions arise such as—"What was that we saw?" "Do you remember that whale, or was it a dolphin?" The wish is finally expressed that some good book on the subject was available. Further, tunny and tarpon fishing have recently added a new sporting interest to the sea. To meet this increasing interest this book has been written, and the status of the authors on the staff of the British Museum of Natural History ensures that the information given is up to date. The book deals with the more conspicuous vertebrate inhabitants of the ocean in a thoroughly interesting and comprehensive manner. It is divided into two sections each sub-divided into eight chapters, the first section dealing with fishes, the second with whales and dolphins.

All the better-known whales and dolphins are included, and all fishes which normally reach a length of six feet have been mentioned. In addition, notes have been added on certain smaller fishes such as pilot-fishes and flying-fishes which are often observed from the deck of a steamer, and which attract general attention. Very full accounts are given of the various species described. The appearance, food, breeding and general habits are described in a clear and interesting manner. The final chapter in each section consists of a key to the various species. These keys are so arranged as to be simple and easy to use.

All the illustrations have been specially prepared for the work and add greatly to its interest and enjoyment.

The authors are to be congratulated on the interesting and informative work which they have produced, and which we can thoroughly recommend to all interested.

# The Scottish Ornithologists' Club

(OFFICIAL SECTION)

## Third General Meeting, Session I.

Miss E. V. Baxter presided at the Third General Meeting of the Club, which was held in the Rooms of the Royal Scottish Geographical Society, Castle Terrace, Edinburgh, on 29th October at 7.30 P.M. There was an attendance of about sixty-five persons.

*Some Lowland Birds*, a cine film exhibited by Mr James R. Marshall, K.C. This film depicted Woodcock with young, some good views of Crossbills, a study of nest sanitation by the Mistle Thrush, some beautiful studies of Herons fishing, and some quite unique shots of Waders and Shelducks courting on the mud-flats at Aberlady in spring.

*The Distribution and Spread of the Fulmar Petrel in the British Isles*, a Paper by Mr George Waterston, illustrated by maps, and a short cine film taken by Mr G. Theo Kay.

After describing the remarkable extension of this bird's breeding range, and the rapidity of the colonisation of large parts of our coast, Mr Waterston dealt with various factors governing this extension—food supply, nesting sites, association with other species, and infant mortality. Details were then given of the general distribution of the Fulmar in the North Atlantic and what was known of the range of the dark and light varieties of this species. Maps showing the positions of the present known colonies in the British Isles were then passed round the meeting, and details were given of the various colonies in the order in which they appeared. Finally, Mr Kay's film was exhibited showing the Fulmar in the act of ejecting oil at an intruder.

A short discussion was held after the reading of the Paper.

The meeting adjourned at 9.30 P.M.

---

## General Notices.

Arrangements have been made with the Editor of *The Scottish Naturalist* for reprints of important papers on the bird-life of Scotland, to be sent free of charge to all members of the Club.

The Council invites Fellows and Members to bring forward Papers for future meetings, and would welcome any criticisms or suggestions as to the organisation of the Club.

Forms of Application for Fellowship and Membership of the Club, also copies of the Rules and Regulations, can be obtained from the Hon. Secretary, George Waterston, 27 Inverleith Terrace, Edinburgh.

# A Vertebrate Fauna of Forth

By LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER

With 16 full-page illustrations and a map of  
the Forth Area. 8vo. 456 pages. 25s. net.

EDINBURGH: OLIVER AND BOYD LTD., TWEEDDALE COURT  
LONDON: 33 PATERNOSTER ROW, E.C. 4

---

---

## THE NATURALIST

A Monthly Illustrated Journal of Natural History for the North of England

Edited by W. H. PEARSALL, D.Sc., F.L.S., and  
W. R. GRIST, B.Sc., The University, Leeds.

With the assistance of a Panel of Referees.

*All Communications to be addressed to—*

THE EDITORS, "THE NATURALIST," THE UNIVERSITY, LEEDS

Annual Subscription, 15s. Single Numbers, 1s. 6d. net

LONDON: A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.

---

---

## READ The Irish Naturalists' Journal

The Official Organ of Irish Scientific Societies

The only popular Scientific and Archæological periodical published  
in Ireland.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.

Issued every Second Month.

Annual Subscription, 6s. post free. Single Copies, 1s. 3d. each.

*All Communications to be addressed to—*

W. M. CRAWFORD, F.E.S., F.Z.S., Orissa, Marlborough Park South, Belfast

---

---

## The North Western Naturalist

A Scientific and Educational Journal for Lancashire, Cheshire, Shropshire,  
Stafford, Derbyshire, North Wales, Cumberland, Westmorland, the  
Isle of Man and the North West

EDITED BY A. A. DALLMAN, F.C.S.

Published Quarterly. Annual Subscription, 7s. 6d. (post free). Single Copies, 2s.

All Articles and Communications intended for Publication, and all Books, etc., for  
Review, should be sent to The Editor, A. A. DALLMAN, 12 Tickhill Road, Doncaster.

Subscriptions and Advertisements should be addressed to the Publishers, T. BUNCLE  
& Co., Market Place, Arbroath, Angus.

# CONTENTS

	PAGE
Isle of May Breeding Census, 1936— <i>H. N. Southern</i> . . . . .	I
Notes concerning some Animals obtained from three German Warships recently salvaged at Scapa Flow, Orkney— <i>J. E. Forrest</i> and <i>M. I. Crichton</i> . . . . .	3
<i>Æschna cærulea</i> (Ström) and other Dragonflies from Mid-Perth and Argyllshire— <i>C. Ethel Evans</i> . . . . .	9
The Natural History of the Island of Raasay and of the adjacent Isles of South Rona, Scalpay, Longay, and Fladday ( <i>continued from p. 172, 1937</i> ):—	
VIII. Notes on the Bird Life of the Island of Raasay, Inner Hebrides— <i>George W. Temperley</i> . . . . .	11
IX. The Ephemeroptera, Plecoptera, Megaloptera, Neuroptera and Mecoptera of Raasay and the adjacent Islands of South Rona, Scalpay, and Pabbay— <i>J. W. Heslop Harrison</i> . . . . .	28
Book Notices . . . . .	31
The Scottish Ornithologists' Club . . . . .	32

Notes :

Dark-breasted Barn Owl at Bothwell—*W. Stewart*, 8 ; House Martins in Fife—*Philip M. Boase*, 8 ; *Verella spirans* (Forsk.) in the Outer Hebrides—*J. E. Forrest*, 10 ; Dusky Redshank in Fife—*D. I. Molteno*, 30 ; Great Crested Grebes on the Town Loch, Dunfermline—*Norman M. Johnson*, 30.

### PUBLISHERS' NOTE.

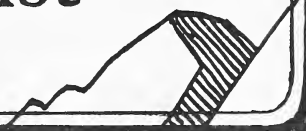
The Annual Subscription for 1938, payable in advance, 12s. 6d. post free, should be addressed to the Publishers, Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

### COVERS FOR BINDING "THE SCOTTISH NATURALIST."

Special Cloth Cases for Binding the 1937 Volume can be supplied at 1s. 6d. each (by post 1s. 9d.), by Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

05.471

# The Scottish Naturalist



No. 230]

1938

[MARCH-APRIL



EDINBURGH: OLIVER & BOYD, TWEEDDALE COURT  
LONDON: GURNEY & JACKSON, 98 GREAT RUSSELL STREET

*Price 2s. 3d. Annual Subscription, payable in advance, 12s. 6d. post free*

# The Scottish Naturalist

*A Magazine devoted to Zoology*

With which is incorporated

“The Annals of Scottish Natural History”

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

*Keeper, Natural History Department, Royal Scottish Museum.*

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

*Formerly Keeper, Natural History Department, Royal Scottish Museum.*

ASSISTED BY

PROFESSOR JAMES RITCHIE, M.A., D.Sc.,  
F.R.S.E.  
EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.  
LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.

H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.  
C. H. O'DONOGHUE, D.Sc., F.R.S.E.  
ANDERSON FERGUSSON, F.R.E.S.  
A. R. WATERSTON, B.Sc.

All Articles and Communications intended for publication, and all Books, etc., for notice, should be sent to THE EDITORS, Royal Scottish Museum, Edinburgh.

Subscriptions and Advertisements should be addressed to the Publishers, MESSRS OLIVER AND BOYD LTD., Tweeddale Court, Edinburgh.

Authors of General Articles will receive 25 Reprints (in covers) of their Contributions gratis. Additional Copies, in covers, may be had from the Printers, at the ordinary prices ruling, provided such orders accompany the Manuscript.

---

---

## EVERY NATURALIST SHOULD READ

The following major articles which have appeared in recent numbers of *The Scottish Naturalist*:—

Scottish Insect Immigration Records.  
Notes on Highland Diptera. (Illustrated.)  
Ferrets and Polecats.  
Notes on Whales stranded on the Scottish Coast. (Illustrated.)  
The Natural History of South Rona. (Illustrated.)  
The Occurrence of *Gammarus* in Scottish Waters.  
Notes from Gairloch in Wester Ross.  
Scottish Sand-eels.  
Further Notes on the Parasites of the Magpie Moth.  
Land Planarians of the British Isles.  
Lesser Redpoll in Midlothian.  
Isle of May Bird Observatory Report.  
The Eider in Sutherland and Shetland.  
Notes on the Birds of Loch and Forest. (Illustrated.)  
Wild and Domestic Cat compared. (Illustrated.)  
Kingfishers breeding in Juvenile Plumage.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.



*(Authors are responsible for nomenclature used.)*

# The Scottish Naturalist

No. 230]

1938

[MARCH-APRIL

## THE AQUATIC COLEOPTERA OF THE OUTER HEBRIDES.

### SECOND PAPER.

By FRANK BALFOUR-BROWNE, M.A. (Oxon et Cantab), F.R.S.E.,  
F.Z.S., F.R.E.S., F.L.S. (formerly Professor of Entomology at  
the Imperial College, London).

IN 1915 (4) \* I published a paper on the water-beetles of Lewis and Harris, as being the only part of the Outer Hebrides which had been visited by coleopterists. Until recently no further interest has been taken in the fauna of the western islands of Scotland, but within the last few years things have changed. There have been organised expeditions from some universities and at least some of these are still in progress. One of these expeditions, from University College, Dundee, visited South Rona (North Ebudes) in 1933 and published a short and by no means exhaustive list of the water-beetles of that island (12). Another, from the University of Durham (King's College, Newcastle-on-Tyne), visited Raasay and the neighbouring isles, including South Rona, and its work is still in progress, while a third, organised by the Biological Society of the University of Edinburgh, spent a fortnight in Barra in July 1935 (9).

One member of the Durham University expedition, Dr George Heslop Harrison, extended his travels and visited a number of islands, including Barra, Mingulay, Berneray and South Uist, and through the kindness of Professor Heslop Harrison and Mr A. R. Waterston, one

\* The numbers in brackets refer to the bibliography at the end of the paper.



of those responsible for the Edinburgh expedition, I have seen all the water-beetles collected by members of these two parties. These beetles were, for the most part, sent me in tubes of spirit. Among those from Raasay, the centre of the Durham University expedition, were several specimens of a Gyrinid, *Aulonogyrus striatus* Fab., a species only known previously from the Canary Islands and the Mediterranean area; while one of the tubes sent me from Barra by Dr George Heslop Harrison, included two specimens of *Deronectes canariensis* Bedel, a ♂ and ♀, a species otherwise only known from the Canary Islands.

It was because of these startling records that I decided to examine for myself the water-beetles of Barra as I expected that, if two Canary Islands species occurred in the western isles, there should be other interesting species waiting to be found. A single specimen of a species being taken in an unexpected place might be due to accidental dispersal, but with two or more specimens the likelihood of chance occurrence is almost ruled out. I have no reason to doubt Professor Harrison's reply to my enquiry as to whether it was possible that there had been a mixture of material which would account for the appearance of such unexpected species in the tubes, when he explained that not only were none of his party coleopterists but none of them had ever collected in either the Mediterranean district or in the Canaries, and none of them had any beetles from these areas; and I am therefore forced to the conclusion that my failure to find *D. canariensis* in Barra was either due to the fact that it was not in the imaginal state in June, when I visited the island, or to my net having been evaded by what must certainly be a very rare species. Dr Heslop Harrison's captures were made in October, which might also account for the absence of the species in the collections made by the Edinburgh expedition.

I spent only one week on the island and, during that time, I collected thirty-seven species, thus adding eighteen to the list published by the Edinburgh expedition<sup>(9)</sup>, but I added no species not previously known from the British Isles and from Scotland. Nine of the species are additions to the Outer Hebrides list and, since my visit, Mr Waterston

has sent me a few more specimens taken by him in August 1936, and these include two specimens of an addition not only to the island fauna but also to the Scottish list. Thus, the Barra list now runs to forty-two species, while that for the Outer Hebrides expands to sixty-three species.

The island has already been well described in the Edinburgh report and, so far as the water-beetles are concerned, I examined all the lochs (excepting Loch nic Ruaidhe), a limited number of peat pools and moor streams and the streams and ponds in the sandy area on the western side, and a few ditches where, as in the sandy area, conditions are rather those of freshwater marsh. The only high ground visited was Ben Tangaval to the west of Castlebay, and I think it probable that more extensive collecting at higher levels, such as on Heaval, would have added a number of other species to the list. The few ditches and ponds of the freshwater type, including ponds through which sandy streams passed, provided me with the following species :—

<i>H. fulvus</i> . . . . .	17	<i>G. natator</i> var. <i>substriatus</i>	33
<i>H. ruficollis</i> . . . . .	50	<i>H. picicrus</i> . . . . .	67
<i>H. lineatocollis</i> . . . . .	63	<i>P. fuscipennis</i> . . . . .	20
<i>H. inaequalis</i> . . . . .	40	<i>A. globulus</i> . . . . .	20
<i>D. 12-pustulatus</i> . . . . .	67	<i>A. limbata</i> . . . . .	50
<i>H. gyllenhalii</i> . . . . .	25	<i>L. nigriceps</i> . . . . .	75
<i>H. palustris</i> . . . . .	100	<i>L. alutaceus</i> . . . . .	67
<i>H. erythrocephalus</i> . . . . .	40	<i>L. truncatellus</i> . . . . .	50
<i>H. nigrita</i> . . . . .	60	<i>H. aquaticus</i> . . . . .	67
<i>H. pubescens</i> . . . . .	33	<i>H. viridicollis</i> . . . . .	36
<i>H. tessellatus</i> ( <i>lituratus</i> ) . . . . .	67	<i>H. brevipalpis</i> . . . . .	100
<i>A. bipustulatus</i> . . . . .	40	<i>H. gracilis</i> . . . . .	100
<i>I. fuliginosus</i> . . . . .	50	<i>C. orbiculare</i> . . . . .	100
<i>D. semisulcatus</i> ( <i>punctulatus</i> )	100		

In this list of helophile species, three-quarters of the total number of species I found, the figures indicate the percentage of occurrence in this type of habitat as compared with the total number of occurrences in all the collections. This gives a rough indication of the preference of each species for this type of habitat. I say "rough indication" because, in the first place, a stream with *Callitriche*, *Myosotis*, grass, etc., at the place where the collection is made comes from

the peaty grounds above and thus may well introduce odd specimens of the peat community. A single individual of such a species is of the same value in the percentage as if the species were in abundance. Thus a rare peat-bog species which only occurred a few times in all the collections would appear high in the percentages if a single specimen turned up in the helophile list. *H. fulvus* is a common loch species, that is, it was common in four of the lochs examined, one or more specimens turning up in many of the hauls of the net. Altogether it occurred in six out of the thirty-seven collections. One specimen was taken in a sphagnum pool and one in a roadside pond which my notes describe as "rich in freshwater marsh vegetation." That one specimen gives the species 17 per cent. in the above list. *H. palustris* only occurred in one ditch on the island and is therefore 100 per cent. helophile. Similarly, *H. gracilis*, of which one specimen was taken in a deep sandy pool, thick in parts with reed and with grassy and *Callitriche* patches at the edge, in a stream running down below Greian Manse. Thus it appears as 100 per cent. helophile in the list although it is a well-known running water species.

*H. ruficollis* is a typical helophile species and yet its value in the above list is only 50 per cent. This is accounted for by the fact that its other 50 per cent. is made up of its occurrence in three lochs in which freshwater conditions were well marked.

Both *L. nigriceps* and *H. gracilis* are new to the Outer Hebrides, and neither has been recorded from any other of the western isles excepting the Clyde isles where, in Arran, Anderson Fergusson has several times taken the *Hydræna*. The only western mainland records for this latter species, excluding the south-west counties which have been well worked, is Cantyre, while the only western mainland record for the *Laccobius*, again excluding the south-western counties, is Argyll Main. But as these two areas are the only western ones which have been at all worked, excepting Sutherland, this absence of these species may be more apparent than real. It is to be noted, however, that I found neither species in Caithness or Sutherland (?),

nor are they among the thirty-two species of which I have records for East Ross.

There are twelve lochs in the island, not eleven as stated in the Edinburgh report, which omits the small Loch an Each Uisge between Ben Cliad and Ben Erival. It is as large as the miniature Loch Benloden and equally worthy of notice, but it is not to be confused with Loch Uisge between Heaval and Beinn Moine, which is the reservoir for Castlebay. Of the eleven I examined, two (Loch an Duin and Loch St Clair) produced no beetles,\* although both were worked not only with the net but also with a dredge thrown out from the shore. Loch St Clair appeared to be a particularly good loch and I had expectations of finding in the beautifully clear water a pale form of *H. confinis* similar to the *pallens* of Fowler, and I even hoped to land *D. depressus* in one of its forms which, so far, has not been taken in the Outer Hebrides. The nine other lochs produced the following species :—

<i>H. confinis</i> . . . . .	100	<i>A. bipustulatus</i> . . . . .	30
<i>H. fulvus</i> . . . . .	66	<i>I. fuliginosus</i> . . . . .	50
<i>H. ruficollis</i> . . . . .	50	<i>R. bistriatus</i> . . . . .	50
<i>H. lineatocollis</i> . . . . .	12	<i>G. minutus</i> . . . . .	100
<i>H. inæqualis</i> . . . . .	60	<i>G. caspius</i> . . . . .	100
<i>D. assimilis</i> . . . . .	84	<i>G. natator</i> . . . . .	55
<i>H. 12-pustulatus</i> . . . . .	33	<i>G. thomsoni</i> . . . . .	100
<i>H. gyllenhalii</i> . . . . .	25	<i>Ph. fuscipennis</i> . . . . .	40
<i>H. erythrocephalus</i> . . . . .	60	<i>L. minutus</i> . . . . .	100
<i>H. obscurus</i> . . . . .	50	<i>H. aquaticus</i> . . . . .	33
<i>H. pubescens</i> . . . . .	16	<i>H. viridicollis</i> . . . . .	36
<i>H. tessellatus</i> . . . . .	33		

Of these twenty-three species, at most five or six are typical of lochs and most of the others are found in the freshwater marsh conditions at the edges of the lochs. A few, such as *H. gyllenhalii* and *obscurus*, *R. bistriatus* and *Ph. fuscipennis* are usually associated with sphagnum and peat. The figures which follow the names in the accompanying list indicate the percentage of occurrence of each species in the lochs as compared with its total number of occurrences

\* I worked only the open water of Loch St Clair, but Mr Waterston, working the reed-beds along the north-east shore, took *D. assimilis* (1935) and *H. inæqualis* (1936).

in the island, and from this it will be seen that the chief loch species are :—

<i>H. confinis</i>	<i>L. minutus</i>
<i>G. minutus</i>	<i>D. assimilis</i>
<i>G. caspius</i>	<i>H. fulvus</i>
<i>G. thomsoni</i>	etc.

All the above species are mainly loch species in most parts of the British Islands with the exception of the *Laccobius*. Its position in the list is either due to the fact that it is extremely rare in the island, which is possible, as it only occurred once in the one hundred and thirty collections made in Harris and Lewis, or it might be due to the few peat pool collections made in the island.

*H. confinis* only occurred in Loch na Cartach and Loch na Doirlinn, in different parts of the island, whereas *G. minutus* \* occurred only on Loch an Ail and Loch Scotageary, two neighbouring lochs. *G. caspius* was common on Loch na Doirlinn where it was also taken by Waterston later in the year. *G. thomsoni* was with *minutus* in the two lochs already mentioned. *D. assimilis* was only absent from Loch na Cartach, which produced nothing except *H. confinis*, and Loch Benloden, which was a large sphagnum pool containing no typical loch species, unless the single *Dytiscus* larva which I caught is that of *D. lapponicus*, which is unlikely. All the eight species taken in that loch are ordinary peat pool species and all, excepting *H. erythrocephalus*, occurred in the small peat holes on the surrounding ground.

At the north end of the island is Eoligarry Hill, and between it and the main part is an extensive area of sand-hills, in which there are two pools, possibly dug out to supply the cattle with water. One of these was about half full and was two to three feet deep in the middle, and from it I took a few specimens of *Agabus nebulosus* and a large number of *Agabus* larvæ, probably of the same species. In the other pool there was only water in small holes, mostly the footprints of the cattle, and in these the beetle mentioned was in abundance, while larvæ were so scarce that I only

\* Mr Waterston has since informed me that he found this species in Loch an Each Uisge (1936).

found two after about ten minutes' work. These two ponds were the only spots at which I found this *Agabus*.

Ten of the species in the Barra list are additions to the Outer Hebrides list published in 1915; one of these, *O. punctatus*, of which two specimens were taken by Waterston in 1936, is new to Scotland while three, *G. caspius*, *L. nigriceps* and *H. gracilis* are unrecorded from North, Mid and South Eubudes. *O. punctatus*, although occurring on the whole of the east coast of Ireland and also on the west coast, is unrecorded in England north of Lancs South where a record for "*O. hibernicus* Curt. Liverpool" is mentioned in Stephens' Manual (1839) but is not repeated in any later lists. Otherwise the species definitely occurs in Cardigan, Pembroke and southwards, and extends round southern and south-eastern England, certainly as far as Essex South, and there are records for Essex North, Suffolk East and Cambridge. The inland record for Salop "*Netley, Hope*" in Stephens (1829), repeated by Fowler in the Victoria County History, may be regarded as erroneous. Thus, the appearance of this species in Barra is almost as unexpected as that of the Canary species. The ten species new to the Outer Hebrides list are as follows:—

<i>D. canariensis</i>	<i>L. nigriceps</i>
<i>H. inaequalis</i>	<i>O. punctatus</i>
<i>G. caspius</i>	<i>O. lejolisii</i>
<i>G. thomsoni</i>	<i>H. gracilis</i>
<i>A. limbata</i>	<i>C. orbiculare</i>

*D. canariensis* is not easily mistaken for anything else, although it is possible that it is in some British collection under a wrong name. My Canary specimens vary in length from 5·7 to 4·7 mm., both these extremes being females, while my two British specimens, ♂ and ♀, which Professor Heslop Harrison kindly gave me, are 5·0 mm. long, which is rather smaller than *Deronectes 12-pustulatus* and about the size of *Hydroporus dorsalis*. *D. canariensis* is more parallel-sided than *D. 12-pustulatus* and more shining than *H. dorsalis*. The head is rather broad and appears to project from the thorax more than in either of the species mentioned, and the thorax, which is strongly bordered laterally is but little wider behind than in front. The whole upper surface,



including the elytra, is very dark brown, the vertex of the head and the sides of the elytra being lighter while the elytra are marked, some more, some less, with dark yellow markings, these at the base being short, sometimes arrow-head-shaped, and on each shoulder forming sometimes a circle with a segment missing, sometimes a mere shoulder mark and sometimes a short border at the edge of the shoulder. The remainder of each elytron is marked with short narrow longitudinal streaks of the same colour. Each elytron is marked with two distinct punctured striæ which extend from the base almost to the apex, though they are weaker in the latter region. The whole upper surface is covered with fine punctures which appear to be closer together on the elytra than on the head or pronotum, and the latter has also an irregular row of strong punctures across the anterior border and another series, which tends to form longitudinal striæ across the posterior border.

I have only described the upper surface because this is not a description of a new species, but to enable a British coleopterist to identify a specimen if either he has it in his collection or takes it later. Aubé, the original describer under the name *Hydroporus tessellatus*, gave a full description of a single specimen from Teneriffe (1).

In 1915, I mentioned that I had failed to find *Octhebius lejolisii* in Lewis and Harris and that I had also failed to find it in Skye, and I suggested that Eigg appeared to be about its northern limit along the western Scottish coasts. This species was quickly found in Barra which is only a small part of a degree north of Eigg. Nineteen species which occurred in Lewis and Harris failed to appear in Barra :—

<i>Deronectes griseostriatus</i> Deg.	<i>Agabus arcticus</i> Payk.
<i>Hydroporus morio</i> Aubé	<i>sturmii</i> Gyll.
<i>incognitus</i> Sharp	<i>chalconotus</i> Panz.
<i>longulus</i> Muls. ( <i>celatus</i> Clark)	<i>Ilybius ænescens</i> Thoms.
<i>memnonius</i> Nic.	<i>Dytiscus marginalis</i> Linn.
<i>planus</i> Fab.	<i>Acilius sulcatus</i> Linn.
<i>obsoletus</i> Aubé	<i>Gyrinus opacus</i> Sahlb.
<i>Agabus guttatus</i> Payk.	<i>Paracymus nigroæneus</i> Sahlb.
<i>paludosus</i> Fab.	<i>Octhebius bicolon</i> Germ.
<i>congener</i> Payk.	

Although *D. griseostriatus* occurred at low levels in Lewis and Harris, it has not been taken in Barra, although high pools on Heaval might have produced it. With regard to *H. morio*, I failed to find it in the northern island, the record being included on the strength of a paper by Dale (<sup>8</sup>) in which he listed *H. atriceps*. In 1915, I ascribed its absence from my list to my failure to capture it, but I am now inclined to wonder whether the species existed in 1882 and has since become extinct, or whether possibly Dale misnamed his specimens.

I expected to find various other species in Barra, but it is possible that a visit later in the season would have produced different results, while the examination of more peat pools even in June would probably have increased my list. *Ilybius aenescens* Thoms. was sent me from Mingulay and Berneray, taken by Dr Heslop Harrison in July, and it was present in a few of the Lewis and Harris collections made also in July. Possibly, therefore, I was a few weeks early for it in Barra.

Only the *picicrus* form of *H. fuscipes* has so far been found on the island and this agrees with my experience on Lewis and Harris. The type form was only taken on the only piece of freshwater marsh that I found on Eigg, and has not so far been recorded from Skye; but it was taken at a few places in the South Ebudes (Islay only), whereas *picicrus* was common on both Islay and Jura. I regard *picicrus* as a habitat form and I am experimenting to see whether by keeping it under conditions such as provide *fuscipes*, I can get the form to change in the course of one or more generations.

One noticeable absentee from all these western islands is *Haliphus lineolatus* Mannerh. (*nomax* B.-B.), a species unknown in the British Islands before 1911 and which, it is to be presumed, had been passed over as *ruficollis*, although it is very strange that such careful observers as Sharp had missed such an outstanding character as the excised mid-tibiæ of the ♂. Some of my work on these islands was done before the species had been discovered, but I visited the Mid Ebudes for a second time in 1927 and the South Ebudes in 1922, and the Durham University

expedition has had ample opportunities for discovering the species in Raasay, but so far without result. The form *nomax* has not been recorded from anywhere except the British Isles, the typical form of the species (*browneanus* Sharp) covering all the south and south-east of England. If we could believe that the species is a recent immigrant and that, as it spread northwards, a mutation took place in northern England, and that the mutant has spread northwards and has somehow reached Ireland, the odd distribution in these two countries might be accounted for. The species certainly seems to have become more abundant in numerous lochs in which, nowadays, it is one of the first species to be captured. The records for *nomax* extend northwards from Yorks Mid-West and Mid-Lancs to East Ross, Moray (Elgin), and Aberdeen North; but there are only eighteen county and vice-county records in that area, while there are twenty-three counties and vice-counties without any record, many of these, doubtless, merely because no one has been to examine the lochs. Whether we can argue anything from the fact that, in areas where the species occurs, it is absent from many lochs which appear to be suitable for it, is more doubtful, although, as I have said, *nomax* appears to be increasing in abundance.

*H. ruficollis* occurred in 21 per cent. of the Barra collections and, as my recollection of others of the western isles suggested that this was a high percentage, I examined my records of other islands and the results are as follows :—

Tiree	.	.	55 per cent.	Islay	.	.	7 per cent.
Barra	.	.	21 „	Lewis	.	.	5 „
Skye	.	.	8 „	Jura	.	.	3 „
Coll	.	.	8 „	Eigg	.	.	0 „

This is an interesting record and it seems worth while to enquire why the species was so common in Tiree, fairly common in Barra and so scarce in the other islands. On examining my 1927 records for Tiree, I find that most of the collecting places in which *ruficollis* occurred are described as containing grass: e.g. “shallow grassy pool,” “grassy ditch,” etc., etc. In Skye (3), I recorded the species only twice, once from the Broadford River and once from a

peaty pool, but at that time the name "*ruficollis*" covered several species, so the record is of no value beyond showing the scarcity of the species which, at most, occurred twice in twenty-four collections. In Coll<sup>(2)</sup>, in each case where *ruficollis* appears in my notes, there is mention of grass or Starwort (*Callitriche*). In Islay<sup>(5)</sup>, a single specimen occurred in a peat pool and one, with specimens of *H. palustris*, a usual associate, in Loch Iarnan, of which I have no description, and several in a pond in the sand-hills near the mouth of the Machrie River. In Lewis<sup>(4)</sup> I find mention of either grass (*Glyceria*) or *Callitriche* in almost every case, while in Jura<sup>(5)</sup> the species only occurred in Craighouse Loch on both occasions this loch was examined, along with *H. palustris*, *D. marginalis* and other typical helophile species. Similarly, in Barra, all the six places in which the species was taken were of the same type. In earlier papers I was content to explain such a phenomenon on the ground that the species was struggling to maintain itself and it was driven from other types of habitat by better adapted species or, alternatively, the freshwater marsh type being the best type of habitat, this species being better adapted was able to hold it against other species. My view now is that, although there must certainly be competition and struggle for existence, choice plays a much larger part in community formation than has previously been recognised. My discovery as to the population of the ballast holes in Lewis<sup>(4)</sup> made this evident and, consequently, I regard the localisation of *H. ruficollis* in Barra and the other isles as at least partly due to the choice by the species of freshwater marsh.

I have entered into this matter of the occurrence of *H. ruficollis* because I think that there is a great deal of work waiting to be done on the factors which determine the presence of a species in a habitat or its absence from it, and the view that all the activities of the lower forms of life are merely unconscious responses to chemical and other stimuli will have to be overcome before any advance can be made in this problem.

I conclude with a list of all the species so far taken in the Outer Hebrides and further lists of Barra and of South

Uist, where I had one day's collecting after leaving Barra.\* There are two published records of water-beetles taken in South Uist (<sup>10, 11</sup>) and, so far as I know, Dr Heslop Harrison is the only other individual who has since collected there. He sent me a tube containing four species, taken in October 1935, all of which I again took in June 1937 in the neighbourhood of Lochboisdale. He also sent me tubes containing a few species from two other Outer Hebridean Islets, Mingulay and Berneray, and these are included in the lists.

I need scarcely say that I am greatly indebted to this energetic collector who has visited not only the islands referred to, but also others previously unexplored by any coleopterist, and I hope that his lists for these, however meagre, will be published later on.

LIST OF THE AQUATIC COLEOPTERA OF THE  
OUTER HEBRIDES.

	Outer Hebrides.	Barra.	South Uist.	Mingulay.	Berneray.
<i>Haliplus confinis</i> Steph. . . . .	+	7			
<i>fulvus</i> Fab. . . . .	+	21	+		
<i>ruficollis</i> Deg. . . . .	+	21	+		
<i>wehnckei</i> Gerh. . . . .	+				
<i>lineatocollis</i> Marsh . . . . .	+	28	+		
<i>Hygrotus inaequalis</i> Fab. . . . .	o	17	+		
<i>Deronectes assimilis</i> Payk. . . . .	+	28	+		
<i>12-pustulatus</i> Fab. . . . .	+	10			
<i>canariensis</i> Bedel . . . . .	o	+			
<i>griseostriatus</i> Deg. . . . .	+				
<i>Hydroporus tristis</i> Payk. . . . .	+	+			
<i>gyllenhalii</i> Schiöd. . . . .	+	14	+		
<i>morio</i> Aubé . . . . .	?				
<i>palustris</i> Linn. . . . .	+	3	+		
<i>incognitus</i> Sharp . . . . .	+		+		
<i>erythrocephalus</i> Linn. . . . .	+	17	+		+
<i>longulus</i> Muls. ( <i>celatus</i> Clark)	+				
<i>melanarius</i> Sturm . . . . .	+	+			
<i>memnonius</i> Nic. . . . .	+				
<i>obscurus</i> Sturm . . . . .	+	21	+		
<i>nigrita</i> Fab. . . . .	+	17	+		
<i>discretus</i> Fairm. . . . .	+	+			

\* There is a record of *Gyrinus natator* for North Uist in a paper by Dr Edith Nicol on "The Brackish-water Lochs of North Uist" (*Proc. Roy. Soc. Edin.*, 1936, pp. 169-195). I am indebted to Mr A. R. Waterston for calling my attention to this, so far as I know, the only record of a water-beetle for that island.

## THE AQUATIC COLEOPTERA OF THE OUTER HEBRIDES 45

	Outer Hebrides.	Barra.	South Uist.	Mingulay.	Berneray.
<i>Hydroporus pubescens</i> Gyll.	.	+	41	+	+
<i>planus</i> Fab.	.	+			
<i>tessellatus</i> Drap. ( <i>lituratus</i> Brullé)	.	+	10		
<i>obsoletus</i> Aubé	.	+			
<i>Agabus guttatus</i> Payk.	.	+			
<i>paludosus</i> Fab.	.	+			
<i>congener</i> Payk.	.	+			
<i>nebulosus</i> Forst.	.	+	7	+	
<i>arcticus</i> Payk.	.	+		+	
<i>sturmi</i> Gyll.	.	+			
<i>chalconotus</i> Panz.	.	+			
<i>bipustulatus</i> Linn.	.	+	34	+	
<i>Ilybius fuliginosus</i> Fab.	.	+	7	+	
<i>ænescens</i> Thoms.	.	+		+	+
<i>Rantus bistriatus</i> Bergstr.	.	+	7	+	
<i>Colymbetes fuscus</i> Linn.	.	+	+	+	
<i>Dytiscus semisulcatus</i> Mull. ( <i>punctulatus</i> Fab.)	.	+	3		
<i>marginalis</i> Linn.	.	+			
<i>Acilius sulcatus</i> Linn.	.	+			
<i>Gyrinus minutus</i> Fab.	.	+	7	+	+
<i>caspius</i> Mén. ( <i>elongatus</i> Aubé)	o		3	+	
<i>natator</i> Linn., var. <i>substriatus</i> Steph.	.	+	31	+	+
<i>thomsoni</i> Zaitz. ( <i>edwardsi</i> Sharp)	.	o	7		
<i>opacus</i> Sahlb.	.	+			
<i>Hydrobius fuscipes</i> Linn., form <i>picricrus</i> Sharp	.	+	10	+	
<i>Philhydrus fuscipennis</i> Thoms.	.	+	17		
<i>Paracymus nigroæneus</i> Sahlb.	.	+			
<i>Anacæna globulus</i> Payk.	.	+	17	+	
<i>limbata</i> Fab.	.	o	7		
<i>Laccobius nigriceps</i> Thoms.	.	o	14		
<i>alutaceus</i> Thoms.	.	+	10		
<i>minutus</i> Linn.	.	+	3	+	
<i>Limnebius truncatellus</i> Thunb.	.	+	14		
<i>Helophorus aquaticus</i> Linn.	.	+	10	+	
<i>viridicollis</i> Steph.	.	+	38	+	
<i>brevipalpis</i> Bedel	.	+	7		
<i>Octhebius bicolon</i> Germ.	.	+			
<i>punctatus</i> Steph.	.	o	+		
<i>lejolisi</i> Muls. and Rey	.	o	3		
<i>Hydræna gracilis</i> Germ.	.	o	3		
<i>Cyclonotum orbiculare</i> Fab.	.	o	3		

The circles in the first column indicate the additions to the 1915 list. The numbers in the Barra column are the percentages of occurrence of the species.



## BIBLIOGRAPHY.

- <sup>1</sup> AUBÉ, C. 1838. *Spec. Gen. Col.*, vi., 516.
- <sup>2</sup> BALFOUR-BROWNE, F. 1910. "The Aquatic Coleoptera of the Mid-Ebudes" (First Paper), *Ann. Scot. Nat. Hist.*, 76-86.
- <sup>3</sup> BALFOUR-BROWNE, F. 1911. "The Aquatic Coleoptera of the North Ebudes," *Ann. Scot. Nat. Hist.*, 149-157, 210-217.
- <sup>4</sup> BALFOUR-BROWNE, F. 1915. "The Aquatic Coleoptera of the Outer Hebrides," *Scot. Nat.*, 13-20, 60-67, 89-92, 106-111.
- <sup>5</sup> BALFOUR-BROWNE, F. 1923. "The Aquatic Coleoptera of the South Ebudes," *Scot. Nat.*, 55-60, 87-93.
- <sup>6</sup> BALFOUR-BROWNE, F. 1930 *a*. "The Aquatic Coleoptera of the Mid-Ebudes" (Second Paper), *Scot. Nat.*, 51-59.
- <sup>7</sup> BALFOUR-BROWNE, F. 1930 *b*. "The Aquatic Coleoptera of Caithness and Sutherland," *Scot. Nat.*, 171-188.
- <sup>8</sup> DALE, C. W. 1882-3. "Entomology in the Isle of Harris, etc.," *Ent. Mo. Mag.*, xix., 237, 8.
- <sup>9</sup> FORREST, J. E., WATERSTON, A. R., and WATSON, E. V. 1936. "The Natural History of Barra, Outer Hebrides, etc.," *Proc. Roy. Phys. Soc. Edin.*, xxii., pt. 5, 241-296.
- <sup>10</sup> GRIMSHAW, P. H. 1920. "Notes on the Insect Fauna of South Uist," *Scot. Nat.*, 85-89.
- <sup>11</sup> NICOL, EDITH A. T. 1936. "The Fauna of Loch Bee," *Scot. Nat.*, 131-134.
- <sup>12</sup> PEACOCK, A. D., and Others (Coleoptera by J. and Mrs J. Omer-Cooper). 1935. *Scot. Nat.*, 6, 7.

## NOTE

**Scottish Woodcock migrating to Ireland.**—Amongst the grouse rings returned to me in connection with the Aberdeen University Grouse Migration Enquiry are two which enthusiastic keepers had placed upon woodcock. Both have been returned from Ireland. The first woodcock was ringed as a young bird on Tillyfourie Hill, Monymusk, Aberdeenshire, on 24th June 1932 (ring no. 4468) by Mr W. Robertson. The bird was shot on Carmoney Hill, between Belfast and Carrickfergus, on 2nd February 1933. In 1932, Mr Robertson ringed nine woodcock, one from each of nine broods. None of the other rings has been recovered.

The second woodcock was ringed on the Drummond Estates, Perthshire, on 27th April 1932 by an economical keeper who reused a ring (no. 275) which he had taken from a grouse shot in the previous autumn. The woodcock was shot "on the lands of Mr H. W. B. Roberts of Mount Rivers, Kilnagleary, Carrigaline, Cork," about eight miles south of Cork city, on 14th January 1937. This bird must have been close upon five years old.—JAMES RITCHIE, Edinburgh.

NOTES ON THE STATUS OF BIRDS IN  
SCOTLAND IN 1937

By EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL.

MUCH good work has again been done in 1937 and many interesting changes fall to be recorded here. Mr Waterston's papers on Shetland and Fair Isle, with records of his own and other observers, call for special mention (*Scot. Nat.*, 1937, pp. 25, 73). The further study of subspecies has resulted in some new ones being differentiated and in others being dropped.

In order to keep the *Geographical Distribution and Status of Birds in Scotland* up to date, the following additions and changes should be inserted therein, and it is to this book that the page numbers refer.

THE NORTHERN RINGED PLOVER, *Charadrius hiaticula tundræ* (Lowe), has been added to the Scottish list by Mr Waterston who obtained several specimens on Fair Isle. A page should therefore be headed as above, and "O" (xii.1937.76) added to Fair Isle. Mr Waterston also records a WILLOW TIT on Fair Isle, seen by George Stout; in all probability this was the northern form *Parus atricapillus borealis*, but as "the bird was not examined in the hand" Mr Waterston does not consider it a definite record so "O" in italics should be added to Fair Isle on p. 83.

THE BLACK AND WHITE WARBLER, *Mniotilta varia* found dead in Shetland in October 1936 (*Scot. Nat.*, 1937, p. 46) has not been admitted to the British List by the B.O.U. List Committee as it was considered to be a case of assisted passage.

THE BRITISH CHAFFINCH has been separated from the continental bird, as "British breeding males have the sides of the head (*i.e.* lores, round eyes, ear-coverts and cheeks) paler and more brownish-pink, not so dark and rich as in typical birds." The throat and upper breast also tend to be more brownish-pink. The present chaffinch, p. 35, should therefore be headed, THE BRITISH CHAFFINCH,

*Fringilla cœlebs gengleri* Kleinschm. A new page should be headed THE CONTINENTAL CHAFFINCH, *Fringilla cœlebs cœlebs* L. A rare visitor and "O" (xvii.xxxi.92) added to Renfrew. This chaffinch probably occurs commonly on migration and perhaps also as a winter visitor, but this, so far, is our only definite record.

THE BRITISH RAZORBILL has also been differentiated from the typical form and has been accorded the name of *Alca torda britannica* Ticehurst. It differs from the typical bird in its measurements, having a shorter wing and smaller bill. Dr Ticehurst's measurements are, typical bird, wing 201-214.5 mm., greatest height of bill 22.5 to 26 mm.; British, wing 186-198 mm., greatest height of bill 19.5 to 21 mm. The continental form has not yet been recorded from Scotland, so page 364 should be headed as above.

Dr Ticehurst has also differentiated the British from the typical redshank under the name of THE BRITISH REDSHANK, *Tringa totanus britannica*, Mathews; page 319 should therefore be headed thus. The British redshank in breeding dress is "considerably less spotted and streaked below and less barred with rufous-buff and black above than the typical bird." In winter plumage there is no difference between the two forms. The typical form of the redshank has not yet been recorded from Scotland.

THE HEBRIDEAN ROCK PIPIT, *Anthus spinoletta meinertzhageni* E. G. Bird, has been divided; a page should therefore be headed as above and "R" inserted under the Outer Hebrides. It is blackish-grey instead of olive-brown above with very heavy breast streaks. It has, however, only been recorded from some of the Outer Hebridean islands, we are therefore not deleting "R" and "S" under the Outer Hebrides from the rock pipit on page 62, pending further enquiry into the distribution of these subspecies.

In the *Ibis*, 1934, the Outer Hebridean Twite, *C. f. bensonorum* was stated to be a distinct subspecies; further study showed it to be indistinguishable from breeding birds in various parts of Britain, but distinct from the typical form. Page 406 should therefore be deleted, and the heading on page 19 altered to THE BRITISH TWITE, *Carduelis flavirostris pipilans* (Latham).

A distinction which has not been upheld is that between the LAPLAND and the NORWEGIAN BLUETHROAT; p. 147 should therefore be deleted and page 148 headed THE RED-SPOTTED BLUETHROAT, *Luscinia svecica svecica* (L.).

The following changes in nomenclature have been passed by the B.O.U. List Committee.

The RED-HEADED BUNTING, *Emberiza bruniceps* Brandt (instead of *E. icterica*).

The BOOTED WARBLER, *Hippolais caligata caligata* (Licht) (instead of *Hippolais caligata*).

The NORTHERN WILLOW-WARBLER, *Phylloscopus trochilus acredula* (L.) (instead of *Ph. t. evermanni*); and

The SIBERIAN LESSER WHITETHROAT, *Sylvia curruca blythi* Tice. and Whist. (instead of *S. c. affinis*).

Hooded Crow, add "W" to S.E. Sutherland.

Rook, add "OW" to Shetland.

Golden Oriole, add "O" to Peebles.

Lesser Redpoll, delete "few" in S. Fife.

Scarlet Grosbeak, add "OP" to Shetland.

Tree Sparrow, delete "used to be," and leave "R" for Fair Isle.

Yellow-breasted Bunting, add "O" (xii.1937.53) to the Isle of May.

Reed Bunting, delete "O," leaving "P" for Shetland.

Eastern Short-toed Lark, add "O" (xii.1937.26) to Shetland.

Woodlark, add "O" to Shetland.

Shorelark, add "O" to Shetland.

Richard's Pipit, add "O" (xii.1937.26) to Shetland.

Tree Pipit, delete "O," and insert "P" for Shetland.

British Nuthatch, add "O" in italics to Fair Isle.

British Great Titmouse, add "R" to Skye, and delete "O," as we are informed by Mr Buxton that it now breeds there regularly.

Continental Cole Titmouse, add "O" in italics to Fair Isle.

British Willow Titmouse, add "has bred" to Forfar, and "O" in italics to Fair Isle.

Continental Golden-crested Wren, add "O" to Renfrew.

Lesser Grey Shrike, add "O" (xii.1937.27) to Shetland.

Waxwing, add "O" to W. Sutherland.

Spotted Flycatcher, add "P" to the "O," making "OP" in Shetland.

Pied Flycatcher, delete "O," leaving "P" in Shetland.

Red-breasted Flycatcher, add "P," making "OP" in Shetland.

Sedge-Warbler, add "has bred" to the Outer Hebrides.

Barred-Warbler, delete "O," leaving "P" in Shetland.

Siberian Lesser Whitethroat, add "O" (xii.1937.28) to Shetland, and "O" (xii.1937.54) to the Isle of May.

Continental Song Thrush, add "OW" to Renfrew.

Iceland Redwing, add "O" to Shetland.

Whinchat, delete "O," leaving "P" in Shetland.

British Stonechat, *add* " P " to Shetland, making " OP " and " R " to Nairn.  
 Hebridean Stonechat, *add* " R " to Renfrew and Lanark, *delete* " O " and  
*insert* " R " for Ayr. As it has not yet been proved that this is the only  
 form of stonechat which nests in these counties we are not deleting the  
 " R " under the British race.

Black Redstart, *delete* " O," leaving " P " for Shetland and the Isle of May.

Red-spotted Bluethroat, *delete* " O," leaving " P " for the Isle of May.

Hebridean Hedge Sparrow, *add* " R " to Ayr and Renfrew (also see note  
 under Hebridean Stonechat).

Irish Dipper, *add* " R " to N. Argyll.

Roller, *add* " O " to Shetland.

Kingfisher, *add* " O " to Shetland.

Green Woodpecker, *add* " O " in italics to S. Fife and Shetland.

Great Spotted Woodpecker, *delete* " O " in N. Argyll and *insert* " R."

American Yellow-billed Cuckoo, *add* " O " (xii.1937.46) to Orkney.

White-breasted Barn Owl, *delete* " uncommon, local " in Dumfries, as  
 Mr Arthur Duncan informs us it is now the commonest owl there.

Osprey, *add* " O " to Fair Isle.

Heron, *add* " W " to Dumfries, Berwick, and E. Ross.

Bittern, *add* " O " to Fair Isle.

Whooper Swan, *add* " OS " to E. Inverness.

Greylag Goose, *delete* " O," leaving " W " in N. Argyll, as Mr Simon Moreton  
 Macdonald tells us they have wintered there for the last two years.

White-fronted Goose, *add* " O " to Lanark.

Shelduck, *add* " S " to Dumfries, " W " to Aberdeen, *delete* " O, has bred,"  
 and *add* " R " to Shetland.

Mallard, *add* " S " to Kinross.

Wigeon, *add* " R " to S. Argyll, and " has bred " to Nairn.

Pintail, *add* " O " to the Isle of May and " has bred " to W. Sutherland.

Pochard, *delete* " has bred," and *add* " R " to Midlothian.

Eider, *add* " O " to E. Ross.

Black Scoter, *add* " O " to Morayshire.

Red-breasted Merganser, *add* " R " to Dumfries and Kirkcudbright.

Cormorant, *delete* " O " and *insert* " W " in N. Perth, *add* " W " to Dumfries,  
 Ayr, N. Argyll, Forfar and Aberdeen, and *add* " O " to Nairn.

Shag, *add* " W " to Aberdeen.

Great Shearwater, *add* " O " to Fair Isle.

Fulmar, *delete* " Forth " under Berwickshire, leaving " S," as it now breeds  
 in the Tweed division of the county. *Add* " has bred " to S. Fife and  
 " O " to W. Ross.

Red-necked Grebe, *add* " O " to Dumbarton and N. Argyll.

Slavonian Grebe, *add* " W " to Fair Isle.

Black-necked Grebe, *add* " O " to S. Argyll and " has bred " to S. Fife.

Red-throated Diver, *delete* " W, has bred " and *insert* " R " in N. Argyll.

Stone Curlew, *add* " O " (xii.1937.127) to the Isle of May.

Dotterel, *add* " O " to the Inner Hebrides.

Ringed Plover, *add* " R " to Nairn.

Southern Golden Plover, remove italics from " P " in Outer Hebrides.

Northern Golden Plover, *add* " OW " to Skye, and " W " making " OW " to  
 the Inner Hebrides. *Delete* " has occurred " and *insert* " P " in  
 N. Fife. *Delete* " O " and *insert* " P " in the Outer Hebrides.

Grey Plover, *add* " W " to N. Fife.

Lapwing, *add* " W " to Renfrew,

- Ruff, *delete* " O," leaving " P " on Fair Isle.  
 Temminck's Stint, *add* " O " (xii.1937.30) to Shetland.  
 Black-tailed Godwit, *delete* " O," *insert* " W " and " P " for N. Fife, and  
*add* " OW " to Shetland.  
 Curlew, *add* " W " to Dumfries.  
 Snipe, *add* " W " to N. Argyll.  
 Woodcock, *add* " S " to Morayshire.  
 Sandwich Tern, *add* " O " to N. Perth.  
 Common Tern, *delete* " rare " in the Outer Hebrides.  
 Black-headed Gull, *add* " R " to W. Ross and " W " to Orkney.  
 Common Gull, *add* " R " to Nairn.  
 Herring Gull, *add* " S " to E. Lothian and Berwick.  
 Glaucous Gull, *add* " OS " to Shetland.  
 Northern Guillemot, *add* " S " to Caithness.  
 Great Bustard, *add* " O " (xii.1937.31) to Shetland.  
 Water Rail, *add* " has bred " to E. Inverness.  
 Coot, *add* " W " to Midlothian.

## NOTES

### Dumfriesshire Hemiptera-Heteroptera.—*Velia currens*

Fab. is common on the backwaters of rivers and on ponds. I have many times seen the immature bugs attack small Chironomid flies which came within their reach. *Gerris lacustris* Lin., on the surface of ponds, fairly common. *G. costæ* H.S., on water in peat holes on Newton Moss, rare. *G. odontogaster* Zett., with the above, but much more plentiful. Both taken in July. *Ploiariola vagabunda* Lin., twice beaten from Oak on Nutberry Moss in September. *Nabis flavomarginatus* Scholtz, a frequent insect among coarse herbage in July and August. *N. limbatus* Dahlb., another common species. *N. fesus* Lin., also abundant in moist locations. *N. rugosus* Lin. plentiful. *N. ericetorum* Scholtz., commonly swept from heather in summer. *Acanthia* (*Salda*) *pallipes* Fab., our most abundant *Salda* along river banks from May to September. *A. c.-album* Fieb., in my experience uncommon, along river banks. *A. saltatoria* Lin., generally occurs singly and frequently away from water. All my specimens were met with in September. *A. orthochila* Fieb., apparently rare. I have only met with it twice, once in April and the other time in September. *A. scotica* Curt., uncommon along the R. Kirtle in June. *Salda littoralis* Lin., among gravel on river banks in summer. It takes to wing readily in bright weather. *Chartoscirta cocksii* Curt., rare, one specimen in wet moss on Newton Moss on the 3rd of October. *Chiloxanthus pilosus* Fall., on the sandy shores of the Solway at Gretna in May and Powfoot in June. Uncommon and not easily detected as its colour somewhat assimilates with the sand.—JAS. MURRAY, Gretna.



**Breeding of Great-crested Grebe on Duddingston Loch.**—Till April 1937, I had never seen this grebe on the loch since 26th October 1930, when one remained with us for eight days. I had previously noted it but once or twice since 1903.

It was very pleasurable, therefore, to note the arrival of one in full summer plumage on 16th April 1937. A solitary bird was seen off and on till 26th May, when no less than four were seen at the east end of the loch, and by their bowing movements indicated that they were pairing. Thereafter they spent much time in the neighbourhood of the old boathouse and evidently intended to nest there: just a place where boys would find great difficulty in reaching their nest.

Here two nests were constructed. By 16th June one bird was sitting closely on the nest, and on 10th July two birds could be seen incubating. On 15th July one brood of three had hatched out and by their size were about five days old. On the 17th, the second brood of three hatched out, but one chick very soon disappeared.

By the 27th I noted both families were growing rapidly and were being fed industriously by their parents. On 8th August the early brood were as large as the adults. On the 22nd August I had the rare pleasure of seeing six or seven grebes, old and young, under my eye at one time, when the young birds were still being fed by the old birds, but were also skimming the surface of the water like shoveller as if catching insects.

They all left the loch some time in late September, excepting one adult bird which is still with us on 16th October.

These, with other locally bred birds, possibly spend the winter in the Forth estuary where sometimes fifty or sixty may be counted on a very short stretch of coast.—Rev. WILLIAM SERLE, M.B.O.U., Duddingston.

**Pintail at Linlithgow Loch.**—On the 17th October 1937 when making one of our periodical visits to Linlithgow Loch, Mr William Watson and I were pleased to see a fine male pintail at the east end of the loch. We have never observed this duck there before, and don't know of any previous record. We have now seen eleven species of duck at Linlithgow Loch.

Visiting the loch again on 21st November 1937, we were pleased to find over a dozen pintail on the water, eight of which were male birds. Incidentally I might mention that a female smew had again appeared at the loch on the same date.—DAVID HAMILTON, Edinburgh.





FIG. 1.

DENTO-ALVEOLAR ABSCESS IN A GRAMPUS  
(*ORCA GLADIATOR* BONN.).\*

By Sir J. F. COLYER, K.B.E., LL.D., F.R.C.S.

AN excellent example of a dento-alveolar abscess in a Grampus is shown in Fig. 1. The abscess has formed in connection with the second cheek tooth; the socket of the tooth is much enlarged, the whole of the bone forming its base has disappeared and there is an opening through the inner wall of the body of the mandible. The third tooth shows a fair degree of wear from the top, the pulp is not exposed, the root is thickened—the result of a proliferative periodontitis. The remaining teeth show slight wear from the top and in some of these there is considerable wear of the sides.

It is unfortunate that the first and second teeth are missing as, without them, it is not possible to express a definite opinion as to the cause of the pathological condition present; but, from an examination of other specimens, one is perhaps justified in attributing it to exposure of the pulp cavity from undue attrition of the hard tissues.

The wear of a tooth is usually associated with the formation of secondary dentine in the pulp cavity, a condition termed by Salter<sup>1</sup> (p. 62) "dentine of repair." If the formation of secondary dentine keeps pace with the wear of the tooth then the soft tissues of the pulp are protected. If, however, the wear of the tooth occurs at a greater rate than the formation of secondary dentine, the pulp cavity becomes exposed and infection of the pulp tissues follows with the formation of a dento-alveolar abscess.

The Grampus and other allied Cetacea have conical-shaped teeth which are arranged so that when the jaws are closed the teeth interdigitate. There is in some specimens a slight degree of wear of the tops of the teeth and invariably of the sides, the latter varying in degree and position. The

\* The specimen referred to, a male 21 ft. 9 ins. in length (S.W. 1937/27), was found floating in the sea near Haverø Island, Shetland, on 16th September 1937. The lower jaws were sent to the Royal Scottish Museum, Edinburgh, for identification.

wear from the top seems to be more marked in the anterior than the posterior teeth. The wear does not always occur as stated above, for example in four out of twenty specimens examined there was an abnormal degree of attrition. A brief account of three of these will serve to illustrate the varying conditions that may be present.

In one case, whilst some of the teeth showed but little wear, others showed extreme wear of the tops of the teeth with a variable amount of the sides. In the majority of the teeth much worn secondary dentine had formed, but in two the wear had exposed the pulp cavities.

The teeth in the second specimen showed considerable wear mostly from the tops, but in several there was wear of the sides and this was of an irregular character; in the majority of the teeth much worn secondary dentine had formed in the pulp cavities. The right half of the mandible presented interesting features; the sixth tooth had the pulp cavity widely open, the posterior teeth were worn on the sides. The five anterior teeth had been lost from the jaw; the bone forming the sockets of the fourth and fifth teeth showed pathological changes, they were enlarged and the septum between the teeth had disappeared.

The wear of the teeth in the third specimen, a mandible, varied in degree on the right and left sides. On the right side there was considerable wear from the tops with the formation of secondary dentine; on the left side the wear had led to the exposure of the pulp cavities of the second and third teeth.

The facts recorded above show that in the *Grampus* the wear of the teeth may be irregular and that the formation of secondary dentine may not keep pace with the loss of the tooth tissue.

Irregular attrition with extreme wear of one tooth is seen in the Ungulates; there is a good example in an *Oryx leucoryx latipes* (B.M. 34.8.4.30) in the British Museum. In the Horse, irregular attrition of the teeth often takes the form of cup-like depressions, and in one case observed the mandibular left fourth premolar was worn down level to the gum, the opposing tooth being considerably above its neighbours.

In the Grampus the comparative frequency of abnormal wear has been attributed to an absence of exact symmetry of the skeleton ; and in a case recorded by C. S. Tomes <sup>2</sup> (p. 39) it was stated to be " sufficient to alter the antagonism of all the teeth on the right side of the mouth, and lead to destruction of the pulp by placing them directly opposite to one another." The abnormality is, however, not always symmetrical. Martin A. C. Hinton, who has a wide knowledge of the Cetacea, informs me that the teeth are set loosely in their sockets and can be easily moved. It may therefore be possible that movement may lead to loss of the natural antagonism, and in that way an undue strain may be placed on the tops of some of the teeth.

## REFERENCES TO LITERATURE.

- <sup>1</sup> SALTER, S. J. A., 1874 . *Dental Surgery and Pathology.*  
<sup>2</sup> TOMES, C. S., 1873 . *Trans. Odontol. Soc.*, vol. v., N.S.

## NOTES

**Waxwings at Cromarty.**—On Saturday, 4th December, I saw two waxwings at Ballicherry, six miles west of Cromarty. Unfortunately one has been picked up dead since then.—ALBERT SWANSON, Conon Bridge.

**White-fronted Goose in Ayrshire.**—It may be of interest to note that while " fighting " duck here on 4th December I shot an adult white-fronted goose. It was alone and came over after the duck had stopped fighting and it was nearly dark. The colouring of the bill was unusually orange for a whitefront. The whitefront is an infrequent visitor to Castle Semple Loch, about a mile from where I was shooting.—J. ALASDAIR ANDERSON, Beith, Ayrshire.

**Dusky Redshank in Fife.**—As this bird is not common with us, it is worth recording that we saw a dusky redshank on the rocks in Largo Bay, on 1st October 1937, and another at the mouth of the Eden on 28th December. Both were with common redshanks.—LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER, Largo, Fife.



## BOOK NOTICES

**The Nation's Sea-Fish Supply.** The Buckland Lectures for 1936. By E. FORD, A.R.C.S. 112 pp., 3 plates. London: Edward Arnold & Co. Price 3s. 6d. net. Of late years one of the main concerns of those in charge of fishery administration has been the unquestioned destruction and enormous waste occasioned by the capture and rejection as useless of under-sized fishes in vast quantities by the trawl. One such example may be quoted. In an area off the Aberdeenshire coast during the years 1924-1930 an estimated total of over 141 million haddock weighing some 17,000 tons were caught. Of this quantity 51 per cent. by number and 35 per cent. by weight were returned to the sea as useless; the fish of course being dead. In these Buckland Lectures for 1936 Mr Ford deals principally with this problem of the destruction of immature fish and its solution. The whole matter is very fully treated and the results of many relevant scientific experiments and observations noted. This little volume should be of great interest to our readers.

**Oyster Biology and Oyster Culture.** By J. H. ORTON, A.R.C.S., D.Sc. 211 pp., 57 figs. London: Edward Arnold & Co. 1937. Price 5s. net. There is little need to stress the commercial value of the oyster, and it has been the subject of many investigations. In this volume which represents, in part, the Buckland Lectures for 1935, Professor Orton has given a very full summary of modern knowledge, chiefly in regard to the European oyster. The account is divided into two parts. The first deals with the natural history of this animal, treating of such subjects as habits, food, shell-growth, breeding and kindred matters. The second part deals with oyster culture and its problems. A glossary of some of the terms used by fishermen and a considerable list of papers dealing with the oyster are included. This account is clearly and interestingly written, and supplied with a large number of illustrations which greatly enhance its value. The author is to be congratulated on this most interesting account.

**Evolution and its Modern Critics.** By A. MORLEY DAVIES. Pp. xii+277. 30 illustrations. London: Thomas Murby & Co. 1937. Price 7s. 6d. net. The author deals chiefly with the "evolution within the family but not beyond it" theory propounded by Dewar in his *Difficulties of the Evolution Theory*. Although largely a reply to Dewar's criticisms, Professor Morley Davies' book is in reality a critical exposition of the Evolutionist's creed. Various objections raised by Dewar, Vialleton, Sir Ambrose Fleming, and G. K. Chesterton are discussed and shown to be insignificant beside the overwhelming mass of evidence supporting the theory of Organic Evolution.

## NOTES ON MAMMALS OF THE ISLES OF BARRA, MINGULAY, AND BERNERAY, OUTER HEBRIDES.

By TOM WARWICK, B.Sc., Department of Zoology,  
Edinburgh University.

MOST of the following observations were made during the Edinburgh University Biological Society's expeditions to Barra in July 1936 and July 1937.

*Sorex minutus* (L.), Pigmy Shrew. This animal was caught in heather by the side of a streamlet above the schoolhouse at Loch Obe. It is probably widespread in suitable situations.

*Lutra lutra* (L.), Otter. The otter is said to frequent the lochs and sea coast, especially near Greian Head, where one of the rocks is named after this animal. None was, however, seen or traced.

*Halichoerus grypus* (Fabricius), Grey Seal. Isolated individuals may be seen anywhere off the coast of Barra, but at low tide most are found to the south of Greian Head on Sgeir Liath, at Rudha Fada off Ard Mhòr, and on the Isle of Hellisay in Hintish Bay.

*Oryctolagus cuniculus* (L.), Rabbit. The largest warren is on the machair land at Eoligarry. Occasional animals were seen on the lower slopes of Ben Erival just above Loch an Dùin. Shells of *Helix aspersa*, Müller, eaten by rabbits, were found at the entrance to burrows at Eoligarry. They had been attacked in the characteristic way, the peristome being untouched; but the periphery of the body whorl was neatly nibbled away. One adult and two well-grown young rabbits from the same locality were infected with the cestode *Cittotaenia denticulata* (Rudolphi).

*Apodemus hebridensis* (de Winton), Hebridean Field Mouse. Few specimens of this species have hitherto been collected in Barra (Barrett-Hamilton and Hinton, p. 533). There are two specimens in the Royal Scottish Museum, one from a stone dyke at Castlebay and the other from a grassy hill just above sea-level at Eoligarry. In July 1936 and July 1937, 35 males and 13 females were obtained on cultivated land at Vaslain. Traps set in other likely situa-

tions elsewhere caught only house mice ; no house mice were, however, caught at Vaslain. Despite careful search no runways, holes, or food traces were found. The nest of a small mammal, probably that of a field mouse, was found below a boulder in a field between Loch St Clair and the road ; Mr A. R. Waterston tells me that he found a similar nest earlier in the year in the same locality. I was told also of mice emerging from a rabbit hole during ferreting operations on the machair at Eoligaray. Though no estimates of density could be made the field mice at Vaslain seemed to be abundant. Most were found where the stands of rye had an undergrowth of corn marigold and other plants ; few frequented the potato plots or where the rye was thin. Mice came out even on wet nights, and three juveniles were caught in the twilight before 11 P.M. The edges of the ears were often ragged, the tail scarred or minus its tip. These injuries indicate that fights between the mice are common. It is impossible to list the food as the mass in the stomach was always finely divided.

The Long-tailed Field Mouse of the mainland, *Apodemus sylvaticus sylvaticus* (L.), usually becomes adult when it weighs 15 grams (Baker). The corresponding figure for *Apodemus hebridensis* is here assumed to be 22 grams. It is quite unlikely that any animals above this weight are immature. On this standard 7 of the 11 females and 27 of the 33 males weighed were adults. The heaviest animal obtained was a male of 35 grams. In the smallest individual, a female of 9 grams weight, the third molar teeth were unerupted and the occipital sutures had not yet closed. Of the 7 adult females 4 were pregnant, 2 with 6 embryos each, and 2 with 7. One caught on 13th July 1936 was lactating and the uterus showed 7 implantation sites. In *Apodemus sylvaticus* the usual number of embryos found is 4, 5, or 6, most frequently 5 (Baker).

Hebridean Field Mice are also found on Berneray and Mingulay, though so far as I know they have not hitherto been collected on these islands. I have 8 taken on Berneray in December 1937. It is hoped later to establish the relation of the field mice of the three islands to one another and to the other sub-species of *Apodemus hebridensis*.

An article on the parasites of these mice is being published elsewhere.

*Rattus norvegicus* (Erxleben), Brown Rat. Though sometimes found in outbuildings, most of the brown rats on the east coast of Barra, near Northbay, seem to live on the many turf covered islets near the shore. Here remains of crabs were found near their holes. One such islet is in Northbay and rats from its colony came ashore to forage at nightfall. I am told that occasionally rats get their tongues or fore-paws trapped under limpet shells.

*Mus musculus* (L.), House Mouse. House mice differing neither in colour nor skull characters from mainland individuals were found living wild in the fields at Northbay, Loch Obe, and Eoligarry; they were very common.

#### REFERENCES TO LITERATURE.

- BAKER, J. R. 1930. "The Breeding Season in British Wild Mice," *Proc. Zool. Soc. Lond.*, vol. i., p. 113.  
 BARRETT-HAMILTON, G. E. H., and HINTON, M. A. C. 1915. *A History of British Mammals*, Part xvii., p. 505.

#### NOTES

##### **Continental Golden-crested Wren in Renfrewshire.**—

Another specimen of the continental golden-crested wren (*Regulus r. regulus*) was obtained near High Darnley, East Renfrewshire, on the 27th November 1937. The specimen, a first winter male, was one of a small party, and was surprisingly shy for a goldcrest.

This is only the second record for Renfrewshire. The first example was obtained in almost the same spot as the present specimen, and is recorded in *British Birds*, vol. xxx., p. 376.—PHILIP A. CLANCEY, M.B.O.U., Glasgow.

##### **Nesting of Black-necked Grebes in South Fife.**—

The black-necked grebe is still spreading as a breeding species in Scotland. In 1937 we found two broods with their parents on a loch in South Fife where we had never seen them before. On revisiting an old centre, we found that the colony had increased, so it is much to be hoped that this grebe has established itself and become a permanent breeding species.—EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL, Largo, Fife.

THE NATURAL HISTORY OF THE ISLAND OF  
RAASAY AND OF THE ADJACENT ISLES  
OF SOUTH RONA, SCALPAY, LONGAY, AND  
FLADDAY.

(Concluded from p. 30.)

X. THE AQUATIC COLEOPTERA OF RAASAY AND  
OF THE ADJACENT ISLANDS OF SOUTH RONA,  
FLADDAY, SCALPAY, LONGAY, AND PABBAY.

By GEORGE HESLOP HARRISON, B.Sc., Ph.D.

WHEN the King's College (University of Durham) and the University College, Dundee (University of St Andrews), Biological Expeditions visited Raasay and the neighbouring islands, in the years 1933-1937, the work of investigating the water-beetles was assigned to me. In addition, I have had opportunities for collecting in Raasay in early spring and summer of 1936, and if my list be compared with that presented for Skye by Balfour-Browne,\* it will be found that that investigator took 43 species whilst my captures include 42. Of these, 29 are common to both lists. Fourteen, *Helophorus aquaticus*, *H. brevipalpis*, *Gyrinus opacus*, *Hydroporus incognitus*, *H. lepidus*, *H. morio*, *Deronectes 12-pustulatus*, *D. latus*, *D. assimilis*, *D. elegans*, *Hydrobius fuscipes*, *Cœlambus inæqualis*, *Philhydrus minutus* and *P. melanocephalus* appear on Balfour-Browne's list and not on mine, whilst 13, *Deronectes depressus*, *Oreodytes borealis*, *O. septentrionalis*, *Hydroporus umbrosus*, *H. rufifrons*, *Noterus sparsus*, *Agabus sturmi*, *Ilybius fuliginosus*, *Rhantus bistratus*, *Colymbetes fuscus*, *Dytiscus marginalis*, *Aulonogyrus striatus*, and *Philhydrus fuscipennis* are found only in mine.

Of the latter 13, *Noterus sparsus* is new to Scotland and *Aulonogyrus striatus*, a very noteworthy capture, new to the British Islands.

Although, for the most part, I am responsible for naming my insects, I wish to tender my best thanks to Professor Balfour-Browne and Mr G. B. Walsh, B.Sc., who have so

\* *Scot. Nat.*, 1911, p. 149.

very kindly confirmed my determinations, and assisted me with the more difficult and unusual species.

## HALIPLIDÆ.

*Haliphus confinis* Steph.—Nowhere very plentiful, but found on Raasay, S. Rona, and in the lochan near Loch an Leoid, Scalpay.

*H. fulvus* F.—Not uncommon, Raasay, Scalpay, and Fladday.

*H. ruficollis* De Geer.—Common in most lochs on the larger islands, as well as on Fladday.

*H. lineatocollis* Mrsh.—Rare near Balachuin in Loch Eadar da Bhaile.

## DYTISCIDÆ.

*Deronectes depressus* F.—Not common, lochs under Dun Caan, Raasay.

*D. griseostriatus* De Geer.—Also rare in similar places, but also seen on Scalpay.

*Oreodytes borealis* Gyll.—A single specimen in Loch Storab.

*O. septentrionalis* Gyll.—Quite rare in the lochs along the west of Raasay.

*O. rivalis* Gyll.—As the form *sanmarki* in the little pools along the upper road, Raasay.

*Hydroporus tristis* Payk.—Rather rare, central Raasay.

*H. gyllenhali* Schiödte.—Quite common in most of the lochs on Raasay, S. Rona, and Scalpay, but not taken every year.

*H. palustris* L.—Common, Loch Braig, Rona, Loch an Leoid, Scalpay, and generally on Raasay; also on Pabbay.

*H. erythrocephalus* L.—The commonest of the genus; to be found almost everywhere.

*H. obscurus* Sturm.—Apparently most at home in peat bogs and lochans; in the loch just to the west of Loch an Rathaid, Inverarish bogs, closed lochans under Dun Cann, Raasay, and in the bog where *Malaxis* grows in central Scalpay.

*H. nigrita* F.—Not common, lochs on Raasay only.



*H. pubescens* Gyll.—Common, Loch Braig, S. Rona, Loch Mor, Fladday, and lochans on Scalpay and Raasay.

*H. umbrosus* Gyll.—Lochs west of Dun Cann, Raasay only.

*H. rufifrons* Duft.—A single specimen in one of the lochans above Oskaig, Raasay.

*Noterus sparsus* Mrsh.—New to the Scottish list, but taken in pools near Inverarish in 1935 and 1937.

*Agabus congener* Payk.—Apparently restricted on Raasay to the lochs around Dun Cann as in Loch Meall Daimh at about 1000 feet, also in Loch a Mhuilinn, Scalpay.

*A. arcticus* Payk.—Common, in Loch na Meilich, Loch na Mna and generally at 800-1100 feet on Raasay, at 700 feet on Scalpay, but much lower on Fladday and S. Rona.

*A. sturmi* Gyll.—Well distributed on S. Rona, Raasay, Scalpay, and Fladday.

*A. chalconotus* Panz.—Twice on Raasay in the lochans above Oskaig.

*A. bipustulatus* L.—As the form *solieri*; common everywhere even on Longay and Pabbay.

*Platambus maculatus* L.—Very rare, once only in the stream issuing from Loch Eadar da Bhaile, Raasay.

*Ilybius fuliginosus* F.—Taken commonly on all the islands excluding Longay.

*I. ænescens* Thoms.—Common on Raasay as in Loch an Rathaid, Loch an Meilich, etc., and even in roadside depressions as at Torran, also on S. Rona and Scalpay.

*Rhantus exoletus* Forster.—Common, S. Rona, Fladday, Raasay, and Scalpay.

*R. bistriatus* Er.—In much the same localities.

*Colymbetes fuscus* L.—Quite rare in moorland pools near Inverarish, Raasay.

*Acilius sulcatus* L.—The commonest of water-beetles; to be found everywhere in lochs, etc., on S. Rona, Fladday, Raasay, and Scalpay.

*Dytiscus marginalis* L.—One of the species not recorded from Skye by Balfour-Browne, but captured freely by me in Loch Braig, etc., S. Rona, in the lochan above Loch na Mna, Inverarish Bogs, etc., Raasay.

*D. punctulatus* F.—Common in Loch Braig, S. Rona, and in most of the lochs on Raasay and Scalpay.

*D. lapponicus* Gyll.—Far from rare; Loch Uachdair, Loch na Bronn, Loch an Rathaid, loch just west of the preceding, loch just north of Loch na Mna, lochan above Loch Storab, moorland pools, etc., near Inverarish—all on Raasay. It may therefore be found from a height of 80 feet above sea-level to the greatest available heights (1100 feet) near Dun Cann. The chosen lochs or pools may be shallow or deep, closed or with an outlet, with peaty bottoms or with stony bottoms, with fish and/or newts or with neither, with or without vegetation. Moreover, no restriction imposed by the varied geological formation seem to influence the distribution.

Another interesting point lies in its occurrence alongside its two congeners in the shallow Inverarish moorland pools, in the dark deep lochan west of Loch an Rathaid, and in the tiny loch under Dun Cann.

A curious circumstance in respect to the sex ratio of the specimens captured in 1937 was seen in the fact that whilst those taken on Soay showed a ratio of 9 ♀♀:1 ♂, the Raasay collection reversed those figures.

#### GYRINIDÆ.

*Aulonogyrus striatus* F.—In this species we are concerned with one of the most unexpected captures made. Apparently a Mediterranean species, it has not been recorded either for Great Britain or the adjoining islands; nevertheless, it was taken on Raasay in 1935 and 1936. In the latter year only one specimen was taken whilst in the preceding year it was taken more freely, in both cases in one of the low-lying lochs between Balachuin and Raasay House. Careful search in 1937 failed to reveal further specimens.

This curious example of discontinuous distribution may, of course, have been brought about by accidental circumstances, but this in my opinion is very unlikely; thus the occurrence becomes of great zoogeographical importance. It falls in line with the distribution of several of the most

important discoveries made in connection with Raasay plants.

*Gyrinus minutus* F.—Very common on Raasay, S. Rona, Fladday, and Scalpay.

*G. natator* L., var. *substriatus* Steph.—Also very common on the same islands as well as on Pabbay.

#### HYDROPHILIDÆ.

*Helophorus viridicollis* Steph.—Rather rare on Raasay, Fladday, and Scalpay.

*Anacæna globulus* Payk.—Not very common, Raasay only; in the smaller lochs.

*Philhydrus fuscipennis* Thoms.—Also not well represented in my collections; Raasay only.

*Laccobius minutus* L.—Rare in the shallower lochans, Raasay.

*Limnebius truncatellus* Thnbg.—Rare also in the small lochs under Dun Cann.

---

#### BOOK NOTICE

**The Dragonflies of the British Isles.** By CYNTHIA LONGFIELD, F.R.E.S. (The Wayside and Woodland Series.) Pp. 220. 38 plates. London: Frederick Warne & Co., Ltd. 1937. Price 7s. 6d. net.

It is thirty-seven years since Lucas' well-known work appeared, and our knowledge of the habits and distribution of the British species has progressed considerably during this period. The present volume forms a useful up-to-date summary of these discoveries. There are only 42 species represented in the British Isles, hence it has been possible to treat each one in some detail. The specific characters, nymph, habits, times of appearance and distribution of each species are discussed; and there are useful chapters on life-history, methods of collecting and preserving, classification, and means of identification. The illustrations include photographs of each species and figures of the body-markings and wing venation.

This book is a worthy addition to "The Wayside and Woodland Series," and should do much to stimulate popular interest in one of our most beautiful and fascinating Orders of insects.

# A Vertebrate Fauna of Forth

By LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER

With 16 full-page illustrations and a map of  
the Forth Area. 8vo. 456 pages. 25s. net.

EDINBURGH: OLIVER AND BOYD LTD., TWEEDDALE COURT  
LONDON: 98 GREAT RUSSELL STREET, W.C.

---

---

## THE NATURALIST

A Monthly Illustrated Journal of Natural History for the North of England

Edited by W. H. PEARSALL, D.Sc., F.L.S., and

W. R. GRIST, B.Sc., The University, Leeds.

With the assistance of a Panel of Referees.

*All Communications to be addressed to—*

THE EDITORS, "THE NATURALIST," THE UNIVERSITY, LEEDS

Annual Subscription, 15s. Single Numbers, 1s. 6d. net

LONDON: A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.

---

---

## READ The Irish Naturalists' Journal

The Official Organ of Irish Scientific Societies

The only popular Scientific and Archæological periodical published  
in Ireland.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.

Issued every Second Month.

Annual Subscription, 6s. post free. Single Copies, 1s. 3d. each.

*All Communications to be addressed to—*

W. M. CRAWFORD, F.E.S., F.Z.S., Orissa, Marlborough Park South, Belfast

---

---

## The North Western Naturalist

A Scientific and Educational Journal for Lancashire, Cheshire, Shropshire,  
Stafford, Derbyshire, North Wales, Cumberland, Westmorland, the  
Isle of Man and the North West

EDITED BY A. A. DALLMAN, F.C.S.

Published Quarterly. Annual Subscription, 7s. 6d. (post free). Single Copies, 2s.

All Articles and Communications intended for Publication, and all Books, etc., for  
Review, should be sent to The Editor, A. A. DALLMAN, 12 Tickhill Road, Doncaster.

Subscriptions and Advertisements should be addressed to the Publishers, T. BUNCLE  
& Co., Market Place, Arbroath, Angus.

# CONTENTS

	PAGE
The Aquatic Coleoptera of the Outer Hebrides— <i>Frank Balfour-Browne</i> . . . . .	33
Notes on the Status of Birds in Scotland in 1937— <i>Evelyn V. Baxter and Leonora Jeffrey Rintoul</i> . . . . .	47
Dento-Alveolar Abscess in a Grampus ( <i>Orca gladiator</i> )— <i>Sir J. F. Colyer</i> . (Plate) . . . . .	53
Notes on the Mammals of the Isles of Barra, Mingulay, and Berneray, Outer Hebrides— <i>Tom Warwick</i> . . . . .	57
The Natural History of the Island of Raasay and of the adjacent Isles of South Rona, Scalpay, Longay, and Fladday ( <i>concluded from p. 30, 1938</i> ):—	
X. The Aquatic Coleoptera of Raasay and of the adjacent Islands of South Rona, Fladday, Scalpay, Longay, and Pabbay— <i>George Heslop Harrison</i> . . . . .	60
Book Notices . . . . .	56, 64

Notes :

Scottish Woodcock migrating to Ireland—*James Ritchie*, 46 ;  
 Dumfriesshire Hemiptera - Heteroptera—*Jas. Murray*, 51 ;  
 Breeding of Great-crested Grebe on Duddingston Loch—*Rev. William Serle*, 52 ; Pintail at Linlithgow Loch—*David Hamilton*, 52 ; Waxwings at Cromarty—*Albert Swanson*, 55 ;  
 White-fronted Goose in Ayrshire—*J. Alasdair Anderson*, 55 ;  
 Dusky Redshank in Fife—*Leonora Jeffrey Rintoul and Evelyn V. Baxter*, 55 ; Continental Golden-crested Wren in Renfrewshire—*Philip A. Clancey*, 59 ; Nesting of Black-necked Grebes in South Fife—*Evelyn V. Baxter and Leonora Jeffrey Rintoul*, 59.

## PUBLISHERS' NOTE.

The Annual Subscription for 1938, payable in advance, 12s. 6d. post free, should be addressed to the Publishers, Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

## COVERS FOR BINDING "THE SCOTTISH NATURALIST."

Special Cloth Cases for Binding the 1937 Volume can be supplied at 1s. 6d. each (by post 1s. 9d.), by Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

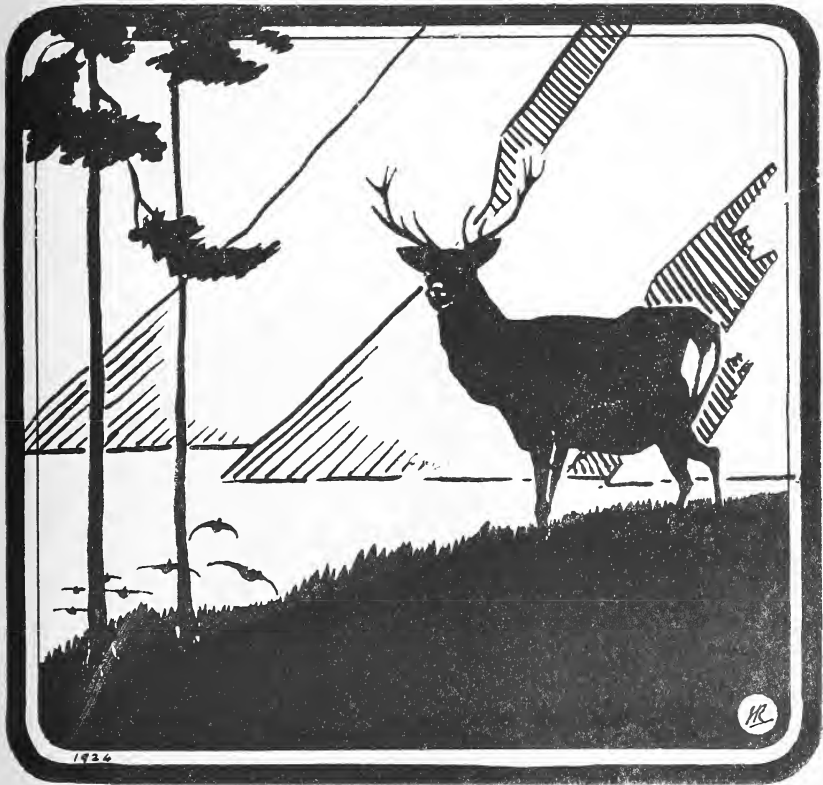
# The Scottish Naturalist



No. 231]

1938

[MAY-JUNE



EDINBURGH: OLIVER & BOYD, TWEEDDALE COURT  
LONDON: GURNEY & JACKSON, 98 GREAT RUSSELL STREET

*Price 2s. 3d. Annual Subscription, payable in advance, 12s. 6d. post free*



# The Scottish Naturalist

*A Magazine devoted to Zoology*

With which is incorporated

“The Annals of Scottish Natural History”

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

*Keeper, Natural History Department, Royal Scottish Museum.*

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

*Formerly Keeper, Natural History Department, Royal Scottish Museum.*

ASSISTED BY

PROFESSOR JAMES RITCHIE, M.A., D.Sc.,  
F.R.S.E.  
EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.  
LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.

H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.  
C. H. O'DONOGHUE, D.Sc., F.R.S.E.  
ANDERSON FERGUSSON, F.R.E.S.  
A. R. WATERSTON, B.Sc.

All Articles and Communications intended for publication, and all Books, etc., for notice, should be sent to THE EDITORS, Royal Scottish Museum, Edinburgh.

Subscriptions and Advertisements should be addressed to the Publishers, MESSRS OLIVER AND BOYD LTD., Tweeddale Court, Edinburgh.

Authors of General Articles will receive 25 Reprints (in covers) of their Contributions gratis. Additional Copies, in covers, may be had from the Printers, at the ordinary prices ruling, provided such orders accompany the Manuscript.

---

## EVERY NATURALIST SHOULD READ

The following major articles which have appeared in recent numbers of *The Scottish Naturalist* :—

Scottish Insect Immigration Records.  
Notes on Highland Diptera. (Illustrated.)  
Ferrets and Polecats.  
Notes on Whales stranded on the Scottish Coast. (Illustrated.)  
The Natural History of South Rona. (Illustrated.)  
The Occurrence of *Gammarus* in Scottish Waters.  
Notes from Gairloch in Wester Ross.  
Scottish Sand-eels.  
Further Notes on the Parasites of the Magpie Moth.  
Land Planarians of the British Isles.  
Lesser Redpoll in Midlothian.  
Isle of May Bird Observatory Report.  
The Eider in Sutherland and Shetland.  
Notes on the Birds of Loch and Forest. (Illustrated.)  
Wild and Domestic Cat compared. (Illustrated.)  
Kingfishers breeding in Juvenile Plumage.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.

# The Scottish Naturalist

---

---

No. 231]

1938

[MAY-JUNE

---

---

## THE MAGPIE IN SCOTLAND.

By A. B. DUNCAN, B.A., M.B.O.U.

THIS paper is the report of the magpie investigation organised by the Scottish Ornithologists' Club. The first part gives a general survey of the past and present distribution of the bird in Scotland and is followed by a detailed survey county by county. I have adopted the county rather than the "Faunal Area" as the geographical unit; but I have endeavoured to group the counties approximately in their Faunal Areas and thus compromise between those who hold, as I do personally, that it is best to use the county as the unit and the other school of thought who still prefer the larger so-called natural unit on which so much of the bird work in Scotland has been based.

I am glad to have this opportunity of thanking all my numerous correspondents, without whose aid this enquiry could never have been brought to completion.

### GENERAL STATUS.

The present-day distribution of the magpie in Scotland may be roughly given as follows:—

Starting in the south-east we find it practically exterminated from Roxburgh, Selkirk, Peebles, Berwick and East Lothian, in which group of counties there is a small colony on the Berwick-East Lothian boundary and scattered pairs here and there in woods between the cultivation and the open hill. Moving westwards we find it rare and local in Dumfriesshire, slightly more numerous in Kirkcudbright, though absent from large areas in the county, and locally common in Wigtownshire. In southern Ayrshire the

distribution is similar to Wigtownshire, but when we get to the north and west of the county we are touching the industrial belt of Scotland and the magpie becomes more common. In southern Lanarkshire the magpie is virtually extinct. Turning now to the industrial belt, we find here the headquarters of the magpie in Scotland, and it is widespread and in some places abundant in the counties of Renfrew, North Lanark, West Lothian, Midlothian, Stirlingshire and part of Dumbarton. Turning now to the west coast, we find that it has been extirpated from Buteshire and practically so from Argyllshire, and north from Loch Fyne I have received no notice of its presence on the west coast at all. Returning to central Scotland it occasionally strays over into southern Perthshire from Stirling. In the rest of Perthshire I have no records of its recent breeding. In Fife, Clackmannan and Kinross it is extinct or on the verge of extinction as a breeder. In Angus a few pairs still hold out near Arbroath. In the north-east we come upon another colony, and it is fairly widespread in suitable terrain in Aberdeenshire and numerous around Aberdeen itself. It appears to be extinct in Nairn and Elgin. There is a small colony in the Spey valley around Aviemore. Further north there appears to have been a fair number in Easter Ross in the Kildary-Fearn area, but the colony in that district may now be extinct. In Sutherlandshire it was at one time common round Brora and appears to have been once common enough in Caithness. Unfortunately I have obtained no information from these two counties during the present enquiry. The magpie does not occur in the Orkney or Shetland groups nor the Outer or Inner Hebrides, but at one time bred in Mull and possibly in Skye.

#### PAST HISTORY.

At the beginning of the nineteenth century the magpie was generally distributed throughout Scotland wherever there was suitable ground, and being a bird of catholic tastes that was everywhere, except on the bare treeless uplands, though probably never common in the north-west. The serious preservation of game, as we now understand

it, dates from about 1850, and from that time on the magpie has been steadily decreasing throughout Scotland. It is a fairly easy bird to destroy particularly by means of poison. Apart from the respite gained during the War its extermination has gone on unabated ; but the probability is that, with the break-up of estates and the increasing unkeeped areas throughout the country, it will tend now to increase rather than to decrease.

Much has been said and written from time to time of the deleterious effect of modern methods of game preserving on the Scottish avifauna ; but in this connection it must always be remembered that while game preservers are to blame for reducing the numbers of certain birds, such as the hen-harrier, almost to extinction, and thereby placing the species in such a parlous position that a small number of over-zealous collectors could totally exterminate it, they have increased the numbers of the smaller and non-rapacious birds by providing them with suitable covert and sanctuary from their natural enemies. It may be well said with truth that the coverts and preserves of landowners form the best and truest bird sanctuaries that exist, or are likely to exist, in Scotland ; for most of the game preservers in Scotland have now a better understanding of the value of preserving the avifauna of Scotland as a whole and a more ample opportunity of so doing than many well-intentioned but ill-informed protagonists of extreme bird protection.

#### DISTRIBUTION UNDER COUNTIES.

The order of counties followed is that outlined under " General Status " above.

##### ROXBURGH.

Evans (1911) writes of the Tweed area as a whole : " This well-known enemy of the gamekeeper was formerly very abundant both in the lowlands and in many parts of our hill districts, but has now greatly decreased in numbers." At present my information is that the bird no longer breeds in the county.

## SELKIRK.

Adair (1898), writing of Ettrick, says: "A few pairs, particularly at Tushielaw and Thirlestane"; and Marshall (1901) calls it "fairly common in the St Mary's Loch district." There are still a few scattered pairs in these areas.

## PEEBLES.

Evans (1891) writes: "Decreasing throughout the district where it was formerly common. It still occasionally breeds with us." Of its present status Mr Blackwood writes: "Practically unknown in Peeblesshire. An odd bird was occasionally seen in the Broughton-Biggarr area and in the north-east of Earlston parish, where they probably nested till about 12 or 15 years ago."

## BERWICK.

Selby (1841) called it "permanent resident." Nearly fifty years later Muirhead (1889) was only able to say: "It is still frequently seen in the parishes of Legerwood, Westruther, Lauder, Abbey St Bathans, Coldingham and, occasionally, Mertoun and Cowdenknowes, but it is also observed in other districts." Evans (1911) wrote that it still held its own in the hill valleys and a few survived in the low ground, but that it was a fast disappearing species. Writing of Lauderdale, McConachie (1920) writes: "Disappeared as a breeding species a good many years ago and an odd bird is all that is now seen." In the same year Woodman (1920) writes of Morpeth: "Magpies were numerous 80 years ago but I have not seen one for 40 years." At the present time the only positive reports from Berwickshire are an odd one around Greenlaw and a few on the East Lothian border.

## EAST LOTHIAN.

Turnbull (1867) writes: "Not uncommon except in districts where game is strictly preserved." Hepburn (1882) writes: "The magpie is rare." At present all the information gathered is negative except on the borders of Berwick-

shire, where broods on the wing have been observed at Nether Monymet. It would seem that the magpie has been practically extinct in the county for the past twenty years.

#### DUMFRIES.

Gladstone (1910) gives a very full account of the history of the bird in this county which may be summarised as follows: Very numerous in the beginning of the nineteenth century and up to 1850-1860. So swift was the extermination that in 1876 it had all but disappeared. The work of extermination went on unabated and by 1910 it is recorded as a very local resident in the littoral parishes; elsewhere sporadically in small flocks, pairs or individuals. Gladstone (1922) notes an increase during the War, which was checked when the attention of landowners and gamekeepers was once again turned to game preservation. At present the magpie nests very rarely in the county, chiefly in dark woods on the edge of the moors. It is interesting to note that at Springkell where the bird is given protection on a large estate its numbers remain constant at one or two pairs (*vide* B. Johnson-Ferguson).

#### KIRKCUDBRIGHT.

The history of the species in this county is similar to that elsewhere. Service (1902) wrote: "Of late years the magpie seems to have become a little less scarce than it was. I can remember when it was common all over the county." At the present time it is locally common near the coast particularly, but absent from large areas and scarce in others. It is not uncommon around Dalbeattie and scarce but regularly breeding around Newton Stewart. As elsewhere in hilly districts in the uplands of southern Scotland, it breeds here and there in dark thick woods in the hills.

#### WIGTOWN.

In Wigtownshire the magpie appears to be more than holding its own and is locally numerous, particularly in coastal areas, but absent from other stretches of well-kept land.



## AYR.

Gray and Anderson (1869) wrote: "This beautiful bird has of late been very much shot down in game-preserving quarters. We were lately interested in observing as many as 12 or 14 on a farm near Girvan where no keeper has been employed for some years." Craig and Barr (1912) regarded it as fairly common within four miles of Beith. Paton (1929) notes an increase due to the break-up of many estates. McWilliam (1936) considers it fairly common in the county. At the present time Mr E. Richmond Paton regards it as scarce and decreasing in the Fenwick district. Mr John G. Thomson writes that it is very numerous between Darvel and Strathaven, and that he has seen as many as 14 nests containing eggs or young in one day. Mr John Rintoul writes: "I have seen them every time I have been in Ayrshire recently, and everybody says they have become much commoner. In the Cumnock district I find them nesting in most of the thick woods along the edge of the hills."

## LANARK.

Stewart (1928) deals with the magpie in Lanarkshire in the most important Scottish paper on this bird. Its distribution and history may be summarised from that source as follows: "Around Glasgow, common; Cadder, extremely plentiful; the Monklands, Shotts, Cambusnethan, Bothwell, Blantyre, Hamilton, East Kilbride, Cambuslang, Rutherglen and Carmunnock, evenly distributed; Glassford, Stonehouse, Dalsersf and Avondale, common; the higher grounds of Carluke, Carstairs and Carnwath, a few scattered pairs; but in the remaining south and south-east parishes it becomes exceedingly rare; indeed in one or two it is practically non-existent. Within many small parishes of the Middle and Lower Wards we found it, if not exactly encouraged, at least tolerated, and around scores of the farm-steadings a pair was nesting." My present information is that since the date of the above paper the magpie population has remained constant or possibly increased in the north end of the county, but that

it has been further reduced in the strictly preserved southern end of the county.

#### WEST LOTHIAN.

In this county magpies have always been a common bird. Rintoul and Baxter (1935) summarise as follows: "In West Lothian the species was formerly abundant and both Mr Serle and Mr Hamilton consider it to be a common bird in the county. Present information is that it is numerous around Linlithgow, fairly common in the Winchburgh, Torphichen and Kirkliston areas, and in the eastern county there is at least one bird to the square mile."

#### MIDLOTHIAN.

A full account of the magpie's history and status is given in Rintoul and Baxter (1935). The bird appears always to have been common through the county and still is, being particularly numerous in the immediate neighbourhood of Edinburgh.

#### STIRLING.

In Stirling the magpie is probably less common than it used to be, though it is still numerous enough in parts of the county, notably between Glasgow and Stirling. Rintoul and Baxter (1935) summarise its status as follows: "Coming to Stirling and South Perth we find that magpies have diminished very much in numbers; they were resident at Gargunnoch and Muiravonside in 1841, and large numbers frequented the banks of the Carron as late as 1867. By this time, however, they had decreased at Dunipace owing to persecution, and in 1892 were considered scarce in the environs of Stirling." The present enquiry leads me to believe that it is more widespread and commoner than might be deduced from the above quotation, though it doubtless has decreased within the past century.

#### RENFREW.

The magpie never seems to have been scarce in Renfrewshire. Paterson and Robertson (1895) wrote: "Not yet

uncommon in the district." Robertson (1911) referring to the same district (East Renfrewshire) wrote: "A few nest all over the district." Clancey (1935) considers it numerous and increasing, and McWilliam (1936) calls it "fairly common."

#### DUMBARTON.

Writing of Loch Lomondside, Lumsden (1876) says: "Not nearly so common as it used to be"; and nineteen years later he again writes, "20 or 30 years ago pyets were often seen and bred every season; but the gamekeepers have almost cleared them out" (Lumsden, 1895). McWilliam (1936) is silent as to its present status in Dumbartonshire. All the information presently at my disposal shows that it is common in the immediate vicinity of Glasgow, but does not spread far to the west of Bearsden.

#### BUTE.

The history of the magpie on the island of Bute is contained in the following extract: "The magpie was very numerous on Bute in the middle of the nineteenth century and its disappearance was no doubt chiefly due to modern methods of game preservation. It has occurred recently on the Cumbraes" (McWilliam, 1927). "It was also exterminated in Arran. It has occurred casually in Bute of recent years" (McWilliam, 1936).

#### ARGYLL.

Dalgleish considered that a pair which bred in the Manse orchard at Kilchoan, Ardnamurchan, for a few years after 1856 had probably crossed from Mull (Dalgleish, 1877), in which island Harvie-Brown records two having been shot at Colgary about 1876 and none having been observed since (Harvie-Brown, 1892). Dealing with the mainland in the same work, Harvie-Brown says: "Commoner in the southern districts about Ardchattan and Bunawe. Less abundant on the north side of the river Awe and central districts of the area. At Inverlochry the keeper used to kill a considerable number but not for many years. Mr Smith

has never seen one near Fort William." McWilliam (1936) mentions two seen in Kintyre in May 1926. In the course of the present investigation the only colony of magpies which I can trace is in southern Argyllshire. I saw one when shooting at Toward Castle in November 1937 and was informed that a few pairs breed up Loch Striven and around Dunoon.

#### PERTH.

Cameron (1873) says: "Nearly exterminated in the Balquhiddier district." Horn (1880) wrote: "Used to be common in Strath Tay and in the neighbourhood of Pitlochry but is now seldom seen. The only district where it is now seen regularly is in Glen Quoich near Amulree." By 1892 (Harvie-Brown, 1906) it was quite extinct around Remony, Loch Tay, but there were still considerable numbers quite locally to the east at that district. At the present date it is generally agreed by correspondents that the magpie is extinct in Perthshire except in the very south of the county around Dunblane.

#### CLACKMANNAN, KINROSS, FIFE.

Once we have crossed the Forth we leave behind the main centre of the magpie, which is now only a casual visitor to these three counties, and if it does breed it does so only occasionally, not regularly. There is a very full account given by Rintoul and Baxter (1935), which may be quoted in full as giving the complete history of the bird in these three counties: "In the *Old Statistical Account* of Tillicoultry we read: 'About sixty years ago (say 1735) the common broom grew so tall and luxuriant near the manse that the Crows and Magpies built their nests in the branches'; and in 1795 Magpies were not uncommon there and an albino was seen that year. At Alloa in 1793 they were 'often seen but do not breed,' while the *New Statistical Account* merely calls them 'common.' They are recorded from Cleish in 1792, and said to be 'rather scarce' at Blairadam in 1870. In 1794 magpies are included in a list of birds for Carnock (Fife), and in 1836 in one

for Inverkeithing. By 1885 it was extinct at Culross, but stragglers from other parts occurred every year. Mr Balfour Kirke, in his notes of the Burntisland district, wrote: 'Formerly very numerous, now only an occasional bird or pair.' The same is true of the eastern part of the county where we frequently found their nests in many places. About thirty-five years ago, at Lahill, they were so numerous and fearless that they used to come close to the windows and steal the chickens. In 1896 they were nesting in small thorn-trees near Gibleston. In 1906 a nest at Lahill was lined with strips of fresh lime-tree bark, and in 1921 a pair bred in the same tree as a Heron in Airdrie Wood, and the nests were described as jostling each other. In the last three counties they are very scarce, and all we can hope to see is an occasional bird or pair."

#### ANGUS.

In 1885 it was resident but not common (Drummond Hay, 1885). Simpson (1887), writing of the parish of Arbroath, says: "My parish appears to be a favourite locality with these birds. Although shot down whenever observed by professional and amateur gunners, yet on almost every road a couple may be seen." At present it appears to have been almost shot out in Angus. Around Arbroath where, Mr W. J. Dewar writes, there were a dozen pairs in 1919, there are no more than three pairs now. Elsewhere in the county an odd bird occasionally turns up and is usually shot.

#### KINCARDINE.

Simpson (1900) writes: "Extremely local, and far from plentiful. The last example of the species I came across was in the Glen of Dye in the late fall of 1898. The keepers shot these birds in season and out of season." Apart from an overflow on the Aberdeenshire boundary the bird is apparently extinct in the county. Dr A. C. Stephen saw one near Laurencekirk on 11th November 1930, the only one he has ever seen in the district which he knows well.

## ABERDEEN.

Recorded as breeding in the parishes of Drumblade and Huntly in the north-west country in 1871 (Forbes, 1871); in the same year included in the Inverurie list (Garrow, 1871). In 1881 considered rare in Buchan (Horn, 1881). In 1885 Drummond Hay considered it to be a common resident (Drummond Hay, 1885). In 1897 Harvie-Brown writes: "Its natural dispersal would be more extensive and reach further up into the hills were it not kept in check by keepers" (Harvie-Brown, 1897). In 1903 Sim refers to it as "one of the most abused and highly persecuted birds we have." Forty years ago this bird was fairly abundant in most parts of Dee, but from that time onwards to the present day it was being steadily exterminated in many quarters. For the past few years it has increased. Fairly frequent all along the Dee and Don valleys and not uncommon around Braemar. Around Aberdeen plentiful and in the parish of Nigg, south of the Dee, six to eight may be seen at one time" (Sim, 1903). Its present status may be summed up as being relatively numerous in such parts as Deeside and Lower Donside and the wooded parts of the county generally. Scarce in Buchan and absent from many moorland districts, it is very numerous at Countesswells in the outskirts of the city of Aberdeen. There is little doubt that the recovery in numbers during the War has not yet been reduced and that the magpie is probably an increasing species in Aberdeenshire.

## BANFF.

Edwards (1859) writes: "Very sparingly distributed and in some places scarcely known." I have no data about its present distribution in the county, but one might expect it to cross the Aberdeenshire boundary in some places.

## ELGIN AND NAIRN.

Gordon (1844) writes: "Generally met with in pairs, but at times in flocks of 18 or 20." St John (1863) writes: "The magpie abounds in this district, building both in



dense woods and where unmolested in single trees close to a farm or other house." Hadfield (1864) writes: "Only saw it once or twice in a year's residence"; but he had spent most of his time near the coast where there was little suitable cover. Harvie-Brown (1896) writes: "Brown of Forres considers it decreasing. It was common in 1885 about Rose Isle, seven miles from Forres, but Captain Dunbar-Brander considers it rare now in localities known to him east of Elgin." At present Mr William Ogg, Elgin, writes to me, "35 years ago I kept them as pets. They were then common birds. They are never seen now, not even in passing. They stopped nesting about 1910." R. Fergusson, Nairn, also writes: "Never seen."

#### INVERNESS.

In western Inverness-shire the magpie was apparently always casual. A single bird was seen at Waternish in Skye in May 1882 by Captain Macdonald, who had not seen one for many years previous (McPherson, 1888). In Glenurquhart, Craig (1883) writes: "Only occurs as a straggler and I do not know of them having nested for many years. Harvie-Brown (1896) writes: "Is certainly not increasing though it may still occur in most suitable districts. Mr A. McGillivray tells us it has been seen, though very rarely, as far up Strathglass as Guisachan. It occurs about Beauly. At Invergarry it used occasionally to be seen though apparently never common and now we are informed there is not one. Mr Lewis Dunbar remembers how abundant magpies were sixty years ago in the wood which is now close to Grantown railway station, five and six nests being commonly found in it. Even at the present day they are spoken of as commoner there than in most parts of Strathspey."

As regards present information, I gather that the magpie is extinct or practically so in Inverness-shire except for a few in the Spey valley around Kingussie. Mr J. C. Scott writes: "So far as I know it is a rare straggler from the south"; and Mrs MacKenzie has only seen one during the last nine years in the Strathnairn district.

## ROSS AND CROMARTY.

Harvie-Brown (1896) writes : " A few exist in the large woods in the east of Ross-shire, but they are pretty well looked after there as elsewhere." Harvie-Brown (1904) writes : " The magpie at present finds no place to nest anywhere in West Ross though it had nested at one time in a fir wood at the back of Strondubh House. On the authority of Mr Duncan Matheson, a pair nested many years ago at Culaig, Strathcarron, and a pair were seen at Loch Maree in the winter of 1891." At the present time the only records that I can get are " fairly frequently in Easter Ross, Kildary-Fearn area " (J. C. Scott); and of the same area J. Budge writes : " Up to 10 years ago they were numerous but do not nest now."

## SUTHERLAND AND CAITHNESS.

Harvie-Brown (1887) writes :— " Resident ; extremely scarce now in the eastern district, having of late years been killed down in game preserving interests ; quite common in 1870. We find that in 1873, 16 were killed at Dunrobin ; in 1874, 26 ; none again till 1877, when 2 were killed ; in 1878, 2 ; in 1879, 3 ; and in 1880, 5. Unknown in the west and at Tongue."

Of Caithness he writes :—" Mr Osborne records that the magpie is found in wooded situations all over the county, and that in the breeding season the few trees planted near occasional farm-houses often form a domiciliary refuge for a pair. Near Wick they build at Hempriggs, Stirkoke, and at the Mill of Watten (Osborne MSS., 1868). Not mentioned by Mr Reid as being known to him. Not seen by J. A. H.-B. in 1885. Probably extinct." I have nothing but negative data from the two counties and must therefore consider it as probably extinct in them.

SUNDRY NOTES.—A full and interesting account of the habits of the magpie are given by Stewart (1928), to whom I would refer all interested for further information.

There are two points in the returns that seem worthy of mention. Firstly, although nearly all species of trees are used as nesting sites—trees of such diverse habit as saughs

and "monkey puzzles" being recorded—there is a marked preference noted in nearly all cases for conifers, either old high trees or thick young plantations. Hawthorns, which are usually associated with magpies' nests, are only a very poor second in most areas.

The other point is that nearly all are agreed on the destructive habits of the magpie as regards young and eggs. One can judge the extent to which bird-life would be adversely affected by protecting rigidly so destructive a species by glancing at the return of magpies killed at Glenorchard, Stirling, where the aim of the proprietor, Mr James Bartholomew, is not extermination but keeping a true balance.

These returns are :—

1927 . . .	17	1932 . . .	16
1928 . . .	13	1933 . . .	20
1929 . . .	13	1934 . . .	30
1930 . . .	15	1935 . . .	35
1931 . . .	12	1936 . . .	30

A total of 201 in ten years and still the bird tends to increase !

#### REFERENCES.

- ADAIR, P. 1898. "Notes on Birds of Ettrick," *Ann. Scot. Nat. Hist.*  
 CAMERON, W. 1873. "Birds at Balquhider," *Scot. Nat.*, vol. ii.  
 CLANCEY, P. A. 1935. "Increase and Decrease of Certain Birds in East Renfrewshire and West Lanarkshire," *Scot. Nat.*  
 CRAIG, A. 1883. "On Birds of Glenurquhart," *Proc. Roy. Soc. Edin.*  
 CRAIG, J., and BARR, M. 1912. "Birds of the Parish of Beith and Neighbourhood," *Glas. Nat.*  
 DALGLEISH, J. J. 1877. "List of Birds observed in District of Ardnarmurchan," *Proc. Nat. Hist. Soc. Glas.*, vol. iii.  
 DRUMMOND, H. M. HAY. 1885. "Reports on Ornithology of East of Scotland," *Scot. Nat.*, vol. viii.  
 EDWARDS, T. 1859. "List of the Birds of Banffshire," *Zool.*  
 EVANS, A. H. 1891. "Preliminary List of Birds of Melrose District," *Scot. Nat.*  
 EVANS, A. H. 1911. *A Fauna of the Tweed Area.*  
 FORBES, H. O. 1871. "Birds of North-West Aberdeen," *Scot. Nat.*  
 GARROW, J. 1871. "Additions to the Birds of North-West Aberdeen," *Scot. Nat.*  
 GLADSTONE, H. S. 1910. *The Birds of Dumfriesshire.*  
 GLADSTONE, H. S. 1922. *Notes on the Birds of Dumfriesshire.*  
 GORDON, Rev. G. 1844. "A Fauna of Moray," *Zool.*  
 GRAY, R., and ANDERSON, T. 1869. *The Birds of Ayrshire and Wigtownshire.*

- HADFIELD, H. 1864. "Birds observed during a Year's Residence on the North-East Coast of Scotland," *Zool.*
- HARVIE-BROWN, J. A. 1892. *A Fauna of Argyll and Inner Hebrides.*
- HARVIE-BROWN, J. A. 1887. *Fauna of Sutherland and Caithness.*
- HARVIE-BROWN, J. A. 1896. *A Fauna of the Moray Basin.*
- HARVIE-BROWN, J. A. 1897. *The Deveron Valley and Its Bird Life.*
- HARVIE-BROWN, J. A. 1904. *A Fauna of the North-West Highlands and Skye.*
- HARVIE-BROWN, J. A. 1906. *A Fauna of the Tay Basin and Strathmore.*
- HEPBURN, A. 1882. "On the Birds found in the Neighbourhood of Pressmennan Lake," *Hist. Berw. Nat. Cl.*, vol. ix.
- HORN, W. 1880. "Notes on Birds of North-West Perthshire," *Proc. Nat. Hist. Soc. Glas.*, vol. iv.
- HORN, W. 1881. "Collected Notes on Birds of Buchan," *Proc. Nat. Hist. Soc. Glas.*, vol. iv.
- LUMSDEN, T. 1876. "Sketch Paper on Birds of Loch Lomond and Neighbourhood," *Proc. Nat. Hist. Soc. Glas.*, vol. iii.
- LUMSDEN, J., and BROWN, A. 1895. *A Guide to the Natural History of Loch Lomond and Neighbourhood.*
- MCCONACHIE, Rev. W. 1920. "Some Lauderdale Birds," *Hist. Berw. Nat. Cl.*, vol. xxiv.
- MCPHERSON, Rev. H. A. 1888. "Birds of Skye," *Proc. Roy. Soc. Edin.*
- MCWILLIAM, Rev. J. M. 1927. *The Birds of the Island of Bute.*
- MCWILLIAM, Rev. J. M. 1936. *The Birds of the Firth of Clyde.*
- MARSHALL, J. MCL. 1901. "Notes on Birds of St Mary's Loch District," *Ann. Scot. Nat. Hist.*
- MUIRHEAD, G. 1889. *The Birds of Berwickshire.*
- PATERSON, J., and ROBERTSON, J. 1895. "A List of the Birds of East Renfrewshire," *Ann. Scot. Nat. Hist.*
- PATON, E. RICHMOND. 1929. *The Birds of Ayrshire.*
- RINTOUL, L. J., and BAXTER, E. V. 1935. *A Vertebrate Fauna of Forth.*
- ROBERTSON, J. 1911. "Birds of East Renfrewshire," *Glas. Nat.*, vol. iii.
- SELBY, P. J. 1841. "A Report on Ornithology in Berwickshire," *Hist. Berw. Nat. Cl.*, vol. i.
- SERVICE, R. 1902. "The Birds of Kirkcudbright," in *Maxwell's Guide to the Stewartry of Kirkcudbright*, 7th Edition.
- SHEARER, R. J. OSBORNE. 1861-63. "Notes on the Ornithology of Caithness," *Proc. Roy. Phys. Soc. Edin.*, vols. ii and iii.
- SIM, G. 1903. *A Vertebrate Fauna of Dee.*
- SIMPSON, A. N. 1887. "The Ornithology of Arbroath," *Scot. Nat.*, vol. ix.
- SIMPSON, A. N. 1900. "Contribution to Ornithology of Kincardineshire," *Ann. Scot. Nat. Hist.*
- STEWART, W. 1928. "Studies in Some Lanarkshire Birds—The Hooded Crow, the Chough, and the Magpie," *Scot. Nat.*
- ST JOHN, C. 1863. *Natural History and Sport in Moray.*
- TURNBULL, W. P. 1867. *The Birds of East Lothian and a Portion of the Adjoining Counties.*
- WOODMAN, W. 1920. "Natural History of Morpeth," *Hist. Berw. Nat. Cl.*, vol. xxiv.

## BOOK NOTICES

**Snakes of the World.** By RAYMOND L. DITMARS. London and New York: Macmillan & Co. Pp. xi+207, 85 plates. Price 8s. 6d. net.

As Curator of the mammals and reptiles at the New York Zoological Park, the author has received numerous queries about snakes, and his latest work is an endeavour to answer these. Many people ask what is the greatest size attained by serpents. Tales of immense anacondas fifty feet in length and with tremendous powers of constriction are frequent in popular literature, but the record anaconda to come under the author's notice was little more than twenty-one feet long. The constrictive powers of snakes have been similarly exaggerated. The vexed problems of whether snakes swallow their young to protect them in times of danger and whether they hypnotise their prey, are discussed at length.

The major portion of the book, however, deals with the distribution and characters of the harmless and poisonous snakes, and the author has much to say on the action of various snake poisons and the splendid work being carried out by the Antivenin Institutes. The volume is beautifully illustrated by 85 excellent photographs depicting characteristic attitudes of the world's more important snakes. Mr Ditmars' book is a perfect storehouse of reliable information, and its modest price should find it a place in the library of all who are interested in living animals.

**A Contribution to our Knowledge of the Lepidoptera of the Islands of Coll, Canna, Sanday, Rhum, Eigg, Soay and Pabbay (Inner Hebrides), and of Barra, Mingulay, and Berneray (Outer Hebrides).** By J. W. HESLOP HARRISON. *Proc. Univ. Durham Phil. Soc.*, 1938, xi., 10-23.

This is a useful list from the standpoint of distribution since it contains records of over 200 species from the various islands. It is a pity, however, that the author gives so little indication of the dates when the islands were visited. He also states that the occurrence of *Cosmotriche potatoria* L. on Canna, Rhum, Soay, and Pabbay, indicates "a considerable extension of the known range of the species"; but apparently the fact that records do exist in Scottish literature for Mull, Skye, and as far north as Caithness, has escaped his notice.

## BIRD NOTES FROM UPPER LOCH FYNE.

By W. STEWART, Holytown.

DURING the months of May, June and September, in the years 1919-20-21, a total of six months was spent here. The following are mainly additions to the "Geographical Distribution and Status of Birds in Scotland":—

SISKIN, *Carduelis spinus* (L.).—Adult male seen in Ardkinglass woods in June 1919. (Note—Another seen at Lochgoilhead in May 1920.)

BRITISH WILLOW TIT, *Parus atricapillus kleinschmidti* Hellm.—A short distance up Glen Shira I heard the unmistakable notes, but did not see the bird. (Note—Fifty years ago or more the then Duke of Argyll knew the bird well in Inveraray woods. Then known as the Marsh Tit.)

GREENLAND WHEATEAR, *Ænanthe æ. leucorrhœa* (Gm.). Seen on the top of Ben Arno in May 1921.

HOBBY, *Falco subbuteo subbuteo* L.—Had a fine view of the bird circling above migrant pipits which it seemed to be following, September 1920. (Note—During September there is a continuous stream of pipits passing southward along the eastern water edge. They seem to be mainly meadow pipits, although I have seen an odd bird of large dimensions, probably Richard's pipit.)

KITE, *Milvus milvus milvus* (L.).—Seen a few times at Ardkinglass in June 1919. On the first occasion I mistook the "mew" of the approaching bird for that of a buzzard. Remaining perfectly still, and partly screened with birch foliage, I had the good fortune to see the bird glide past within twenty yards of where I stood. Every detail was plainly noted: ruddy plumage, pale coloured head, forked tail; even the movement of a yellowish foot was plainly seen.

PINTAIL, *Anas acuta acuta* L.—Adult male seen on Dubh Loch at entrance to Glen Shira in May 1919.

STORM PETREL, *Hydrobates pelagicus* (L.).—Often seen when the weather was stormy.

ROSEATE TERN, *Sterna dougallii dougallii* Mont.—One bird was often seen on the eastern side in 1919, two in 1920, but none in 1921. Although the Common Terns were quite a small colony I could find no trace of the Roseates nesting.



## NOTES

**Risso's Dolphins on the Coast of Orkney.**—On 10th March 1938 notice was sent by the Receiver of Wreck, Kirkwall, to the British Museum (Natural History) that two whales nine feet in length had stranded at Deer Sound, Orkney. The head and flippers of one of the specimens were forwarded to the Museum and have been identified as belonging to Risso's Dolpin, *Grampus griseus* Cuv. On each ramus of the lower jaw there were present four conically pointed teeth  $\frac{5}{16}$  in. in diameter and projecting from the gum about  $\frac{1}{2}$  in. On the right side of the upper jaw was a similar tooth just posterior in position to the insertion of the hindermost lower jaw tooth. Although it is most unusual to find any teeth in the upper jaw of Risso's Dolphin their occurrence has been noted once or twice.

This record of stranding was the second instance of *Grampus griseus* on the coast of Orkney this year. Mr James Marwick, of the Orkney Natural History Society, noted one stranded on the sand of Wharbeth, Stromness Parish, on Saturday, 8th January 1938. This specimen was  $11\frac{1}{2}$  feet long. The lower jaw and flippers were sent to the British Museum (Natural History) for identification.—FRANCIS C. FRASER, London.

**Orthoptera from Perth E. and Forfar.**—During the past season (1937) I collected the following grasshoppers, which seem to be new to their respective counties. Dr Burr has kindly verified my naming. *Omocestus viridulus* (L.), near Kinguddie village on the Errol road (Perth E.); beside the marshes at the top of Tullybaccart hill on the Coupar-Angus-Dundee road; and in Glen Prosen (Forfar). *Chorthippus bicolor* (Charp.), near Kinguddie village (Perth E.) and also on rough ground near Tullybaccart (Forfar). *Myrmeleotettix maculatus* (Thunb.), with *bicolor*, near Tullybaccart (Forfar).—A. R. HILL, Dundee.

**An Alpine Grasshopper to be looked for in Scotland.**—Stephens (*Ill. Brit. Ent. Mand.*, vi., 32) records a well-known alpine grasshopper, *Gomphocerus sibiricus* L., from the hills near Netley. I included it with some doubt in my first book on British Orthoptera, but omitted it from my recent book, as I did not think it possible that it could occur in Hampshire, and had dismissed it from my mind.

But there is no question about the identity of the original specimen, which is still in the Hope Museum, as stated by Stephens,

and what is more, labelled *in my own handwriting*, as a unique British specimen, over my initials and the date 30.iv.97.

It is very desirable to clear up the doubt, and I hope that all who have the opportunity of collecting on grass at high altitudes in Scotland and the north of England in August and September will keep a sharp look-out for this species, especially in the hills near Netley in Shropshire.

It is a mountain insect, occurring in the Alps, I believe, not below 1000 metres. It is dull greenish-brown in colour, with strongly clubbed antennæ and, which is unmistakable, in the male the fore tibiæ are distended in huge great pairs. It is now in the genus *Aeropus*.—MALCOLM BURR, D.Sc., F.R.E.S.

**Siskin recovered at Musselburgh.**—On 15th January 1938 I obtained a ring taken from a siskin which was caught on an alder tree at the side of the Esk near Musselburgh.

The ring, which bore the origin mark of the Leiden Museum, Holland, was submitted to Mr George Waterston, who kindly obtained the following information. The bird, which was an adult female, was ringed at the Island of Texel, North Holland, on 23rd October 1936, roughly five hundred miles from the place of recovery.—DAVID HAMILTON, Edinburgh.

**Starlings making Casts.**—On 27th August, at Dunbog, Newburgh, Fife, I saw a starling casting. It brought its head down slightly and opened its beak, convulsed a little and ejected the pellet; this pellet I later found. On the next day I saw two casting and on subsequent days one or two more. It is probable that quite a number were casting at this time because a small flock of starlings frequented this tree all day, and there were always some twenty fresh casts daily.

The casts themselves are about  $\frac{3}{4}$ "  $\times$   $\frac{3}{8}$ " and are rather flattened. Some consisted of oat husks—the kernel being quite digested and only the empty husks brought up. Other casts were of beetle elytra, most of which were of a small black night-flying beetle—*Aphodius*—and always mixed with a few shreds of vegetable fibre, usually corn husks. A few casts were of solid cattle food—maize and linseed-cake; these were completely undigested. Only one cast had any barley in it, possibly due to the fact that barley-beards would be difficult to swallow and very irritating. None had any signs of wheat.

Excreta below the tree often contained beetle shreds in quite big quantities, and occasionally a few corn husks—from this I

inferred that the bird did not generally cast beetle hard-parts, but only when mixed with some corn husks—and that corn husks if in small enough quantities would pass through the bird and not be ejected.—TOM SPENCE, Edinburgh.

**Wintering of the Black-tailed Godwit in Scotland.**—

In Scotland the black-tailed godwit has long been known as a passage migrant in small numbers, and it is said to have attempted to nest in Orkney. In the autumn of 1936, Miss Wilson, St Andrews, drew our attention to the fact that six or seven were frequenting the mouth of the Eden and, later, told us that they were wintering there. This season they have been on the Eden in greater numbers: our first record was of three on 18th August; on the 28th of August we watched at least a hundred pass along the banks of the River Eden, but on returning on 31st August could only see six. Our next visit was on 1st November when we counted thirty; five were seen on 27th November, while on 28th December we again saw about thirty. When visiting the mouth of the Tay on 30th December 1937 we saw five black-tailed godwits, while in Islay in September 1937 we saw four in Loch-in-Daal. It would appear that the black-tailed godwit is becoming commoner in Scotland and remaining as a winter visitor.—EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL, Largo, Fife.

**Notes from Noss Head.**—The season 1937 has been rather a poor one at Noss Head for migrants, but one or two are worth recording. On Stroma, a waxwing was seen on the 20th March and a hoopoe from the 7th to the 20th April; both these are new to Stroma.

A pair of black redstarts, male and female, has stayed at Noss Head from the 2nd to the 8th April, a ♂ red-backed shrike was observed on the 22nd and 23rd May, and from 11th to 16th June a turtle dove frequented the roadside leading from the lighthouse to Wick.

From the 27th June, a buff-coloured starling has been seen almost daily. A ruff, which was shot on 1st September in this locality, was sent to me for identification. It proved to be a young male.

On the 2nd October, a bird with a badly-broken wing, was given to a friend of mine. It seems to be an albino hen-harrier. Cere and legs are yellow, beak and claws pale flesh colour, almost white, plumage almost all milk white, a few feathers of dark grey

on nape and a very faint tinge of grey on the tips of the second primary feathers. Length, 18 inches; wing, 12.25 inches; tarsi, 2.75 inches; eye, iris blue, pupil black; the lower part of the facial disc was fairly evident, even the plumage was white.

To me the most interesting record was the finding of a shelduck's nest at the lighthouse, it was situated about ten feet down from the top of the cliff and about a hundred feet from the bottom.

I know for a fact that a pair of sheldrakes has frequented a small pond at the lighthouse gate in April and May for the last 25 years, but the nest had never been discovered until this year.

The nest, with ten eggs, was found on the 10th May and the ducks were hatched out on the 27th. It was easy to see on examination that the site had been in use for a number of years from the fragments of old egg-shell.—JOHN BAIN, Noss Head Lighthouse.

**Recovery of Ringed Puffins.**—Of 220 adult puffins marked on an island in Orkney in May last year, 18 wore rings of previous years. Eight of them were marked as adults in 1936 and were re-marked. One of them had been marked in a previous year, but the figures could not then be read to place the year. The rings on the other ten were too worn to read their numbers, some being altogether missing, but four of them were probably marked as adults in 1935.—H. W. ROBINSON, Lancaster.

**Tree Sparrows in Dumfriesshire**—As there are no previous records of the occurrence of the tree sparrow (*Parus m. montanus*) in the Solway area, I was pleased to receive from Mr Jack Dickson, of Annan, in April 1937, a letter informing me that tree sparrows had nested in an ash-tree near the town in the summer of 1936. I paid a visit to Annan when the birds were nesting and was able to confirm the record.

Two broods emerged from a hole in an ash-tree in 1936. In 1937 the first nestling left the nest on 2nd June, and the birds had rather bad luck with this first brood, the weather being so stormy and wet when they were ready to leave the nest that only one nestling survived. A second brood of three nestlings left on 4th July, and a third brood of two chicks left the nest on 13th August.

Besides this pair and their offspring, Mr Dickson had visits from another pair, and on two occasions he saw other broods and single birds in other parts of Annan. Now, with a new breeding season approaching, it is gratifying to hear that a pair

pays regular visits to the favourite nesting-place, so that it seems safe to say that a colony of tree sparrows is now well established in the Annan district of Dumfriesshire.

As some ornithologists have suggested that the uncertain occurrence of tree sparrows is partly due to competition with, and persecution by, house sparrows, it seems worth while adding that Mr Dickson has never seen house sparrows interfering with the tree sparrows when feeding, and that they only attempted on one occasion, fortunately without success, to drive the tree sparrows from their nesting-hole.—O. J. PULLEN.

**Notes from Edenmouth, Fife.**—The dusky redshank wintered this year, being seen from October to April. At the present time (6th April) it is beginning to change its plumage, although its silvery appearance is most striking.

Black-tailed godwits again wintered, up to thirty being usually seen: a number of them are now assuming summer plumage.

Duck have been very numerous, and by far the most interesting have been the pintail. These duck, although not so plentiful as the teal and wigeon, have been fairly numerous.

A few shoveller have spent the winter in the estuary—an unusual habit of theirs; but the feeding and shelter in this estuary is very good, and this no doubt accounts for it.—D. I. MOLTENO, Fortingall.

---

## BOOK NOTICE

**World Natural History.** By E. G. BOULENGER. With an Introduction by H. G. WELLS. Pp. xx+268. London: B. T. Batsford Ltd. 1937. Price 7s. 6d. net.

Mr Boulenger maintains his reputation as a versatile writer on animal lore in this delightful book. Information regarding the habits and distribution of animals is given in encyclopædic form, and this volume should provide an endless source of information and pleasure to all who are interested in animal life. As one might expect in a book of this nature, the greater part deals with the vertebrates. The invertebrates are rather summarily disposed of in 35 pages, and the account is unfortunately marred by an unusual number of mis-spellings of the Latin names. These errors are repeated in the index. The volume is well illustrated with 150 magnificent photographs and 36 text-figures.



ALGÆ STUDIES FROM BOGHALL GLEN  
(MIDLOTHIAN), III.

By E. WYLLIE FENTON, M.A., D.Sc.

THE problem of the rôle (if any) played by algæ in the soil has always been an intriguing one. Much work has been done on investigating soil algæ. There is, however, another very interesting side to this problem. Can algæ, commonly occurring, live for any time in darkness when light is their natural medium? If they fail to live in darkness there is little chance of these algæ surviving in the darkness of the soil. Another interesting point is the capacity of algæ below the surface layer of soil to reach the light, or to penetrate any obstruction. Petersen (1935) has stated that with perhaps two exceptions algæ are not truly subterranean. The same author states that certain algæ have the power of moving upwards, and can move up through filter paper to light. It must not be overlooked that the movement of the water table in the soil may play an important part in this algal movement. To most algæ water is as necessary as light, so that light and water must play the chief part in any upward movement of algæ already below the surface of the soil.

It therefore seemed desirable to test out some of these problems with algæ found in Boghall Glen.

## I. THE SURVIVAL OF ALGÆ IN DARKNESS.

The algæ examined were placed in long wide-mouthed glass bottles, and enamelled white bowls. The water was renewed frequently. All were placed in a box which permitted of ventilation, but into which no light could penetrate. In the bowls which held a little more water than the bottles there was an increase in the time of survival. Even with the larger quantity of water, it was observed that disintegration and decay set in almost at the same time as in the glass bottles, but the process was more delayed or more gradual. Hence it is improbable from



the results obtained that the algæ tested are capable of surviving in the darkness of a soil under conditions much more adverse than those under which the test was conducted.

TABLE I.

*Survival of Algæ in Darkness. The Figures represent the Number of Days of Survival.*

<i>Aphanocapsa</i> spp. . . . .	±15	<i>Spirogyra</i> spp. . . . .	17-37
<i>Oscillatoria</i> spp. . . . .	±17	<i>Vaucheria terrestris</i> . . . . .	17-46
<i>Mougeotia</i> spp. . . . .	17-22	<i>Draparnaldia glomerata</i> ±50	
<i>Zygnema</i> spp. . . . .	17-22	<i>Draparnaldia plumosa</i> . . . . .	±63
<i>Tribonema bombycinum</i> . . . . .	29-70	<i>Cladophora glomerata</i> . . . . .	82-94
		<i>Microspora</i> spp. . . . .	±101

GENERAL OBSERVATIONS.—The frequency of traces of *Spirogyra* being present (undetected) in *Vaucheria terrestris* and vice versa is a characteristic of samples from Boghall Glen (Fenton, 1936, 1937). Occasionally *Microspora* appears and grows where another alga has died. This suggests a certain amount of competition between algæ.

*Prasiola* (*Hormidium* stage) survived in darkness for over five months. It can survive long periods of desiccation in the laboratory and revive when moistened. Under laboratory conditions of rapidly alternating periods of desiccation and moistening with spells of darkness, it fails to survive. If not submitted to darkness it survives for a much longer time.

*Spirogyra* tended to produce asexual zygotes just as the filaments begin to break down under the influence of darkness. There was no evidence of sexual reproduction.

*Vaucheria* tended to produce much smaller tubes or filaments after being placed in darkness.

*Tribonema* showed cell distortion and occasionally certain cells enlarged and suggested the commencement of branching, but this never occurred.

*Cladophora* for some time after placing in darkness tended to produce fresh growth. This explains how this alga tended to disappear from certain sites, and then later reappear in quantity. When growing mixed with other algæ this ability to produce fresh growth in darkness enables it finally to reach the light and survive (Fenton, 1936).

Another feature noted was the tendency of the chloroplasts in darkness to give a reticulate appearance at times developing into a structure like the spongy parenchyma of a dicotyledon leaf.

None of the remaining algæ showed any unusual or outstanding peculiarities. Generally the chloroplasts lost colour and gradually the filaments disintegrated. *Mougeotia* did show a slight tendency to disintegrate into small pieces like *Tribonema*.

#### THE ABILITY OF ALGÆ TO GROW THROUGH SILVER SAND FROM VARYING DEPTHS.

In this test four algæ were selected: *Spirogyra*, *Vaucheria*, *Tribonema* and *Mougeotia*. The algæ were placed at depths of  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1 cm. respectively below the surface of the sand. The sand was placed in large enamelled mugs with a hole at the foot for drainage. All the mugs were placed in a container which had always water present to a depth of  $\frac{1}{2}$  cm.

*Spirogyra*. Four days after the experiment commenced strands appeared at the surface from depths of  $\frac{1}{4}$  and  $\frac{1}{2}$  cm.

*Vaucheria*. At the end of a few days algæ appeared on the surface of the  $\frac{1}{4}$  cm. depth experiment. After seven days the algæ appeared from a depth of  $\frac{1}{2}$  cm.

*Mougeotia*, *Tribonema*. Neither of these algæ succeeded in reaching the surface. After a few weeks they were dug up and examined.

*Mougeotia* was in fragments and disintegrated. Such parts as showed any green colour were plasmolysed and rapidly dying. Much of the material was scattered through the sand.

*Tribonema* was present, alive, and of a very light green colour, and in a poor condition. When left on the surface it recovered and grew successfully so long as the sand was kept damp. At the conclusion of the experiment, water was applied from above so as to flood the surface of the sand where the *Tribonema bombycinum* occupied the central position. In a very short time small colonies of the alga appeared all over the surface giving a mottled green appear-

ance. If the sand was moistened by flooding from below there was practically no spread of the alga. This explains the rapid spread of *Tribonema bombycinum* in newly opened ditches and streams. It is this ability to spread rapidly and colonise new areas that is the reason of its sudden appearance and distribution, and not any nutritive factor as previously suggested (Fenton, 1936).

At depths greater than  $\frac{1}{2}$  cm. *Spirogyra* was found still alive but in a poor and dying condition (four months). *Vaucheria* below the depth of  $\frac{1}{2}$  cm. had gone black and decay had commenced. There were a few parts near the surface which still showed a green colour, but these were small, and were a recent outgrowth from the main body of the alga. This small form is in keeping with what was found when *Vaucheria* was kept in water in darkness. All algæ tested were dead when the sand was finally examined several months after the experiment was begun.

### 3. THE ABILITY OF CERTAIN ALGÆ TO PENETRATE FILTER PAPER.\*

This experiment was done in two ways :—

- (1) Alga placed in the centre of a petri dish and a single piece of filter paper placed on top and moistened.
- (2) Algæ wrapped in filter paper (one layer only on top) and kept in a petri dish.

TABLE II.

	(1)	(2)
<i>Vaucheria terrestris</i> . . . .	± 2 days	± 2 days
<i>Spirogyra</i> spp. . . . .	±45 ,,	...
<i>Mougeotia</i> spp. . . . .	...	±33 days
<i>Zygnema</i> . . . . .	±33 days	...
<i>Draparnaldia plumosa</i> . . . .	...	...
<i>Draparnaldia glomerata</i> . . . .	...	...
<i>Tribonema bombycinum</i> . . . .	±33 days	...

*Vaucheria terrestris* was the only alga to penetrate the filter paper really successfully and show a good and vigorous

\* (1) Watman No. 1, 9 cms., .00142 gms. (2) Watman No. 1, 18.5 cms., .0060 gms.

growth. It was obvious that sufficient light penetrated through the filter paper to permit of photosynthesis. The spreading aerial growth of *Vaucheria* enabled it to push through the filter paper, whereas the other algæ remained in the moisture between the filter paper and the petri dish, or between the folds of the filter paper. All algæ were alive and healthy at the end of the experiment. It is evident that at least some algæ are capable of penetrating through a medium or obstruction like filter paper. The ability to do this, however, varies and also depends very largely on the habit of the alga in question. It is quite evident that provided there is sufficient light to permit of photosynthesis some algæ remain quite healthy and normal even beneath the light shading of the filter paper. It is interesting in dealing with this point to recall the fact that Harrison and Subranannia (1913, 1914) pointed out that in rice fields algæ help the roots of rice by giving off oxygen under water and so supplying the roots with the necessary gas.

#### SUMMARY.

Algæ differ greatly in their survival capacity in darkness, even when living in their natural medium.

None of the ordinary algæ tested were capable of surviving indefinitely in darkness.

*Prasiola* (*Hormidium*) spp. has great power of persistence. *Cladophora* and *Microspora* showed remarkable persistence when in darkness.

There is evidence of competition between several algæ.

The propensity of *Tribonema* to break up into fragments, or to give off fragments, explains the ability of this alga to colonise and fill up rapidly, newly opened ditches and streams.

*Vaucheria* and *Cladophora* both showed attempts to form fresh growth while in darkness.

*Vaucheria* and *Spirogyra* succeeded in reaching the surface of wet silver sand from depths of  $\frac{1}{4}$  and  $\frac{1}{2}$  cm.

*Mougeotia* and *Tribonema* failed to reach the surface.

*Vaucheria* was most successful in penetrating filter paper towards light.

*Spirogyra* showed some penetrative power, but it was distinctly limited.

*Mougeotia*, *Zygnema* and *Tribonema* succeeded in pushing a few strands through the filter paper. *Draparnaldia glomerata* and *plumosa* did not penetrate filter paper.

## REFERENCES.

1913. HARRISON, T., and SUBRANANNIA, AYIER, "The Gases of Swamp Rice Soils" I., *Mem. Dept. of Agr. India, Pusa Chem.*, Ser. 3.  
 1914. HARRISON, T., and SUBRANANNIA, AYIER, "The Gases of Swamp Rice Soils" I., *Mem. Dept. of Agr. India, Pusa Chem.*, Ser. 4.  
 1935. PETERSEN, T. B., "Studies on the Biology and Taxonomy of Soil Algæ," *Dansk. Botanisk Arkiv.*, Band 8, no. 9.  
 1936. FENTON, E. WYLLIE, "The Periodicity and Distribution of Algæ in Boghall Glen (Midlothian)," *Scot. Nat.*, no. 221, Sept.-Oct.  
 1937. FENTON, E. WYLLIE, "Algæ Studies from Boghall Glen (Midlothian)," II., *Scot. Nat.*, no. 226, July-Aug.

## NOTES

**Some Dumfriesshire Coleoptera.**—On the 24th of May last, a very high tide left a quantity of refuse stranded on the Merse near Gretna, and a couple of hours' examination proved it rich in insect life, particularly Coleoptera. Unfortunately heavy rain put a premature end to my work, and another visit two days later found the refuse almost deserted. Many common species were ignored, but I brought away the following Coleoptera. *Trechus micros* Hbst., *Haliplus lineatocollis* Marsh. (two), *Hydroporus memnonius* Nic., *H. obsoletus* Aub., *Ilybius fuliginosus* Fab. (several). *Limnebius papposus* Muls. (Dr Joy gives the distribution of this beetle "Eng. S. to Yorks"). *Ochthebius bicolon* Germ., *Hydræna riparia* Kug., *Cercyon flavipes* Thunb., *Atheta divisa* Märk., *Hydrosmecta delicatula* Shp., *Stenus bimaculatus* Gyll. (two). *S. tarsalis* Ljun. (several). *Trogophlæus arcuatus* Steph. (several). *Lesteva longelytrata* Goetz. (common). *L. heeri* Fauv. (several). \**Rhizophagus æneus* Rich. (*coeruleipennis* Sahlb.), *Aphodius contaminatus* Hbst., *Ægialia sabuleti* Payk., *Cryptohypnus riparius* Fab. (common). *Hypnoidus maritimus* Curt., *H. sabulicola* Boh., *Selatosomus incanus* Gyll. and its var. *ochropterus* Steph. (several). *Cyphon punctipennis* Shp., *Tanymecus palliatus* Fab., *Philopodon plagiatu*s Schol., etc. Several of these I had not met with in Dumfriesshire before.—  
 JAS. MURRAY, Gretna.

\* New to Scotland,

**Notes from Loch Leven, Kinross.**—On 4th January, among a small flock of greylag geese, an old white-fronted goose was observed. These geese seem to be regular in small numbers each winter.

A fine bean goose of the orange-billed variety was shot on the 5th.

On 1st April a ruff was seen on the loch side and several greenshanks, evidently on migration, were passing through. In spite of the late date wigeon were still in huge flocks, although probably the majority were all paired some time ago.—D. I. MOLTEÑO, Fortingall.

**Green Sandpiper in Lanarkshire.**—A year ago I received the carcass of a fully-developed female green sandpiper for identification. I have only now received the details of its being found. It was killed at Braidwood, Lanarkshire, on 28th February 1937. The climatic conditions at that time were very wintry with heavy snow. Records of the green sandpiper in the Clyde area are very rare, hence my reason for recording this interesting occurrence.—WILLIAM RENNIE, Glasgow.

#### **Notes on Some Birds seen during 1937.**

**TREE SPARROW.**—After an absence of a year or two, one was seen on 7th November 1937, and in all about twenty on 21st November 1937, near Kingoodie, Perthshire.

**SNOW BUNTING.**—A flock of about fifty was seen beside Dunsappie Loch, Edinburgh, on 3rd January 1938.

**HOUSE MARTIN.**—Two lingered at Invergowrie, Perthshire, until 8th November 1937.

**PEREGRINE FALCON.**—An individual taken to be a juvenile of the year was watched working over the mud-flats off Kingoodie, Perthshire, on 21st November 1937. It had taken a small bird, apparently a dunlin, and devoured it while flying, later dropping the bare bones.

**CURLEW SANDPIPER.**—In addition to records in September, one was seen on Invergowrie Bay on 26th December 1937.

**GREENSHANK.**—Two were seen on the marsh west of Kingoodie on 28th July 1937.

**BLACK-TAILED GODWIT.**—A party of fourteen was seen on 29th August 1937: on 13th September 1937 twenty-four were seen, and these dwindled as the month passed: one seen on 10th October 1937—all on the Invergowrie Bay and Kingoodie shores.

**WHIMBREL.**—A party of seventeen was flying to and fro over the flats off Kingoodie on 29th August 1937.—HARRY BOASE, Invergowrie.



## The Scottish Ornithologists' Club

(OFFICIAL SECTION)

### Fourth General Meeting, Session I.

Miss L. J. Rintoul presided at the Fourth General Meeting of the Club, which was held in the Christian Institute, Glasgow, on 21st December 1937, at 7.30 P.M. There was an attendance of about fifty persons.

*Bird Flocks and the Breeding Cycle*,\* a Paper by Dr F. Fraser Darling, illustrated with lantern slides.

Dr Darling explained that he had spent the summer of 1936 camping on Priest Island, one of the Summer Isles, in the North Minch, and had occupied himself in studying the social behaviour of some of the colonial nesting sea-birds which bred there. Birds which were studied in particular were the Herring Gull, the Lesser Black-backed Gull and the Great Black-backed Gull. He discovered that birds nesting in the larger colonies began to lay their eggs at an earlier stage than those nesting in smaller colonies, and the entire crop of eggs of the larger colonies was laid in a much shorter period than in the smaller colonies. Dr Darling put forward the theory that this was because the birds nesting in the larger colonies were influenced by the "flock pattern," and their sexual instincts became synchronised more quickly than in the smaller flocks. Some interesting notes on behaviour of the nesting colony were given, and mention was made of a curious trait exhibited by the male birds of exchanging stances beside their respective nests with other males.

Further observations were advanced to show that there may be a numerical threshold in gregarious birds before breeding took place. Dr Darling stated that in 1936 six pairs of Razorbills came up to the ledges on Priest Island, but did not nest. In 1937, however, fourteen pairs came up to the ledge, and all laid eggs. The Fulmar Petrel was quoted as another excellent example of this phenomenon. It was an accepted fact that new colonies of these birds did not breed until a sufficient number of them had congregated.

The lecture was illustrated throughout with lantern slides of views of the island and some of the birds nesting there.

Miss E. V. Baxter accorded the lecturer a very hearty vote of thanks on behalf of the Club.

Tea was then served and the remaining half an hour was spent in informal discussion.

The meeting adjourned at 9.30 P.M.

\* This complete Paper has now been published in book form by the Cambridge University Press, at 6s. per copy.

## Second Annual Meeting.

Miss E. V. Baxter presided at the Second Annual Meeting of the Club, which took the form of a Dinner at the Royal Hotel, Princes Street, Edinburgh, on 11th February 1938, at 7.30 P.M. There was an attendance of fifty persons.

### Business.

*Review of Past Year.*—In giving a review of the progress of the Club during the past Session, Miss Baxter said that the Club membership stood at 146 Members, 25 Fellows and 7 Honorary Members. Four General Meetings had been held during the year alternately in Edinburgh and Glasgow. A reprint of Mr George Temperley's Paper on "The Birds of Raasay" had been issued to all Members with the last billet, and the Club hoped to be able to issue reprints of important papers on Scottish Ornithology from time to time to Members.

Mr Arthur B. Duncan's report on the Magpie Investigation would be published shortly.

*Minutes of First Annual Meeting.* These were circulated and were approved.

*Financial Statement.* The Statement of Income and Expenditure showed a credit balance of £16, 7s., and the report was adopted.

*Election of Office-Bearers.* Mr McWilliam, in moving that the Office-Bearers should be re-elected for another two years, said that he hoped that efforts would be made to increase the size of the Council. After a short discussion this proposal was adopted.

*The Status of the Jay in Scotland.* A discussion on the question of instituting a Club investigation for 1938 took place, and it was decided to study the distribution of the Jay in Scotland. Mr A. B. Duncan undertook to conduct this on behalf of the Club, and schedules giving details of the required information will be drafted and all observers are asked to co-operate in this interesting enquiry, the results of which should prove of great interest. All correspondence on this subject should be addressed to Mr Arthur B. Duncan, Gilchristland, Closeburn, Dumfriesshire. A Report on the Investigation will be published in due course.

### Communications.

On the completion of business matters, the meeting was declared open for Members to put forward suggestions and to communicate notes of interest.

Mr W. McLeod Watson commented on the presence of a Duck Smew and several Pintail on Linlithgow Loch on 21st November 1937; a Great Skua at the Mouth of the Esk, Musselburgh on 17th December; Hawfinches in the vicinity of Cockpen Church near Gorebridge and at Humble Reservoir near Kirkliston; and a flock of 45 Shore Larks at Tynningham on 6th February. Mr Stirling saw Shore Larks at Aberlady recently. Mr Waterston read a letter from Mr Logan in which he stated that the Nightjar had nested for the last few years near Bathgate, West Lothian. Rev. W. Serle said that it had been a disappointing winter at Duddingston Loch and Aberlady. Rev. J. M. McWilliam asked the Council to consider the publication of a "Guide to the Birds of Scotland," in conjunction with the Royal Scottish Museum. The Council agreed to take the matter up with the necessary authorities. Mr W. McLeod Watson suggested that the Club should, with the permission of the Midlothian Ornithological Club, conduct an expedition to the Isle of May to see the Bird Observatory in the summer. Several other Members also spoke.

The meeting adjourned at 10 P.M.

#### General Notices.

Fellows and Members are reminded that their Annual Subscriptions for Session 1938 are now due and should be paid to the Honorary Treasurer as soon as possible (Fellow, 10s.; Member, 5s.).

The Council invites Fellows and Members to bring forward Papers for future meetings, and would welcome any criticisms or suggestions as to the organisation of the Club.

# A Vertebrate Fauna of Forth

By LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER

With 16 full-page illustrations and a map of  
the Forth Area. 8vo. 456 pages. 25s. net.

EDINBURGH: OLIVER AND BOYD LTD., TWEEDDALE COURT  
LONDON: 98 GREAT RUSSELL STREET, W.C.

---

---

## THE NATURALIST

A Monthly Illustrated Journal of Natural History for the North of England

Edited by W. H. PEARSALL, D.Sc., F.L.S., and  
W. R. GRIST, B.Sc., The University, Leeds.

With the assistance of a Panel of Referees.

*All Communications to be addressed to—*

THE EDITORS, "THE NATURALIST," THE UNIVERSITY, LEEDS

Annual Subscription, 15s. Single Numbers, 1s. 6d. net

LONDON: A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.

---

---

**READ** **The Irish Naturalists' Journal**

The Official Organ of Irish Scientific Societies

The only popular Scientific and Archæological periodical published  
in Ireland.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.

*Issued Quarterly.*

Annual Subscription, 6s. post free. Single Copies, 1s. 6d. each.

*All Communications to be addressed to—*

W. M. CRAWFORD, F.R.E.S., F.Z.S., Orissa, Marlborough Park South, Belfast

---

---

## The North Western Naturalist

A Scientific and Educational Journal for Lancashire, Cheshire, Shropshire,  
Stafford, Derbyshire, North Wales, Cumberland, Westmorland, the  
Isle of Man and the North West

EDITED BY A. A. DALLMAN, F.C.S.

Published Quarterly. Annual Subscription, 7s. 6d. (post free). Single Copies, 2s.

All Articles and Communications intended for Publication, and all Books, etc., for  
Review, should be sent to The Editor, A. A. DALLMAN, 12 Tickhill Road, Doncaster.

Subscriptions and Advertisements should be addressed to the Publishers, T. BUNCLE  
& Co., Market Place, Arbroath, Angus.

# CONTENTS

	PAGE
The Magpie in Scotland— <i>A. B. Duncan</i> . . . . .	65
Book Notices . . . . .	80, 86
Bird Notes from Upper Loch Fyne— <i>W. Stewart</i> . . . . .	81
Algæ Studies from Boghall Glen (III)— <i>E. Wyllie Fenton</i> . . . . .	87
The Scottish Ornithologists' Club (Official Section) . . . . .	94

## Notes:

Risso's Dolphins on the Coast of Orkney—*F. C. Fraser*, 82; Orthoptera from Perth E. and Forfar—*A. R. Hill*, 82; An Alpine Grasshopper to be looked for in Scotland—*Malcolm Burr*, 82; Siskin recovered at Musselburgh—*David Hamilton*, 83; Starlings making Casts—*Tom Spence*, 83; Wintering of the Black-Tailed Godwit in Scotland—*Evelyn V. Baxter and Leonora Jeffrey Rintoul*, 84; Notes from Noss Head—*John Bain*, 84; Recovery of Ringed Puffins—*H. W. Robinson*, 85; Tree Sparrows in Dumfriesshire—*O. J. Pullen*, 85; Notes from Edenmouth, Fife—*D. I. Molteno*, 86; Some Dumfriesshire Coleoptera—*Jas. Murray*, 92; Notes from Loch Leven, Kinross—*D. I. Molteno*, 93; Green Sandpiper in Lanarkshire—*William Rennie*, 93; Notes on Some Birds seen during 1937—*Harry Boase*, 93.

---

## PUBLISHERS' NOTE.

The Annual Subscription for 1938, payable in advance, 12s. 6d. post free, should be addressed to the Publishers, Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

---

## COVERS FOR BINDING "THE SCOTTISH NATURALIST."

Special Cloth Cases for Binding the 1937 Volume can be supplied at 1s. 6d. each (by post 1s. 9d.) by Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

25.41

38

# The Scottish Naturalist



No. 232]

1938

[JULY-AUGUST



EDINBURGH: OLIVER & BOYD, TWEEDDALE COURT  
LONDON: GURNEY & JACKSON, 98 GREAT RUSSELL STREET

*Price 2s. 3d. Annual Subscription, payable in advance, 12s. 6d. post free*



# The Scottish Naturalist

*A Magazine devoted to Zoology*

With which is incorporated

“The Annals of Scottish Natural History”

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

*Keeper, Natural History Department, Royal Scottish Museum.*

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

*Formerly Keeper, Natural History Department, Royal Scottish Museum.*

ASSISTED BY

PROFESSOR JAMES RITCHIE, M.A., D.Sc.,

F.R.S.E.

EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.

LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.

H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.

C. H. O'DONOGHUE, D.Sc., F.R.S.E.

ANDERSON FERGUSSON, F.R.E.S.

A. R. WATERSTON, B.Sc.

All Articles and Communications intended for publication, and all Books, etc., for notice, should be sent to THE EDITORS, Royal Scottish Museum, Edinburgh.

Subscriptions and Advertisements should be addressed to the Publishers, MESSRS OLIVER AND BOYD LTD., Tweeddale Court, Edinburgh.

Authors of General Articles will receive 25 Reprints (in covers) of their Contributions gratis. Additional Copies, in covers, may be had from the Printers, at the ordinary prices ruling, provided such orders accompany the Manuscript.

---

## EVERY NATURALIST SHOULD READ

The following major articles which have appeared in recent numbers of *The Scottish Naturalist*:—

- Scottish Insect Immigration Records.
- Notes on Highland Diptera. (Illustrated.)
- Ferrets and Polecats.
- Notes on Whales stranded on the Scottish Coast. (Illustrated.)
- The Natural History of South Rona. (Illustrated.)
- The Occurrence of *Gammarus* in Scottish Waters.
- Notes from Gairloch in Wester Ross.
- Scottish Sand-eels.
- Further Notes on the Parasites of the Magpie Moth.
- Land Planarians of the British Isles.
- Lesser Redpoll in Midlothian.
- Isle of May Bird Observatory Report.
- The Eider in Sutherland and Shetland.
- Notes on the Birds of Loch and Forest. (Illustrated.)
- Wild and Domestic Cat compared. (Illustrated.)
- Kingfishers breeding in Juvenile Plumage.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.

(Authors are responsible for nomenclature used.)

# The Scottish Naturalist

---

---

No. 232]

1938

[JULY-AUGUST

---

---

## Obituary.

WILLIAM EAGLE CLARKE, I.S.O., LL.D.

WE deeply regret to record the death, which took place on 10th May last, of one who was intimately associated with this Journal for a period well exceeding forty years. Dr Eagle Clarke became sole Editor of *The Scottish Naturalist* in 1891, and the following year, when the Journal became the property of Mr J. A. Harvie-Brown (under the name of *The Annals of Scottish Natural History*), he took up the position of Acting-Editor (in conjunction with Mr Harvie-Brown and Professor J. W. H. Trail), acting in this capacity without a break until the year 1931. From that time until 1934 he remained on the Editorial Staff, but the gradual failure of his health compelled the cessation of his long services to Scottish natural history, the value of which it is difficult to exaggerate.

A glance at our long series of volumes will show that, in addition to his labours as Chief Editor, Dr Clarke contributed to our pages a large number of important papers and notes on Scottish vertebrates of all classes; and that although his name must always be especially associated with birds, his contributions to our knowledge of Scottish mammals, reptiles, amphibians and fishes are too important to be overlooked.

His outstanding work, however, was in connection with the phenomena of bird-migration. For the personal study of this important subject he sacrificed his annual leave for many years. During many migration seasons he paid visits, often with much discomfort, to such out-of-the-way stations as the Eddystone Lighthouse, the Kentish Knock Lightship (off the Thames estuary), Fair Isle, the Flannan Islands, St Kilda, Sule Skerry, and the Isle of Ushant, off the coast of Brittany. The information thus gained by such constant

devotion to problems which had always attracted his attention enabled him to publish, in 1912, his *magnum opus*, entitled, *Studies in Bird Migration*, the two volumes of which soon acquired a world-wide reputation.

In addition to his researches on migration, Dr Clarke made many contributions to our knowledge of the birds of other lands. He studied bird-life personally in Holland, the delta of the Rhone, the Pyrenees, the Färoes and Iceland, and worked out the ornithological results of the Scottish Antarctic Expedition, the Jackson-Harmsworth Expedition to Franz Josef Land, wrote a series of papers on the birds of the Philippine Islands, and a large number of papers and notes in various Journals, the details of which cannot be given in this place. He also revised and rewrote the third edition of Saunders' *Manual of British Birds* (1927); wrote (jointly with W. D. Roebuck) *A Handbook of Yorkshire Vertebrata* (1881); and co-operated with Nelson in *The Birds of Yorkshire* (1907). He was also one of the authors of Bartholomew's *Atlas of Zoogeography*, which appeared in 1911.

Dr Eagle Clarke was born in Leeds in 1853, and was thus in his eighty-sixth year at the time of his death. He was educated in his native town, and first took up business there as a land surveyor. His keen love of natural history, however, soon led to his renouncing a business career and to his being offered the Curatorship of the Leeds (Philosophical Society's) Museum, a position he occupied until 1888. In that year he obtained, by special appointment, an Assistantship in the Museum of Science and Art, Edinburgh (now the Royal Scottish Museum). He was eventually promoted to the Keepership of the Natural History Department in that Museum, from which position he retired in 1921. For his services in the Museum he was awarded the I.S.O. in 1920, and for his researches in bird-migration the University of St Andrews conferred upon him the honorary degree of LL.D. He also received the Godman-Salvin medal from the British Ornithologists' Union, of which he was at one time President. He was a past-President of the Royal Physical Society of Edinburgh and of the Yorkshire Naturalists' Union, and an honorary Fellow of many foreign Societies.

P. H. G.

## FOOD OF THE OTTER IN THE MARINE LITTORAL ZONE.

By RICHARD ELMHIRST, Director of the Millport  
Marine Biological Station.

THERE is a general belief that the otter (*Lutra lutra* (L.)) "inhabits the banks of rivers, lakes and marshes. Swims and dives with great facility, and is destructive to fish, on which it preys" (1, p. 13). According to Lydekker (2, p. 137) the otter feeds "almost exclusively on fish, which it pursues not only in rivers and lakes, but also in the open sea." The same author quotes Macgillivray to the effect that in the north of Scotland and the adjacent islands the otter "resides among the blocks, or in the caverns along the coasts, and subsists on marine fishes, seldom appearing in the streams or lakes except in winter, during very stormy weather." Also "it has been known to attack young domestic animals" and eat "larvæ and earthworms." In Ireland, too, "otters are plentiful on the coast, and in winter travel up the streams" (3, part 17, p. 3). In the Clyde area the otter is recorded as "widely and generally distributed in suitable waters and on the coast" (4, p. 156). Harvie-Brown (5, p. 93), writing of the Hebrides, says they mostly frequent the shore but follow the salmon and sea-trout "runs" in July, and that "the recently frequented resting-place of an otter is readily recognisable by the freshness of the grass, but the droppings themselves, which cause the greenness, rapidly dry up." C. St John (6, p. 110) says, "in severe frosts, the otter catches and eats rabbits, hares and any animal it can surprise, or in some situations takes to the seashore, living on flounders, crabs, etc." He also notes a rather prolonged breeding season. Whilst the life of the otter by inland waters is all too closely studied by jealous anglers and hunters, very little seems to be known of its activities around the coasts, beyond the points already quoted.

Being chiefly nocturnal in their habits otters are rarely seen, but there are places which they frequent regularly, as is known from their droppings. Trappers know these places. Such places on the coast usually have the following

features :—a trickle of fresh water, often the overflow of a small pool, running down the shore, the pool being situated in an open grassy patch giving a clear view landwards. The runnel of fresh water permits access to the land by a path which loses scent readily; the pool provides drinking water and a wash to remove any saltiness from the fur; the open grassy sward makes a safe playground. In such a place there can be found one or more mounds recognisable by the presence of fish bones. These mounds are the "seats" where the otters defecate, and are used regularly year after year, apparently over very long periods; in shape they may be small and conical, some six or eight inches high or larger, like ant-hills, up to two feet across and a foot or so high in the case of very old ones. They often have a vivid green vegetation much brighter than the grass around them, and have a number of bleached fish bones on them if fresh droppings are not present.

For many years, then, it has been known that otters frequent the shore, particularly during the winter, although occasionally in some localities and regularly in others they stay right through the summer and breed there. Whilst March is given as the usual time for the arrival of the young, they may be as late as June, as suggested by C. St John in the work quoted. Otters are extremely conservative in their habits and the same places are used in exactly the same way year after year. For instance, one seat which has to my knowledge been used for thirty years (Fig. 1) (and according to local tradition for generations before) does not appear to be much changed in appearance or size during that period. A section of an old seat shows bones all through the matted fibres of thrift and grasses which bind the mound together.

In 1936 a number of otter seats on the Cumbrae were kept under observation. On 1st October there was evidence of one small otter frequenting the area, and all loose bones, etc., were cleaned up from five seats. On 28th October large otter droppings were found and the seats were then used fairly regularly until the end of April 1937. No further evidence was found until the first week in July, when a small otter began to use the seats and continued



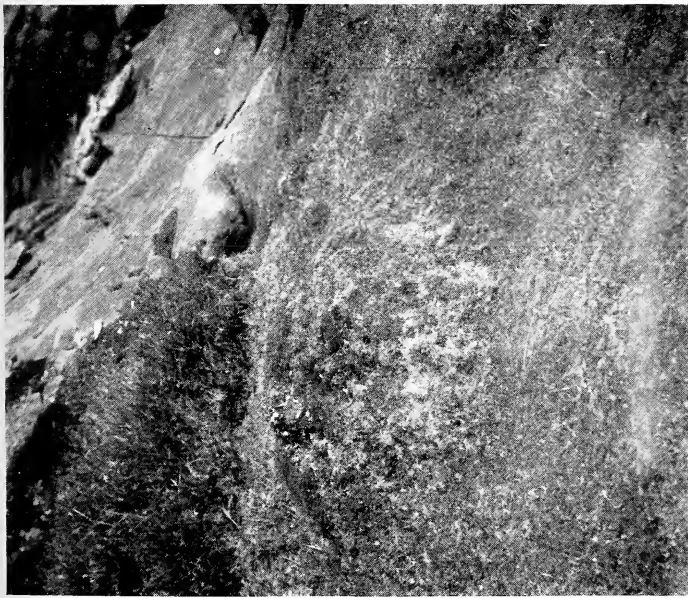


FIG. 1.—An old "seat" showing the surround of short trampled grass and various bleached bones from the droppings. A small extension is seen just beyond it.

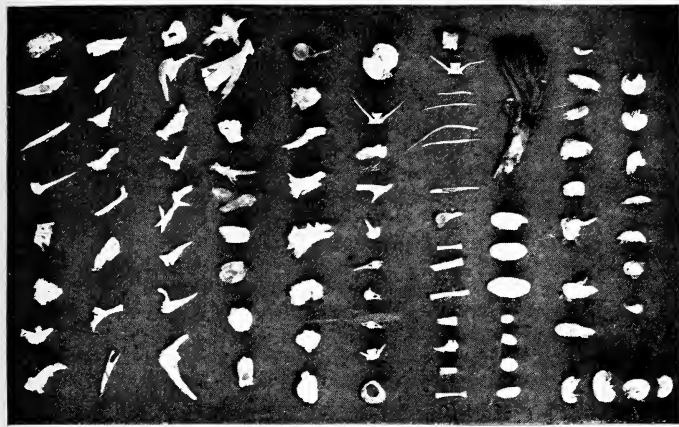


FIG. 2.—Bones, etc., washed from otters' faces. Six rows of fish bones from wrasses, gadoids and flatfish. Seventh row, mammalian bones including vole and some fish spines. Eighth row, fish otoliths and feathers. Ninth and tenth rows, *Idotea*, *Porcellio*, *Ligia*, *Gammarus* and *Orchestia*. Photographs by E. Latham.





doing so occasionally during the remainder of the summer. Very little evidence of their presence was seen until nearly the middle of November, when after a few frosty nights (8th-10th) it was found that four seats in the area had been used very recently. During the winter of 1937 the seats under observation were used fairly regularly until March 1938.

The general evidence, from runways, etc., of the movements of otters on the shore was fully confirmed by a light fall of snow in January 1937, when tracks and details of movements were amply revealed. An old one and a young one came ashore together at a usual place, played along the landward margin of the rocks and used two seats, visited a freshwater pool and then swam about 250 yards to another landing-place. Between the second and third places the old one went down on to the shore, presumably to hunt for crabs, and the young one visited a refuse dump and played with a bit of broken blue pottery and then with a sardine tin.

While playing along the drift line just above high-water mark they pick up and eat such small things as the Crustaceans *Orchestia littorea*, *Porcellio scaber* and *Ligia oceanica*, much as a kitten will catch any small creature (spider, etc.) which it may chance on. These species, particularly the two last, are found in large numbers browsing in the dark in the spray zone. While playing in the sea they catch *Idotea granulosa* and take *Gammarus duebeni* in the pools just above high-water mark.

When otters catch crabs they usually carry them ashore to some grassy ledge to eat them. The evidence left in the form of the crab's carapace and parts of the legs is often distinctive, as the carapace may have clear tooth marks. Tips of crabs' claws may also be found in the faeces. The species of crabs eaten are *Carcinus maenas* (shore crab), *Cancer pagurus* (edible crab) and *Portunus puber* (velvet swimmer crab). These three species are given in the order of the frequency of their occurrence as rejecta. It is interesting to note that it agrees with their occurrence on the shore, *Carcinus* being most abundant and ranging highest up the littoral zone, *Cancer* next and *Portunus* lowest and least frequent between tide marks.

The fæces of the otter when fresh consist of a thick tube of mucus enclosing a residue of hard more or less indigestible objects. When washed these are found to consist of fish bones, otoliths and scales, mammalian and bird bones, various small crustaceans, and, rarely, mussel shell and feather (Fig. 2). The thick mucus which sheaths these objects enables them to be passed without injury to the bowel. The position of a seat is always such as to give a clear view landward, and so allow defecation to happen without interference or surprise. This is necessary since many of the bones are sharp enough to injure the bowel if forcing occurred. It is hoped that an opportunity to section parts of a gut to find the origin of this mucus will occur soon. The condition of the fish scales and small crustacea from the excreta suggests that digestion is very rapid.

## REFERENCES.

1. JENYNS, L. 1835. *A Manual of British Vertebrate Animals.*
2. LYDEKKER, R. 1895. *A Handbook to the British Mammalia.*
3. BARRETT-HAMILTON, G. E. H. 1912. *A Biological Survey of Clare Island.* Part 17. "Mammalia."
4. WATT, H. B. 1901. *Fauna and Flora of the Clyde Area.* "Mammalia."
5. HARVIE-BROWN, J. 1881. *Proc. Nat. Hist. Soc. Glasgow*, vol. iv. "On the Mammalia of the Outer Hebrides."
6. ST JOHN, C. 1893. *Wild Sports and Natural History of the Highlands.*

**Dumfriesshire Hemiptera-Heteroptera.**—The following is a list of the Cimicidæ I have met with in the county. *Cryptostemma alienum* H.S. frequents shingle by river sides. I have several times met with it in flood refuse from the river Kirtle in May and June. *Cimex lectularius* Lin., reputedly common. *Lyctocoris campestris* Fab., not uncommon by sweeping and in old hay. *Temnostethus pusillus* H.S., widely distributed and not rare on oak and other trees. *Anthocoris confusus* Reut., *A. nemoralis* Fab., and *A. nemorum* Lin. are all plentiful by beating and sweeping in summer. *Tetraphleps vittata* Fieb., beaten from Scots fir at Nutberry Moss in October. *Acompocoris pygmaeus* Fall., common on fir trees in August and September. *Microphysa pselaphiformis* Curt., single specimens beaten from hawthorn near Gretna in June and August. *Myrmedobia distinguenda* Reut., one specimen at Nutberry Moss 20.7.28., swept from rough herbage on edge of a wood.—JAS. MURRAY, Gretna.

THE ISLE OF MAY BIRD OBSERVATORY.  
AUTUMN REPORT, 1937.

By The Midlothian Ornithological Club.

DURING this autumn we were unfortunate in being unable to obtain a sequence of observers over as long a period as usual, the island being under observation only from 1st September to 2nd October.

Each successive year shows how much more valuable our records would be if we could cover a more extensive period, especially during the autumn migration. Many of our summer visitors are moving south as early as August; indeed we have evidence to show that the peak of the willow-warbler's migration occurs in this month. Again, October is full of interest for the ornithologist, and since some of the largest rushes take place in October, it is to be regretted that our observations on the Isle of May do not extend beyond the first half of that month. Accordingly we should be grateful to any competent ornithologists who could in future years manage to visit the Isle of May during these neglected periods.

Once again we should like to thank the Commissioners of Northern Lighthouses for allowing us to continue our work on the Isle of May, the lighthouse-keepers and their families for all their kindnesses to us, and the following ornithologists who have helped us with the work of observation :—

The Hon. E. Elphinstone, Mrs Greenlees, Mrs Lockley, Miss A. Nicolson, Mrs Paulson, Miss E. C. Sharp and Mrs Taylor; and Messrs W. B. Alexander, B. W. H. Coulson, P. W. E. Currie, D. D. Dent, R. C. Homes, R. M. Lockley, H. J. Moore, D. A. T. Morgan, C. W. G. Paulson, R. B. Sibson and R. J. Sudds.

MIGRATION.

*Period 1st to 15th September.*

*Weather Conditions.*—Winds were mainly from the south-west during the first week, with moderate visibility

and generally clear sky with little rain. Later, winds became changeable, but an easterly breeze was recorded only on one day, the 13th. At this same point (12th-14th) visibility became poorer and some rain and drizzle fell. 15th September was a clear day with light westerly wind.

*Notes on Birds of Interest—1st to 6th.*—Birds very scarce, one pied flycatcher on 1st and 2nd being the only feature of interest.

6th.—Birds more numerous, willow-warbler increasing from 8 to 30 and wheatears from 6 to 20; morning southward migration of pied wagtails and sand-martins.

Throughout the period 1st to 9th September large numbers of meadow-pipits and smaller numbers of swallows and house-martins passed southwards over the island in the early mornings.

7th.—Birds scarce again, almost all arrivals of 6th having gone.

9th.—Increase of wheatears from 20 to 35 and of willow-warblers from 2 to 40; also 6 common whitethroats and 4 redstarts.

10th.—First 2 goldcrests (British) of season, 1 pied flycatcher, last sedge-warbler of season, 1 swift (the latter remaining until the 19th).

12th.—One scarlet grosbeak (*Carpodacus e. erythrinus*) which remained until 14th, 1 barred warbler (*Sylvia n. nisoria*) which remained until 15th, 2 pied flycatchers.

13th.—Two pied flycatchers, 2 garden-warblers, 1 black-cap, 1 mistle-thrush, 1 common buzzard, 1 jack snipe and 1 Siberian lesser whitethroat (*Sylvia curruca blythi*). The identification of the whitethroat was very kindly confirmed by Messrs N. B. Kinnear and H. F. Witherby.

14th.—Last common whitethroat, first hedge-sparrow (British) of season, 1 pied flycatcher and 1 jack snipe.

15th.—Most birds departed; barred warbler of 12th and 1 pied flycatcher remaining.

#### *Period 16th to 30th September.*

*Weather Conditions.*—Winds were mainly light to variable throughout the fortnight with good visibility except on 27th September. Some rain fell on 17th and 20th.

*Notes on Birds of Interest.*—No large-scale migration was noted throughout the fortnight.

16th.—One stonechat.

17th.—Last sand-martin, 1 tree-pipit, 5 pied flycatchers, 1 turtle dove, 1 knot.

18th.—Last spotted flycatcher and first wren of season.

19th.—Last garden-warbler, 1 great skua.

20th.—Last pied flycatcher.

22nd.—Last whinchat, great skua (single birds being seen each day until 25th).

23rd.—One stonechat, arctic skua (small numbers having been seen frequently since the beginning of the month).

24th.—One chiffchaff which remained until the 25th.

25th.—First snow-bunting of season.

26th.—First greenfinch, siskin, chaffinches (2) and brambling of the season, 4 snow-buntings, 1 grey wagtail and 1 mistle-thrush.

27th.—Three bramblings and an immature white wagtail.

28th.—First linnet of season, 2 siskins and 2 mistle-thrushes.

30th.—Two siskins and 1 ortolan bunting (*Emberiza hortulana*).

#### *Period 1st to 2nd October.*

*Weather Conditions.*—Easterly winds prevailed throughout the two days and the sky was overcast with rain.

*Notes on Birds of Interest—2nd.*—Two reed-buntings, 1 barred warbler, 1 blackcap and 5 redwings.

No sequence of observers was obtained throughout October, but Mr Leslie (lightkeeper) informs us of a great rush of birds that took place on the night of 30th/31st October. The island was thickly populated with birds on the next day (31st); redwing predominated, but many other species were represented, including starling, brambling, skylark, blackbird, redbreast, lapwing and woodcock. A single hawfinch, which was killed at the light on the night of the 30th/31st, constitutes a new record for the island; the wing was sent to us for confirmation.

From 9th to 12th November the island was again under



observation. Little was seen, except 1 sparrow-hawk on the 9th and 1 late tern (common or arctic?) on the 11th.

### *Ringling.*

The total number of birds ringed during the autumn of 1937 reached the disappointing figure of 212.

Interesting species included in this figure were 1 scarlet grosbeak and 2 barred warblers. Sixty-one willow-warblers were ringed.

### *Retrapping.*

A most interesting case of retrapping seems worth recording. A redbreast (British), ring KE 577, has been trapped on the following occasions:—

First trapped . . . . .	28.9.33
Retrapped repeatedly until . . . . .	7.10.35
Retrapped . . . . .	30.9.36 and 1.10.36
Retrapped . . . . .	27.3.37
Retrapped repeatedly until . . . . .	5.4.37
Retrapped . . . . .	9.11.37 and 10.11.37

It would appear that this individual is a winter visitor to the island, leaving in late March or early April and returning in late autumn. There is of course no direct evidence to show that it actually wintered on the island in 1935-6 or even in 1936-7, since we have no retrapping record in the middle of the winter. Redbreasts do not of course nest on the island.

---

### NOTE

**Lesser Rorqual stranded at Bressay Island, Shetland.**—The British Museum (Natural History) received notice on 8th April from Mr A. Jones, District Officer, Lerwick, that a whalebone whale had been picked up two days earlier near Taing of Ham, Bressay Island. A piece of whalebone forwarded to the Museum confirmed the identification made from the description sent previously that the animal was a lesser rorqual (*Balænoptera acutorostrata*). The total length of the whale was 12 ft. 9 ins., and it was evidently therefore quite a young specimen.—FRANCIS C. FRASER, London.

## NATURAL HISTORY NOTES ON CERTAIN SCOTTISH ISLANDS.\*

SULE STACK, SULE SKERRY, NORTH RONA,  
SULA SGEIR AND ST KILDA.

By MALCOLM STEWART.

### FOREWORD.

THESE notes are the results of observations made when cruising among the Western Isles in July and August 1937.

The writer wishes to acknowledge his grateful thanks to Mr J. Glencorse Wakelin, Secretary to the Commissioners of Northern Lighthouses, for permission to reproduce the map of Sule Skerry.

There are four islands and rocks lying to the north of the Scottish mainland and the Isle of Lewis and to the west of the Orkneys, but owing to a similarity in the names of three of them a confusion has arisen. It has been stated that the late J. A. Harvie-Brown did much to straighten the position, but even in his own works it is easy to find the same place referred to under two different names, and the late Duchess of Bedford made the same type of mistake.

The names of the four islands and rocks, together with their positions, are:—

Sule Skerry	.	.	Lat. 59° 4' N.	Long. 4° 24' W.
Sule Stack	.	.	„ 59° 2' N.	„ 4° 30' W.
North Rona	.	.	„ 59° 7' N.	„ 5° 49' W.
Sula Sgeir	.	..	„ 59° 6' N.	„ 6° 9' W.

Their position is shown in Fig. 1. North Rona is a fair-sized island, but Sule Skerry, Sule Stack and Sula Sgeir are little more than barren rocks.

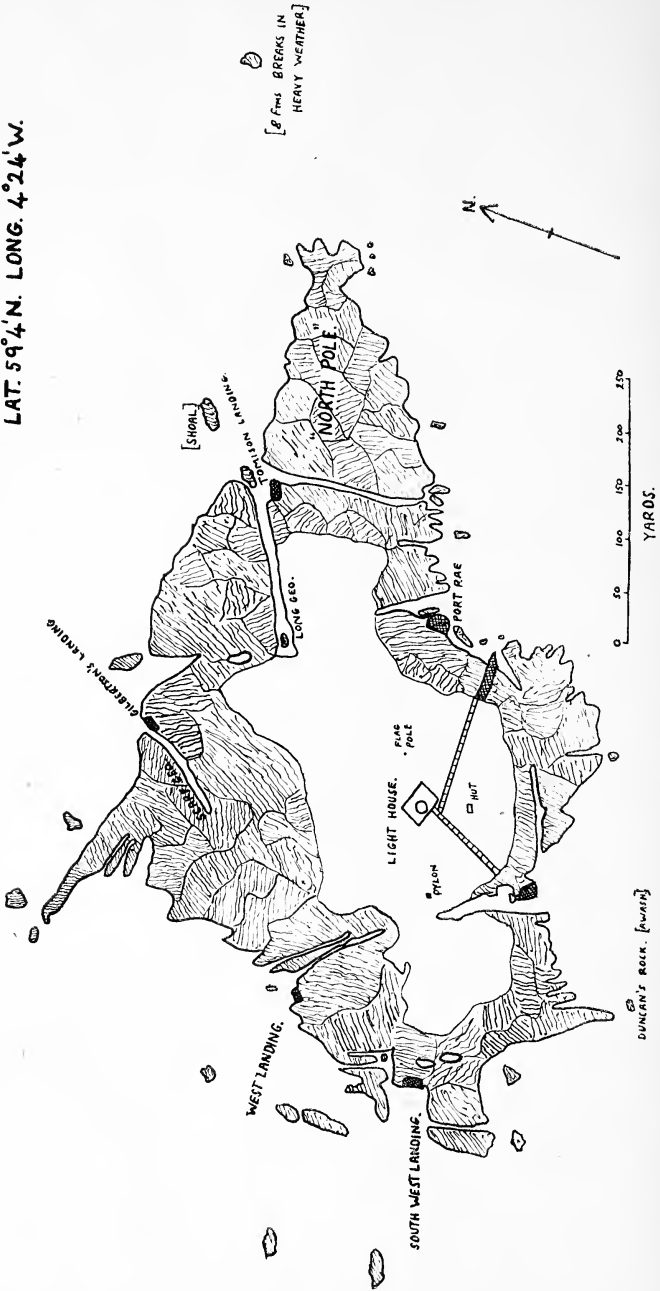
### SULE STACK.

Sule Stack is an isolated rock of about six acres in area and some 120-130 feet in height, entirely devoid of vegetation and covered with white guano<sup>(16)</sup>. Landing is at all times extremely difficult, and probably the first landing by a scientist this century was made on 31st July 1937<sup>(15)</sup>.

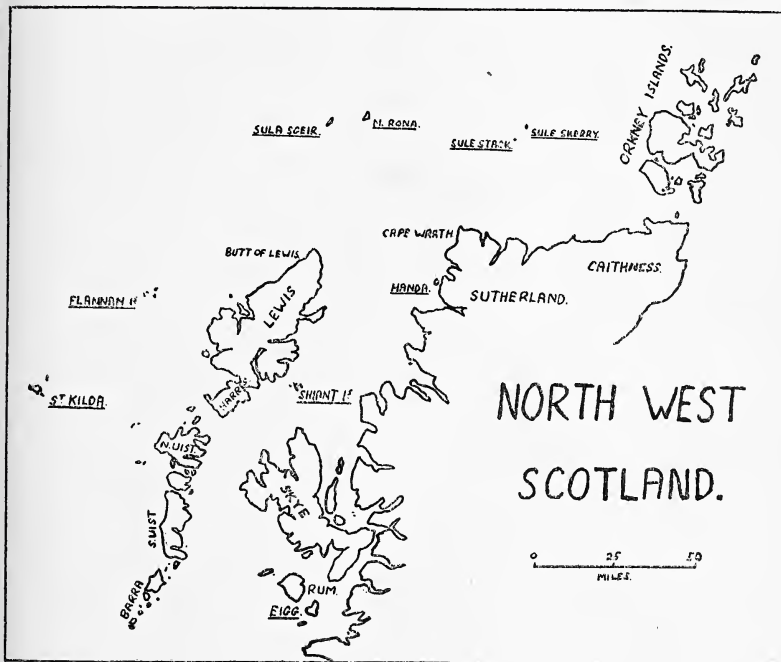
\* Figures in parentheses denote list of references at end of paper.

# SULE SKERRY.

LAT. 59°4' N. LONG. 4°24' W.



Sule Stack is chiefly noted for its gannetry and by means of a series of photographs the writer has estimated the gannet population at about 3500 breeding pairs (15). The gannets nest on the whole of the upper half of the northern portion of Sule Stack, but the southern portion, being smaller and less high, probably holds less than 118 breeding pairs. Previous writers have remarked on the large number of immature gannets on Sule Stack (4, 9), but it was difficult



to verify this definitely, though no doubt a large proportion of the 1200 gannets shown flying over the rock in a photograph taken while the writer was ashore consisted of immature birds.

The absence of vegetation is probably the reason for the small number of birds apart from the gannets. The Duchess of Bedford (4) recorded large quantities of kittiwakes and guillemots, a few shags with young, greater and lesser black-backed gulls and a very few razorbills. At the time of the writer's visit there were, strangely enough, no

kittiwakes. Possibly they have forsaken Sule Stack for North Rona and Sula Sgeir, where they have greatly increased. There were also no razorbills nor shags except for a few on the rocks just above the sea. Guillemots with young were, however, common all over the island.

#### SULE SKERRY.

Sule Skerry is little more than a reef of rock some 850 yards long east to west and 550 yards broad north to south, and of about 35 acres in area. It is deeply cut into on all sides by "geos," one of which has completely separated a small portion of rock on the east to form a separate islet known as "The North Pole." Sule Skerry attains a maximum height of only 40-45 feet, at which point a lighthouse was erected in the autumn of 1895.

Sule Skerry is probably the only portion of the British Isles that has not been mapped by the Ordnance Survey. In 1844 it was surveyed on the scale of one nautical mile to the inch by the Admiralty under Captain H. C. Otter and officers of H.M.K. *Sparrow*. It is from this survey that the island is included in the general maps of Scotland. The only large scale map of Sule Skerry of which the writer is aware is that of the Northern Lighthouse Board. A copy lent to the writer was on the scale (approximate only) of 50 yards to one inch, and, thanks to the kind permission of the Secretary to the Commissioners of Northern Lighthouses, this map is reproduced here on a reduced scale. It is believed that this map has not been published previously and may be of interest to future visitors to Sule Skerry.

The central portion of Sule Skerry is covered with a brownish loam of varying thickness from a few inches to six feet and composed of decayed vegetation. The whole is riddled with puffin burrows, and has a luxuriant vegetation. The most common plant is *Matricaria maritima* (?=*inodora*) which grows profusely, and the only other plants found were *Atriplex babingtonii*, *Cochlearia officinalis* of rather a large size, and also a little *Armeria maritima* which was not found by Harvie-Brown<sup>(5)</sup>.

Except for the three keepers and their dog, the only mammals are a few skinny rabbits which must share their

burrows with the innumerable puffins. The ancestors of these rabbits were brought to Sule Skerry some time ago by previous keepers. It has been recorded that Sule Skerry used to be a well known resort of the grey seal, and that in the autumn large numbers were taken by men from the mainland of Sutherland<sup>(5)</sup>. The keepers state, however, that it is extremely rare to see seals on the rocks and that they certainly do not now breed. This is no doubt due to the fact that they have been too much disturbed since the erection of the lighthouse. There were fifty to sixty the first winter after the erection, but since then the numbers have diminished quickly<sup>(17)</sup>.

As to the avifauna we have two detailed accounts by Tomison<sup>(17)</sup> and Eagle Clarke<sup>(6)</sup>. There is no doubt that the most common bird is the puffin, which is present in thousands. The young are being ringed by one of the keepers in his spare time, as are the arctic terns, the next most common species. Other birds observed by the writer included kittiwakes, shags, oyster-catchers and greater and lesser black-backed gulls. He was, however, surprised to see no fulmars.

The fulmar was first seen at Sule Skerry in 1901<sup>(17)</sup>, but it did not nest until a few years prior to 1928. In that year there were six nesting, but in 1932 there were only five, which number increased to twenty-seven in the following season<sup>(11)</sup>. The keepers told the present writer that of the few fulmars that nested each year only one or two eggs would be hatched. The keepers put this down to the great black-backed gulls which frighten the adult off the nest and rob it of the egg. Probably, however, the true explanation of the non-breeding is that owing to the low-lying nature of the island there are no suitable cliffs for nesting, and it is rare for fulmars to nest in the open unless completely isolated from human habitation<sup>(14)</sup>.

Stormy petrels are common and nest chiefly among the rough stone masonry that supports the tram rails. It has been recorded that Leach's fork-tailed petrel nested at Sule Skerry in 1933<sup>(12)</sup>. The writer was, however, unable to receive confirmation of this as none of the three keepers present was aware of the record. There is no reason why



Leach's petrel, which nests on North Rona should not also nest on Sule Skerry, but it would seem certain from the lack of information that if it does nest here the numbers cannot be great.

A previous writer recorded the large number of earwigs on Sule Skerry<sup>(17)</sup>. The present writer had no difficulty in confirming this. The earwigs are present almost everywhere on the island, and are most unpleasant and unwelcome in the living quarters of the lighthouse. Wood lice are also very numerous.

#### NORTH RONA.

North Rona has been described in such detail elsewhere<sup>(13)</sup> that there is no point in doing so again. This visit of the writer on 1st August 1937 was his fourth, previous visits being in the summers of 1930, 1931 and 1936.

As two papers were published only last year on the birds of North Rona<sup>(2, 3)</sup> there is little to report. It did appear, however, that there were fewer puffins than usual; possibly many of them had already left. In this case they left considerably earlier than last year (after 12th August) and earlier than at Sule Skerry. The grey seals, that are usually seen in such large numbers round North Rona, were on this occasion remarkably few. In fact, the writer saw only a very few grey seals anywhere during the summer.

#### SULA SGEIR.

The writer made his second visit to Sula Sgeir on 5th August 1937. His previous visit was on 23rd to 24th July 1932. Most of his time was taken up in photographing the gannets, which he now estimates at about 4500 breeding pairs<sup>(15)</sup>. The area of Sula Sgeir now occupied by gannets has greatly decreased since 1932 as well as the number. There can be no doubt but that this is due to the deplorable practice of taking the nestlings each year. Endeavours are now being made to give the birds of North Rona and Sula Sgeir complete protection, and to make the islands bird sanctuaries.

There is no doubt but that there has been a big increase

in both kittiwakes and fulmars on this island. Kittiwakes were nesting on nearly all the ledges of the cliffs not occupied by the gannets. Perhaps some have come from Sule Stack; the writer saw none on that rock, while in 1914 the Duchess of Bedford remarked on their large number (4). The young fulmars were everywhere, and very abundant under stones on the top of the island.

The writer saw no razorbills nor puffins; possibly they had already left. It seems probable that the puffins are dying out. There is hardly any soil left for them to burrow in, and the old tunnels and burrows on the southernmost parts of Sula Sgeir have fallen in and all that remains is a number of isolated tufts of vegetation, mostly *Armeria*. A similar state of affairs has been recorded from the island of Grassholm (1). Guillemots with young were common.

In a recently published book (7) it is stated that the late Dr Wilson Dougal saw a St Kilda wren at Sula Sgeir in September 1930. As, however, no species of wren has otherwise been recorded from either Sula Sgeir or North Rona, it seems that more confirmation is needed to substantiate this statement.

#### ST KILDA.

Bad weather on 6th and 7th August 1937 prevented much useful work from being done on St Kilda. It was hoped to visit the gannetry and take a census of gannets on the island of Borreray and on Stacs Lii and Armin, but this proved impossible. This was a pity because very little is known about the population of this gannetry reputed to be the largest extant.

Contact was, however, made with the main island, Hirta, where Alastair Ferguson and Neil Gillies were staying. They stated that the St Kilda wren was still numerous, and the writer saw one bird in the old church. He was also informed that the long-tailed field mouse (*Apodemus hirtensis*) had been seen this year, and that mice had been heard in the wainscoting of the old houses. These latter mice were probably of the house-mouse species (*Mus musculus muralis*). This is interesting as it was thought

probable that they would die out after the evacuation of the islanders in 1930<sup>(10)</sup>, and it is difficult to see what they now find to live on. The writer saw none of the feral Soay sheep that had been removed from the neighbouring island of Soay. Their number on the main island, Hirta, is small, and they were probably up the hills. The last of the "domestic" sheep has now been killed.

## REFERENCES.

- <sup>1</sup> ACLAND, CLEMENCE M., and SALMON, H. MORREY. "The Grassholm Gannets in 1924—a Great Increase," *British Birds*, 1924, vol. xviii., pp. 178-85.
- <sup>2</sup> AINSLIE, JOHN A., and ATKINSON, ROBERT. "On the Breeding Habits of Leach's Fork-tailed Petrel," *British Birds*, 1937, vol. xxx., pp. 234-48.
- <sup>3</sup> AINSLIE, JOHN A., and ATKINSON, ROBERT. "Summer Bird Notes from North Rona," *The Scottish Naturalist*, 1937, pp. 7-13.
- <sup>4</sup> BEDFORD, DUCHESS OF. "Spring Bird Notes from Various Scottish Islands," *The Annals of Scottish Natural History*, 1914, pp. 179-80.
- <sup>5</sup> BUCKLEY, T. E., and HARVIE-BROWN, J. A. *A Vertebrate Fauna of the Orkney Islands* (8vo, Edinburgh, 1891), pp. 45-8, 160-1.
- <sup>6</sup> CLARKE, W. EAGLE. *Studies in Bird Migration* (8vo, London, 1912), vol. ii., pp. 286-304.
- <sup>7</sup> DOUGAL, JOHN WILSON. *Island Memories* (8vo, Edinburgh, 1937), pp. 150-87.
- <sup>8</sup> GURNEY, J. H. *The Gannet; a Bird with a History* (8vo, London, 1913), pp. 150-64.
- <sup>9</sup> GURNEY, J. H. "The Gannetry of 'The Stack,' Orkney Islands," *The Ibis*, 1914, pp. 631-4.
- <sup>10</sup> HARRISSON, T. H., and MOY-THOMAS, J. A. "The Mice of St Kilda, with Especial Reference to their Prospects of Extinction and Present Status," *The Journal of Animal Ecology*, 1933, pp. 109-15; also contained in *St Kilda Papers 1931* (4to, London, 1937).
- <sup>11</sup> ROBINSON, H. W. "Fulmar Petrels on Sule Skerry," *The Scottish Naturalist*, 1929, p. 14; 1933, p. 108.
- <sup>12</sup> ROBINSON, H. W. "First Nesting of Leach's Fork-tailed Petrel in Orkney," *The Scottish Naturalist*, 1934, p. 93.
- <sup>13</sup> STEWART, MALCOLM. *Ronay; a Description of the Islands of North Rona and Sula Sgeir*, etc. (8vo, London, 1933).
- <sup>14</sup> STEWART, MALCOLM. "The Status of Petrels in Certain Remote Scottish Islands," *The Scottish Naturalist*, 1934, pp. 95-8.
- <sup>15</sup> STEWART, MALCOLM. "Notes on the Gannetries of Sule Stack and Sula Sgeir," *British Birds*, 1938, vol. xxxi., pp. 282-94.
- <sup>16</sup> STEWART, MALCOLM. "Notes on the Geology of Sule Stack, Orkney," *The Geological Magazine*, 1938, vol. lxxv., pp. 135-40.
- <sup>17</sup> TOMISON, JAMES. "Sule Skerry, Orkney, and its Bird-life," *The Annals of Scottish Natural History*, 1904, pp. 16-26, 91-8.

## NOTES

**Status of the Magpie in Inverness-shire.**—In his article (*Scottish Naturalist*, 1938, p. 65), Mr Duncan underestimates very considerably the numbers of the Magpie in Inverness-shire. I have not been specially on the look-out for their nests, so my own estimate is almost certainly lower than the actual numbers.

1938. Beginning on the Morayshire border at Dulnain Bridge, I know four nests within a mile of the village and three between that and Boat of Garten. Round Nethy Bridge within two miles of the village there were six nests, and I knew of three others in Abernethy and Glenmore. I have seen birds round Aviemore and Kinraig, and know of two pairs between Moy and Daviot. I consider that the reason they are underestimated is that they are so cunning that one never sees them except before 7 A.M., except by chance. I have watched them look up and down a road before crossing it, and dodge out of sight at the sound of a motor.—WINIFRED M. ROSS, Dulnain Bridge, Inverness-shire.

**Wigeon at Motherwell.**—On 25th May, on a stretch of water near the Clyde at Motherwell, I saw a male and female wigeon. There were very large flocks of these duck at this spot all winter but this is my first summer record. I watched these duck feeding in shallow water and the golden forehead and crown of the male could be seen clearly, even without binoculars. I have not seen them since then.—ROY Y. FERGUSON, Motherwell.

**Pine Grosbeak in Inverness-shire.**—On the 12th May four pine grosbeaks were seen at Tomatin, Inverness-shire. I have not seen an example myself, but the description given me leaves no possible room for doubt, and the call also described by my correspondent is quite accurate. I am familiar with the birds in Lapland and Northern Finland and the description is perfect. The birds were seen on three separate days, the first being the 12th May, and at a distance of only a few yards.—BRIAN VESEY FITZGERALD, Naturalist Editor, *The Field*.

**Continental Chaffinch in Renfrewshire.**—On 15th October 1937 I obtained an adult male continental chaffinch (*Fringilla cæleks cæleks*) near Darnley, East Renfrewshire. Winter specimens of this species are often hard to place, but the present example is very typical indeed, being generally pinker and not so brownish on the under-surfaces as in *Fringilla c. scotica* and *Fringilla c. gengleri*. This is the second record of this race in Renfrewshire.—PHILIP A. CLANCEY, Glasgow.

**Record Stoat from near Glasgow.**—We recently acquired from Mr James Bartholomew, Glenorchard, Torrance, near Glasgow, what appears to be a record specimen of the common stoat, *Mustela erminea stabilis* B.-H., and which may prove of interest to readers.

The specimen, an adult male, has the following measurements :—

Head and body . . . . .	286 mm.
Tail . . . . .	160 „
Hind foot . . . . .	56 „
Weight . . . . .	14 oz.

The largest adult male (from Wales) given in the British Museum Catalogue of the Mammals of Western Europe is as under :—

Head and body . . . . .	280 mm.
Tail . . . . .	120 „
Hind foot . . . . .	48.6 „

Mr Bartholomew informs me he had a pure white bitch stoat in January which only scaled  $4\frac{1}{4}$  oz.—R. GREGORY ABSALOM, Kelvingrove.

**Black-tailed Godwits in Possil Marsh.**—On the 11th and 12th May I saw a pair of black-tailed godwits at Possil Marsh, lovely birds in full nuptial dress. On both occasions I had them under observation at fairly close range (without the glasses) for about an hour and a half each day whilst feeding, pruning and resting. They were remarkably tame, and did not seem to resent the presence of either mallard, waterhens or lapwings alongside of them, but when disturbed by gulls or lapwings suddenly rising they also took wing but only went a few feet away and gradually returned to the same feeding site.—WILLIAM RENNIE, Glasgow.

**British Greater Spotted Woodpecker in Lanarkshire.**—I have two recent interesting records for the British greater spotted woodpecker. These are 10th April and 9th May. Up to now I have only seen this interesting bird in winter. Though only an occasional visitor to Lanarkshire, this bird, if given a chance, would likely become a resident.—ROY Y. FERGUSON, Motherwell.

**Glossy Ibis in Aberdeenshire.**—A glossy ibis was shot at Warhill, Aberdeenshire, on Tuesday, 3rd May.—BRIAN VESEY FITZGERALD, *The Field*.

**Notes on Birds seen at Balgray and Summerston.—**

A few visits to Balgray dams and Summerston marshes during the early part of 1938 proved rather interesting.

Cormorants were seen at Balgray at each visit, the greatest number observed being twenty-three. Goosanders were seen on three occasions, 9th February, 2nd March and 4th April, the numbers being nine, twenty-three and fourteen respectively.

Two red-necked grebes were seen on Balgray on 13th March.

Four whooper swans were seen on the Glen dam on 9th February. I saw three last spring.

At Summerston on 17th April I watched a ruff feeding for some time. I have seen this species there several times during the autumn, but this is my first spring record.

A greenshank, presumably the same bird, was observed on the 20th and 27th April. It is almost an annual visitor here in autumn, but is not so frequent in spring. On 4th May I had a close view of a black-tailed godwit in breeding plumage.—NICOL HOPKINS, Glasgow.

**Skull of a Large Skate from Eday, Orkney.**—At the end of January the skull of a large skate was sent by Mr James Marwick of Stromness to the Royal Scottish Museum for identification. It was found on Eday by Mr G. S. Groat, presumably washed ashore by the tide. In size it closely approximates the monster specimen, *Raia batis* L., caught in the Clyde in 1929, the fish measuring 7 feet 1 inch in length (*Scottish Naturalist*, 1929, p. 94). For future comparison the measurements of the Eday skull are given below :—

	cm.
Maximum length (end of snout cartilage to foramen magnum)	48·8
Distance between anterior end of snout cartilage to the foramina for the internal carotid arteries . . . . .	39·9
Distance between anterior end of snout cartilage and mid-point on ventral surface of skull opposite optic nerve foramina in the orbits . . . . .	35·9
Length of snout cartilage (anterior end to its junction with the nasal capsules) . . . . .	26·8
Distance between outer limits of nasal capsules (maximum width of skull) . . . . .	26·5

It will be seen that these two last measurements are approximately equal, and according to Day\* constitute a distinguishing feature for the species *R. batis* L. In addition its great size would suggest that it belonged to this species, since no other British skate attains

\* *Fishes of Great Britain and Ireland*, F. Day (1880-84), Part 2, p. 336.



such dimensions. Allowing 4 cm. for the amount the eyeball would protrude from each side of the cartilaginous wall of the orbit, two further measurements show the close affinity between the skate to which this skull belonged and the large grey skate from the Clyde mentioned above :—

	Clyde.	Eday.
Width between the eyes . . . . .	23 cm.	21 cm.
Midpoint between the eyes to the anterior end of snout cartilage . . . . .	38 ,,	36 ,,

MARGERY I. PLATT,  
Royal Scottish Museum, Edinburgh.

**Oar-Fish or King of the Herrings (*Regalecus glesne* (Ascan.)—*R. banksii* (Cuv. and Val.) at Westhaven, Angus.**

—During the late afternoon of Tuesday, 19th April 1938, when the tide had ebbed, a specimen of this interesting fish was observed dead and coiled around a rock at a point nearly opposite the Coastguard Station. I was informed of the matter in the evening and taken to inspect the fish. By then it had been dragged to the sand above high-water mark but in the process unfortunately broke into three parts. The head was damaged, some of the bones being loosened, while the characteristic rays of the head and the pelvic fins had been snapped off very short. The dorsal fin was also badly damaged. Otherwise the specimen was in good fresh condition. I was able to remove it the next day to University College, Dundee, where it was examined by Dr Harry Williamson and myself. The following are the measurements obtained: length, 17 feet 10 inches; distance of anus from the tip of the head, 5 feet 3 inches; greatest depth (at 2 feet from the tip of the head), 1 foot; girth at this position and at anus, 2 feet  $1\frac{1}{4}$  inches. Dr J. R. Norman, Assistant Keeper (Fishes), British Museum (Natural History), informs me that, so far as size goes, the specimen is "just about a record" for the British Isles, and further remarks that he has yet to see an oar-fish in anything approaching good condition. The specimen was a female and, judging by the size of the lumen in the gonads, had been spent for some time. The longitudinal markings running above the lateral line were broad and conspicuous, but the vertical streaks did not appear to be so numerous or so striking as those shown in Day's drawing (*British Fishes*, vol. i., Plate LXIV., 1880-84). Of the internal organs all we had opportunity to examine were the liver and alimentary canal. The former was a curious brick-red in colour and so soft that it readily went to "mush." The canal was empty. For other observations regarding strandings

of this species on Scottish coasts reference may be made to an excellent short article by W. Evans in the *Annals of Scottish Natural History*, 1908. Finally, I wish to thank Mr F. C. Murray, and Messrs F. A. Fancourt and F. J. Farrant of the Coastguard Service, all of Carnoustie, for various services rendered to me in connection with the specimen.—A. D. PEACOCK, Dundee.

**Rare Beetle (*Elater tristis* L.) in Rothiemurchus Forest, Inverness-shire.**—On 14th July 1937 my son Keith found two specimens (male and female) of this rare beetle on fir stumps at Loch an Eilean, Rothiemurchus Forest. There are few previous records for Britain. Weaver and Turner first took the species about 1852 (*Proc. Ent. Soc. Lond.*, 1853, p. 114), and Murray (*Cat. Coleopt. Scotland*, 1853) gives the locality as Black Forest, Rannoch. In 1914 Ferguson (*Scot. Nat.*, 1914, p. 142) rediscovered it in the Black Forest, and more recently S. H. Ashe (*Ent. Mo. Mag.*, 1934, p. 261) took it at Nethy Bridge, Inverness-shire.

I am indebted to Sir Thomas Hudson-Beare for confirming my identification and to Mr A. R. Waterston for aid with the literature.—D. K. KEVAN, Edinburgh.

**Rare Squid in Orkney.**—An example of the rare squid, *Stenoteuthis caroli* Furtado, was found alive on the shore at Stronsay, one of the northern islands of the Orkneys, on the 18th December 1937. It was secured by Mr James G. Marwick, Stromness, and forwarded to the Royal Scottish Museum, where a cast was prepared. The dimensions of the animal were as follows:—

Dorsal mantle-length	.	.	1 foot	11 $\frac{3}{4}$ inches
Ventral	„	.	1 „	10 $\frac{3}{4}$ „
To end of longest arm	.	.	3 feet	7 $\frac{1}{2}$ „
To end of tentacle	.	.	5 „	8 „

The width of the fins was 1 foot 7 $\frac{1}{2}$  inches and their greatest width occurred just below the middle line of the insertion of the fins. Another specimen, 5 feet in length overall, was washed up on the 24th November at Birsay Parish, Orkney. Photographs and some small parts were secured by Mr Marwick and there is little doubt that it also belonged to this species.

This squid has been met with on the coast of Portugal, Färoe Islands, and there is a doubtful record from Holland. It has been stranded on the Yorkshire coast, on the coast of East Lothian, and at Buckie in the Moray Firth.—A. C. STEPHEN, Royal Scottish Museum,

## BOOK NOTICES

**A Pocket Book of British Butterflies, Moths and Other Winged Insects.** By CHARLES A. HALL. London: Adam & Charles Black. Pp. 140. 1938. Price 5s. net.

In the small compass of this attractive little book more than 300 species of butterflies and moths are illustrated. Short chapters are also devoted to mayflies, caddisflies, dragonflies, humble bees, and social wasps. The illustrations are on the whole good, but we look with mixed feelings on the plate of dragonflies—where British species are mixed with exotic, and several of the specimens lack the full complement of legs, while one has no head! Nevertheless, this is just the right book to foster the interest of youngsters who are inclined towards the study of insect life.

**The Handbook of British Birds.** By H. F. WITHERBY (Editor), Rev. F. C. R. JOURDAIN, NORMAN F. TICEHURST and BERNARD W. TUCKER. To be completed in five volumes. Price 21s. per vol. for complete set, 25s. per vol. taken singly. H. F. & G. Witherby Ltd., 326 High Holborn, London, W.C. 1.

The original *Practical Handbook* went out of print in 1934 and, since many new facts regarding our British birds had accumulated since its publication, a new edition was called for. The first volume of the new series has now appeared. Needless to say, it forms a complete reference book. Each species is fully treated; especially useful are the coloured plates showing the birds in different plumages. An important new feature is the series of charts of song-periods.

This volume deals with "Crows to Flycatchers," and the number of distinguished authors who have contributed to it guarantees its high quality. It is an essential possession for all interested in our avifauna.

**Systematic Notes upon British Aquatic Coleoptera.** Vol. I. Hydradephaga. By FRANK BALFOUR-BROWNE. London: Nathaniel Lloyd & Co. Ltd. Pp. 95. 1938. Price 3s. 6d.

Professor Balfour-Browne, one of our valued contributors, has spent more than twenty-seven years investigating the biology, relationships, and nomenclature of British aquatic coleoptera. The results of his painstaking researches are now being published in monographic form and we sincerely hope that his conclusions regarding the proper usage of the generic and trivial names of our species will be universally adopted. The present volume deals with the systematics of the Families Haliplidæ, Hygrobiidæ, Dytiscidæ, and Gyridæ. This is an important book and we recommend it to all coleopterists who take a serious interest in their subject.

**Bird Flocks and the Breeding Cycle, a Contribution to the Study of Avian Sociality.** By J. FRASER DARLING. Cambridge University Press. 1938. Price 6s. net.

This study by Dr Darling is of great interest. It is based in the main on his field work on Priest Island during the nest seasons of 1936 and 1937, where he spent several consecutive months. The first chapter is mainly devoted to an account of the experiments made by Rowan and others to accelerate or retard the breeding cycle. A good bibliography relating to these experiments is given at the end of the volume.

The main part of the book is concerned with the breeding habits of the herring gull, lesser black-backed gull, the fulmar petrel and other colonial species nesting on the island. A good account is given of the lay-out of the gulleries, of the dates of nesting and egg laying, the courtship habits and mating play, the number of eggs laid and the number of young reared, and the communal behaviour of the birds. This was all observed with great care and is brilliantly described.

Dr Darling puts forward a theory which he claims to be a new concept to be tried in the fire of future research and thought. His view is that with certain colonial species such as he describes it is practically essential that there should be a considerable number of pairs nesting in proximity. This acts as a stimulus to ovulation and synchronises the breeding period of the different individuals, and this synchronisation has value, as fewer young are likely to be taken by predators if the breeding season is shortened. He states that in the larger colonies the egg-laying period was actually shorter than in the smaller ones. He is of the opinion that fulmars practically cannot breed unless several pairs are combined in this way and that this "numerical threshold" explains why fulmars so often visit a new breeding area for several seasons before eggs are laid. He gives evidence that in such cases it may be a question of all or none breeding.

These views deserve full consideration, and there are obviously many facts that will have to be taken into account. Some of the most typical colonial species, such as gulls and terns, are sometimes found nesting in small groups and even isolated pairs; others, such as the osprey and the grebes, are colonial in one country and isolated nesters in others. In colonies of the cormorant there is not even an approximate synchronisation in egg laying. For the curious behaviour of the fulmar at new nesting sites other explanations are theoretically possible. It may take time to overcome the novelty of new surroundings, or it is even possible that one sex may go in advance of the other, as happens with the capercaillie. The "all or none" theory requires much greater proof. In fact, the wider one's experience the less ready one is to make any generalisation whatever in connection with birds.

Whatever modifications may have to be made to Dr Darling's theory there can be no question that the presence of other mating birds gives a strong emotional stimulus. It is not only with birds that this is so. The importance of "sociality" has been brilliantly brought forward

by Dr Darling, and there is no doubt that this book will give an impetus to the study of the importance of the colonial habit amongst birds.

J. M. M'W.

**The Animal Year Book.** Vol. V. Published by the University of London Animal Welfare Society at The University Union, 42 Torrington Square, London, W.C. 1. Price 2s. 6d.

As usual this is a well-produced and interesting publication, giving first-hand information about the Society and its work. It should be studied by all interested in animals and their study and protection. There are eight articles dealing with such subjects as "Game Reserves and National Parks," "Antarctic Whales," "Tuberculosis in Cattle and its Control," "Current Problems," "Animals Abroad," also a series of book reviews and an appendix dealing with the activities of the Society.

**The Arctic Whalers.** By BASIL LUBBOCK. Brown, Son & Ferguson Ltd., Glasgow. Pp. xi+483, with numerous illustrations. Price 25s. net.

In this handsome volume the author has given a history of the trade, its ships and seamen from the earliest times to the beginning of the Great War.

The book contains eleven chapters dealing with various aspects of the fishing, *e.g.* "The Life," "Personnel," "The Early Spitzbergen Fishery," "The Revival of British Whaling, 1750-1800," "Wintering in the Arctic," "The Supremacy of Peterhead," "The Last Days of the Greenland Whale." The life was an adventurous one and had a glamour all its own. We can recommend this volume to all interested in whaling and stirring adventure at sea.

**Nature Study Above and Below the Surface: A Bridge between Amateur and Professional.** By H. C. GUNTON. London: H. F. & G. Witherby, Ltd. Pp. 134. 1938. Price 7s. 6d. net.

This book is an attempt to "stimulate the interest of those who wish to obtain more than a merely superficial knowledge of some of the phenomena of natural life which are at present engaging the attention of many workers, both professional and amateur."—A wide field is covered and in a chapter on "Outstanding Phenomena," protective resemblance, mimicry, the factors governing survival, activity, and phenology are discussed. A further chapter deals with modern advances in "Applied Entomology." The author stresses the need for closer co-operation between professional and amateur naturalists. This is a book which deserves a wide circulation amongst naturalists, but we fear that its somewhat high price may defeat this end.

## The Scottish Ornithologists' Club

(OFFICIAL SECTION)

### First General Meeting, Session II.

Miss L. J. Rintoul presided at the First General Meeting, Session II, of the Club, which was held in the Christian Institute, Glasgow, on 15th March 1938, at 7.30 P.M. There was an attendance of about forty persons.

"Notes on the Montagu's Harrier." A Paper by Laszlo Studinka, Hungary, illustrated with photographs taken by the author.

Mr Studinka made a special study of the Montagu's Harrier in Western Hungary, where about twenty-five pairs breed annually on a huge marsh and meadowland in an area of about 900 acres—probably the largest colony in Europe, except perhaps in Russia and Spain. Field notes were given illustrating the habits of the birds from their arrival in early April until their departure in August. The Spring migration lasts during April, the mating season being in this month, and the birds start to build their nests in the middle of May. Clutches vary but are usually from three to five eggs, six eggs being rare. Only the hen bird incubates, the male bird supplying her with food. The eggs are hatched during the second part of June, usually being one bird less than the original number of eggs.

Further notes were given depicting the growth of the young birds and the stages of development. Slides were shown illustrating the old birds on the nest and the growth of the young. During the first two or three weeks the hen bird is usually at the nest protecting the young, especially against intense heat, the male bird supplying the family with food. Remains of food found at various nests were collected and were examined, together with the crop and stomach contents of the birds killed, the results showing the highest percentage figure were Skylarks, Mice and Pheasants.

Mr Studinka explained the interesting performance of the hen bird catching the prey in the air dropped by the male bird. When the young are older than three weeks, they sit about in the vicinity of the nest, the mother bird assisting the male in supplying them with food.

The young are fledged towards the end of July and remain in the surroundings until migration begins in August.

The lecturer had ringed some 150 birds during the past years and already had some interesting results to show. Most of the birds were shot during the early part of their lives in a radius of about fifty miles from the nesting-site in the early part of migration, whereas one bird was shot about two months after having been



ringed in Central Italy. There are five instances of birds returning to the nesting place, even four years later.

To conclude the paper several slides were shown of the birds stooping at a stuffed Eagle Owl.

Dr Charles Cairnie of Largs, in proposing a hearty vote of thanks to Mr Studinka, wished to congratulate him on behalf of the Club for the excellent observations he had made and also for the fine photographs.

---

After tea had been served, Miss Rintoul called upon Mr H. F. D. Elder to give a talk on "The Isle of May Bird Observatory," illustrated with photographs.

Mr Elder described the island and the work which is being carried out on Bird Migration Study there. In 1934 a large trap constructed on similar lines to those in operation on Heligoland had been built. Large numbers of birds were trapped and ringed each year, and several unusual species, including Greenland Redpoll, Yellow-breasted Bunting, Reed Warbler, Red-breasted Flycatcher, Norwegian Bluethroat, had been trapped and ringed. Each day during the migration seasons a census was taken of the number of birds on the island and entered on special schedules, together with a record of weather conditions, etc. Each bird after it was caught was examined carefully, the colours of its soft parts noted, the length of its primaries measured, and finally, before ringing, it was carefully weighed on a special balance.

The Midlothian Ornithological Club who conduct the Observatory owe a debt of gratitude to the Commissioners for Northern Lighthouses for the many privileges afforded to them for carrying on this work and for the use of a small bungalow in which observers can stay. A series of photographs were shown of the trap, the bungalow and the island generally.

Mr James Bartholomew, in moving a vote of thanks to Mr Elder, congratulated him on the splendid work which was being carried out on the Isle of May, and stressed the value of ringing as an aid to increasing our knowledge on the migration of birds.

### Ornithological Enquiry

An enquiry is being conducted on behalf of this Club by Mr Arthur B. Duncan, Gilchristland, near Closeburn, Dumfriesshire, into the past and present *Status of the Jay in Scotland*.

Any observations on the subject will be welcomed.

GEORGE WATERSTON,  
*Hon. Secretary.*

27 INVERLEITH TERRACE,  
EDINBURGH.

# A Vertebrate Fauna of Forth

By LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER

With 16 full-page illustrations and a map of  
the Forth Area. 8vo. 456 pages. 25s. net.

EDINBURGH: OLIVER AND BOYD LTD., TWEEDDALE COURT  
LONDON: 98 GREAT RUSSELL STREET, W.C.

---

---

## THE NATURALIST

A Monthly Illustrated Journal of Natural History for the North of England

Edited by W. H. PEARSALL, D.Sc., F.L.S., and  
W. R. GRIST, B.Sc., The University, Leeds.

With the assistance of a Panel of Referees.

*All Communications to be addressed to—*

THE EDITORS, "THE NATURALIST," THE UNIVERSITY, LEEDS

Annual Subscription, 15s. Single Numbers, 1s. 6d. net

LONDON: A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.

---

---

## READ The Irish Naturalists' Journal

The Official Organ of Irish Scientific Societies

The only popular Scientific and Archæological periodical published  
in Ireland.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.

Issued Quarterly.

Annual Subscription, 6s. post free. Single Copies, 1s. 6d. each.

*All Communications to be addressed to—*

W. M. CRAWFORD, F.R.E.S., F.Z.S., Orissa, Marlborough Park South, Belfast

---

---

## The North Western Naturalist

A Scientific and Educational Journal for Lancashire, Cheshire, Shropshire,  
Stafford, Derbyshire, North Wales, Cumberland, Westmorland, the  
Isle of Man and the North West

EDITED BY A. A. DALLMAN, F.C.S.

Published Quarterly. Annual Subscription, 7s. 6d. (post free). Single Copies, 2s.

All Articles and Communications intended for Publication, and all Books, etc., for  
Review, should be sent to The Editor, A. A. DALLMAN, 12 Tickhill Road, Doncaster.

Subscriptions and Advertisements should be addressed to the Publishers, T. BUNCLE  
& Co., Market Place, Arbroath, Angus.

# CONTENTS

	PAGE
Obituary— <i>William Eagle Clarke</i> . . . . .	97
Food of the Otter in the Marine Littoral Zone— <i>Richard Elmhirst</i> . . . . .	99
Isle of May Bird Observatory, Autumn Report, 1937— <i>Midlothian Ornithological Club</i> . . . . .	103
Natural History Notes on Certain Scottish Islands— <i>Malcolm Stewart</i> . . . . .	107
Book Notices . . . . .	120
The Scottish Ornithologists' Club . . . . .	123

## Notes:

Dumfriesshire Hemiptera - Heteroptera — *Jas. Murray*, 102 ; Lesser Rorqual stranded at Bressay Island, Shetland—*Francis C. Fraser*, 106 ; Status of the Magpie in Inverness-shire—*Winifred M. Ross*, 115 ; Wigeon at Motherwell—*Roy Y. Ferguson*, 115 ; Pine Grosbeak in Inverness-shire—*Brian Vesey Fitzgerald*, 115 ; Continental Chaffinch in Renfrewshire—*Philip A. Clancey*, 115 ; Record Stoat from near Glasgow—*R. Gregory Absalom*, 116 ; Black-tailed Godwits in Possil Marsh—*William Rennie*, 116 ; British Greater Spotted Woodpecker in Lanarkshire—*Roy Y. Ferguson*, 116 ; Glossy Ibis in Aberdeenshire—*Brian Vesey Fitzgerald*, 116 ; Notes on Birds seen at Balgray and Summerston — *Nicol Hopkins*, 117 ; Skull of a Large Skate from Eday, Orkney—*Margery I. Platt*, 117 ; Oar-Fish at Westhaven, Angus—*A. D. Peacock*, 118 ; Rare Beetle in Rothiemurchus Forest—*D. K. Kevan*, 119 ; Rare Squid in Orkney—*A. C. Stephen*, 119.

---

## PUBLISHERS' NOTE.

The Annual Subscription for 1938, payable in advance, 12s. 6d. post free, should be addressed to the Publishers, Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

---

## COVERS FOR BINDING "THE SCOTTISH NATURALIST."

Special Cloth Cases for Binding the 1937 Volume can be supplied at 1s. 6d. each (by post 1s. 9d.), by Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

25.47

1938



# The Scottish Naturalist



No. 233]

1938

[SEPTEMBER-OCTOBER



EDINBURGH: OLIVER & BOYD, TWEEDDALE COURT  
 LONDON: GURNEY & JACKSON, 98 GREAT RUSSELL STREET

*Price 2s. 3d. Annual Subscription, payable in advance, 12s. 6d. post free*

# The Scottish Naturalist

*A Magazine devoted to Zoology*

With which is incorporated

“The Annals of Scottish Natural History”

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

*Keeper, Natural History Department, Royal Scottish Museum.*

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

*Formerly Keeper, Natural History Department, Royal Scottish Museum.*

ASSISTED BY

PROFESSOR JAMES RITCHIE, M.A., D.Sc.,  
F.R.S.E.  
EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.  
LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.

H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.  
C. H. O'DONOGHUE, D.Sc., F.R.S.E.  
ANDERSON FERGUSSON, F.R.E.S.  
A. R. WATERSTON, B.Sc.

All Articles and Communications intended for publication, and all Books, etc., for notice, should be sent to THE EDITORS, Royal Scottish Museum, Edinburgh.

Subscriptions and Advertisements should be addressed to the Publishers, MESSRS OLIVER AND BOYD LTD., Tweeddale Court, Edinburgh.

Authors of General Articles will receive 25 Reprints (in covers) of their Contributions gratis. Additional Copies, in covers, may be had from the Printers, at the ordinary prices ruling, provided such orders accompany the Manuscript.

---

## EVERY NATURALIST SHOULD READ

The following major articles which have appeared in recent numbers of *The Scottish Naturalist* :—

Scottish Insect Immigration Records.  
Notes on Highland Diptera. (Illustrated.)  
Ferrets and Polecats.  
Notes on Whales stranded on the Scottish Coast. (Illustrated.)  
The Natural History of South Rona. (Illustrated.)  
The Occurrence of *Gammarus* in Scottish Waters.  
Notes from Gairloch in Wester Ross.  
Scottish Sand-eels.  
Further Notes on the Parasites of the Magpie Moth.  
Land Planarians of the British Isles.  
Lesser Redpoll in Midlothian.  
Isle of May Bird Observatory Report.  
The Eider in Sutherland and Shetland.  
Notes on the Birds of Loch and Forest. (Illustrated.)  
Wild and Domestic Cat compared. (Illustrated.)  
Kingfishers breeding in Juvenile Plumage.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.



(Authors are responsible for nomenclature used.)

# The Scottish Naturalist

---

---

No. 233]                      1938 [SEPTEMBER-OCTOBER

---

---

## THE ANTLER MOTH ON SCOTTISH HILL-PASTURES.

By A. E. CAMERON, M.A., D.Sc., Department of Agricultural  
and Forest Zoology, University of Edinburgh.

THE chief biological feature of the antler moth (*Charæas graminis* (L.)) is the irregular periodicity with which it increases in numbers and forces itself on the attention of sheep farmers and shepherds, as well as members of the general public. Always on these occasions of outbreaks the fear is expressed that the caterpillars may descend from the grazings of the hill-tops, the scene of their nativity, to the cultivated fields of the valleys beneath. Just as regularly, however, does the fear prove groundless since the caterpillars continue to maintain themselves on the natural pastures at 700 feet and above until they have completed their growth and development.

During the summer of 1937 the midland and border counties of Scotland, including Perth, Stirling, Dumbarton, Peebles, Dumfries, Kirkcudbright and Ayr, experienced an infestation of the antler moth, which was but a repetition of others that had occurred in England and Wales in 1935 and 1936, not to mention those of earlier years which have been duly recorded by me in an article on "Insect and Other Pests of 1937" in the *Transactions of the Highland and Agricultural Society*, vol. iv., p. 95, 1938. Despite the frequency of the outbreaks, no satisfactory reason has ever been advanced for their origin. Normally the antler moth occurs in moderate numbers, and its caterpillars are found in grassland in May and June only by dint of assiduous search. Likewise the moth itself, readily recognisable by



the antler-like marks of its fore-wings, is occasionally encountered in hill districts during July and August, and is not an infrequent visitor to artificial lights in houses.

The attention of sheep farmers and shepherds to the presence of unusual numbers of caterpillars in the pastures is often attracted by the sight of thousands of sea-gulls, rooks and starlings which daily quarter the infested hill-sides for the purpose of feeding on the insects. This invasion of insectivorous birds first becomes noticeable about the middle of June, by which time the caterpillars are almost all full-grown and measure  $1\frac{1}{4}$  inches. The development of the caterpillar from the egg, which hatches in March or April, occupies about  $2\frac{1}{2}$  months, during which it moults four or five times. After the final ecdysis the bronzy-brown striped caterpillar feeds but little; but it begins to display that curious restlessness which is expressed in mass migrations that appear to follow no determinate direction, except that the caterpillars rarely descend the slopes of a hill. Certainly lack of food is not the factor which stimulates migration, since the caterpillars frequently traverse areas covered with an abundance of the grasses on which they have fed during their earlier stages. So far as one can discern migrations of the caterpillars would rather appear to be associated with the effort to discover suitable quarters for pupation. For the majority this wanderlust is their veritable undoing. The failure of the caterpillars to appreciate obstacles terminates in their wholesale slaughter in open drains and hill streams, into which they fall and are drowned. It is not unlikely that these natural traps account for more caterpillars than predators or parasites, and represent one of the most important means by which an infestation becomes reduced.

Beginning in March 1938 a series of observations was made in the field in order to find how successful the antler moth had been in passing the winter. Eggs were recovered from hill-pastures and hatched in the laboratory. Hatching was successfully achieved and the caterpillars were caged with their food-plants. Development proceeded normally until the fourth or fifth stage, when the majority became affected by a bacterial disease which terminated fatally.

At the same time regular counts of the caterpillars were made in the field, and a steady decline was noticeable from week to week, until by the middle of June it was with the greatest difficulty that specimens of the caterpillars could be found. It was surmised that the caterpillars in the field had been killed off by the same bacterial disease. Be this as it may, it became apparent in May that the infestation of 1937 was not to have its counterpart in 1938, and in June the hills, which had continued brown and bare in 1937, were clothed with fresh green in 1938.

---

## NOTES

**Late Nesting of Terns in Forth, 1938.**—In mid-June the most noteworthy feature of a visit to the island of Inchmickery, in the Firth of Forth, was the absence of sandwich tern nests at that period of year for the first time for several years (1929). On 3rd August I was able to visit the island again and found about twenty nests of the sandwich tern with eggs in various stages of incubation. Some of the nests held newly-hatched young. All these nests had only one egg or one nestling; in addition there were many young, in a slightly more advanced state, hiding in the rocks and among the grass. I did not see any birds of the year in flight. A similar state of affairs existed with the common tern except that the numbers were much greater than in the case of the sandwich tern, and there were plenty of young common terns flying around the island. Many of the common tern nests contained three eggs, some quite fresh; several held three newly-hatched young, and some had eggs and young. That nesting was still in course at so late a date was probably due to the depredations of the gulls which yearly are very severe on the Forth terns. One would think that there was small chance of survival for these young, as the terns generally leave the Forth by the end of September.

Rock pipits were still attending to young and on the rocks I saw a group of four turnstones. On the sail home I saw two arctic skuas chasing some fishing terns in characteristic style. In my recollection this seems an early date to see skuas in the Forth.—RITCHIE SEATH, Edinburgh.

**Note on some Summer Birds of Selkirkshire.**—During this summer (1938) I was fishing in the valleys of the Ettrick and Yarrow, Selkirkshire, from 19th June to 2nd July, and the following notes on some birds of the district were made during that time.

**PIED FLYCATCHER** (*Muscicapa hypoleuca*).—A pair was seen by the side of the Yarrow near Broadmeadows on 20th June. Baxter and Rintoul (1928) note the species as "O.P. has bred" in the county.

**GOOSANDER** (*Mergus merganser*).—The first example of this species breeding in the county was recorded by Millar above Ettrick Bridge End (*Scot. Nat.*, 1930, p. 87). A brood was seen also on St Mary's Loch on 25th May 1932 (*British Birds*, xxvi., p. 99). I suppose that they have bred regularly since then, and I certainly got the impression that they were not uncommon in the district this summer.

On 21st June a female with seven young birds was seen on the Upper Ettrick near Thirlestane Castle. The young appeared to be nearly fully grown and when I surprised them round a bend of the river they all flapped rapidly upstream along the surface of the water. A female with seven young, probably the same family, was seen again on 3rd July a little above Tushielaw Bridge. Another female with six young was seen on the Yarrow on 28th June, just below the exit of that river from St Mary's Loch. The young were a little smaller than those seen on the Ettrick, and on this occasion when I surprised them all the young dived, while the female flapped upstream and then flew off.

**OYSTERCATCHER** (*Haematopus ostralegus*).—A single bird was seen twice near the Yarrow above the Gordon Arms Hotel, and a pair in the valley of the Rankle Burn on 30th June. The status of the species in the whole Tweed area seems to be only that of occasional visitor, according to Baxter and Rintoul.

**DUNLIN** (*Calidris alpina*).—A few were seen and heard "trilling" on 23rd June near Clearburn Loch.

**REDSHANK** (*Tringa totanus*).—Four newly hatched young were found by the side of the nest on 24th June, near the Upper Yarrow.—P. F. HOLMES, Cambridge.

**White-fronted Goose near Glasgow.**—Referring to Mr Molteno's note about a white-fronted goose being seen among greylag geese at Loch Leven (*Scot. Nat.*, 1938, p. 93), I saw a white-fronted goose amongst a flock of about a hundred grey-lag geese here on 15th January.—JAMES BARTHOLOMEW, Torrance, near Glasgow.

THE AQUATIC COLEOPTERA OF ROSS AND CROMARTY (EAST AND WEST ROSS), INCLUDING AN *OCTHEBIUS* NEW TO BRITAIN.

By FRANK BALFOUR-BROWNE, M.A. (Oxon. et Cantab.), F.R.S.E., F.Z.S., F.R.E.S., F.L.S., formerly Professor of Entomology at the Imperial College of Science, London.

COLLECTORS of water-beetles in the northern counties of Scotland have been few and this must be my excuse for recording the results of a few days' collecting in Ross and Cromarty during last June. Conditions were by no means favourable as the weather was distinctly cold and every day a strong wind was blowing, and it almost invariably happened that I arrived on the fully exposed shore of each loch I visited. These conditions made collecting much more difficult and slow, as water-beetles mostly disappear from the shallows when the water is lashed into waves. Almost all my collecting was done in the lochs, but I worked a few bog areas and one peat-moss at about 1000 feet, and a small piece of merseland near the sea during the five days I had in East Ross and I obtained 40 species. There are, however, 11 additional records for this vice-county, so that the list of 51 species compares not unfavourably with that of Caithness (57 species) and Sutherland North (45 species) (1).\* I only visited West Ross on one occasion and obtained 14 species and, for that vice-county, there is only one published record, and I have an MS. list from A. R. Waterston which includes three additions.

The list contains very little for comment. I worked assiduously for *Hygrotus (Cælambus) 9-lineatus* in the hope of finding specimens of the smooth male-like female which Sharp (10), p. 406, stated he had not found in Britain and which I also have failed to find. There is still, I believe, no British record for this form. *Deronectes depressus* occurred only in two lochs, where it was common: Loch Garve, the males with an ædeagus width of 6 or 7,† and

\* The numbers refer to the bibliography at the end of the paper.

† See the chart "Aquatic Coleoptera of the County of Angus," *Scot. Nat.*, 1934, p. 19.

Loch Croisge, where the specimens were extremely like those from Talkin Tarn, the males with the broad blunt-apexed ædeagus (width 8) and the specimens large and dark. Here again we have two further examples of the segregation of slightly different varieties in different habitats, the only real evidence, so far, in favour of the view that the *depressus-elegans* complex is due to intra-specific variation and habitat forms and not to hybridisation. The record for *Graptodytes lepidus* (Joy, MS. list) is the most northern for the species in Scotland, and south of that there is a gap in the records until Argyll Main, Aberdeen South and Angus, below which line the species is recorded from a number of the Scottish counties. I have taken it in Skye, Coll but not in Tiree, and in Islay. In Skye it turned up in abundance in one peaty pool, while in Coll it also occurred once in abundance. So far it has not been recorded from the Outer Hebrides.

I found only two specimens of *Agabus chalconatus*, unfortunately both females, so that it is not possible to decide whether they are the true form or *melanocornis* Zimm. As, however, my Caithness specimens were the latter, it seems likely that these females also belong to it, especially as the true *chalconatus* has not yet been recognised north of Yorks Mid-West. I sought in vain for *Gyrinus opacus*, of which Hudson Beare took a specimen recently in this vice-county (3). Gyrinids were very scarce and even the common form of *natator* was difficult to find. It is therefore possible that *opacus* actually occurred in some of the small lochans I visited, but that the conditions were not such as encouraged it to disport itself on the surface of the water. On the other hand it may be extremely local and Hudson Beare may have been lucky in reaching one of its haunts. The only other records are for Aberdeen South, Easternness and Harris (Outer Hebrides). Hydrophilids were also very scarce and, as will be seen from the list, I only found eight species. The only one worthy of comment is the *Octhebius* which, at first, I took to be a black variety of *O. marinus* but, being doubtful, I brought home some specimens. My son extracted an ædeagus which is very different from that of *marinus*, so that the species



is definitely new to the British list. Specimens were sent to d'Orchymont by my son with a suggestion that this was the species referred to by him in a paper (7) in which he had mentioned two specimens from northern Norway, with the name "*sparre-schneideri*" and which he had described as only a curious black variety of typical *marinus*. He replied that the two specimens to which he had referred were females, but that he had since received a male which dissection revealed to be the same as our species, and that Héllen gave *sparre-schneideri* as a synonym of *lenensis* Poppius (which he treated as a var. of *marinus*).

My son then discovered a paper by Munster (8) which includes a passage, of which the following is a translation, for which we have to thank Miss Smythe of the British Museum (Natural History) :—

"(3) *Ochthebius lenensis* Popp. In 1904 and likewise in 1907 I found in the breakwater-dam of the Tromsdal river estuary opposite Trömso, an *Ochthebius* present in large numbers which I took to be a new species. As I was at that moment without collecting material and also saw that Poppius (in *Finsk. Vet. Soc. Förh.*, 1905-1906 (1907) 49) had described a closely related species from the Lena district of Siberia, I put off making further observations until I could obtain all possible information in regard to the latter. Through the kindness of the amanuensis, W. Héllen, I obtained the loan of the type specimen of this species from Ytyk-haja from the Zoological Museum in Helsingfors. . . . This specimen corresponds in all points with mine from Trömso and I record the species herewith for the first time from Norway.

"Poppius' description is, however, incomplete and misleading; he does not indicate the most essential characters distinguishing this species from *O. marinus* to which it stands very near, namely the relatively short legs, particularly the tarsi, as regards which it stands nearer the Austrian-Mediterranean *O. viridis*. It is, further, not correct that it is shagreened and covered with fine spots. The frons is not 'shining-smooth' but definitely shagreened, even if somewhat more finely than farther forward; the



raised parts of the prothorax are not strongly 'shining-gold, almost completely smooth' but more or less shining, finely but distinctly shagreened, at times partially, almost smooth; the punctures on the elytra are not 'square,' the interstriae are not 'flat,' there is no essential difference in the micro-sculpture of the elytra between males and females; the size given is too small: 1.5 m/m, whereas the specimen from Ytyk-haja measures 1.7 m/m and my examples from Trömso up to 1.8 m/m.

"The species is distinguished from *O. marinus* by the somewhat shorter legs, particularly tarsi, by the darker (duller) colour and diminished brilliance, shorter and more 'square' curving, slightly more transverse prothorax with shorter indentation in front of the posterior angles together with shorter or sometimes more arched elytra which, besides, are somewhat more acuminate posteriorly.

"I have at once sent several specimens of this species to the correspondents abroad under the name *O. sparreschneideri* in litt."

Having identified the species as *O. lenensis* of Poppius there seems no reason why he should have given it a new name, and that given by Poppius is obviously the correct name for this new British species.

The species was very common in an almost dried up pond in the sea merse where the only other beetles were *Hydroporus planus* and *Helophorus brevipalpis*.

With regard to nomenclature, there is only one point I wish to raise and that is in connection with the name *Laccobius alutaceus*. In 1930 ("Notes synonymiques sur le genre *Laccobius* Er.," *Bull. Ann. Soc. Ent. Belg.*, lxx.), d'Orchymont pointed out that the species which we had been recognising under this name was the *bipunctatus* of Fabricius. This name had, however, for a long time been used for another and smaller species which then became known as *biguttatus* Gerh. At first I accepted the change of name of *alutaceus*, but I soon found that when *L. bipunctatus* was recorded, it was not possible to identify the species intended, unless the author gave the synonym or referred to d'Orchymont's paper. It seems to me that it would be a good rule to adopt that no name may be

transferred from one species to another, as by such a rule we should escape a large amount of confusion.

The list includes all the species so far recorded from the county. Those marked "A" in the list have been taken by me. Those marked "B" have been seen by me and those marked "C" have been published, or are from manuscript lists I have received. D. J. Gordon, 1926, 1927, sent me specimens, as did also N. H. Joy, 1931, and a few specimens are in the British Museum (Natural History). Joy and Gordon sent me lists of their captures at Garve (1910) and Strathpeffer (1925) respectively and I am grateful for their help.

	Ross, East.			Ross, West.
<i>Haliplus confinis</i> Steph.	.	.	.	A
<i>fulvus</i> Fab.	.	.	.	A B C
<i>ruficollis</i> Deg.	.	.	.	A B
<i>lineolatus</i> Mannerh. form <i>nomax</i> B-B.				B
<i>lineatocollis</i> Marsh	.	.	.	A
<i>Hygrotus</i> (C.) <i>9-lineatus</i> Steph.	.	.	.	A B
<i>Deronectes assimilis</i> Payk.	.	.	.	A B C
<i>depressus</i> Fab.	.	.	.	A C
<i>griseostriatus</i> Deg.	.	.	.	A
<i>Oreodytes rivalis</i> Gyll.	.	.	.	A C
<i>septentrionalis</i> Gyll.	.	.	.	A
<i>borealis</i> Gyll. ( <i>davisii</i> Curtis)	.	.	.	C
<i>Hydroporus lepidus</i> Oliv.	.	.	.	C
<i>tristis</i> Payk.	.	.	.	A
<i>umbrosus</i> Gyll.	.	.	.	B C
<i>gyllenhalii</i> Schiödte	.	.	.	A C
<i>morio</i> Aubé	.	.	.	A
<i>striola</i> Gyll. ( <i>vittula</i> Er.)	.	.	.	B C
<i>palustris</i> Linn.	.	.	.	A B C
<i>erythrocephalus</i> Linn.	.	.	.	A
<i>longulus</i> Muls. ( <i>celatus</i> Clark)	.	.	.	A B C
<i>melanarius</i> Sturm	.	.	.	A B C
<i>memnonius</i> Nic.	.	.	.	A B C
<i>obscurus</i> Sturm	.	.	.	A B C
<i>nigrita</i> Fab.	.	.	.	A
<i>pubescens</i> Gyll.	.	.	.	A C
<i>planus</i> Fab.	.	.	.	A
<i>Agabus congener</i> Payk.	.	.	.	A B
<i>arcticus</i> Payk.	.	.	.	A
<i>chalconatus</i> Panz.	.	.	.	A B C
<i>bipustulatus</i> Linn.	.	.	.	A
<i>Platambus maculatus</i> Linn.	.	.	.	C

	Ross, East.	Ross, West.
<i>Ilybius fuliginosus</i> Fab. . . . .		A
<i>ænescens</i> Thoms. . . . .	A	
<i>Rantus exsoletus</i> Forst. . . . .	A	
<i>bistriatus</i> Bergstr. . . . .	A	A
<i>Dytiscus semisulcatus</i> Müll. ( <i>punctulatus</i> Fab.) . . . . .	A	
<i>Acilius sulcatus</i> F. . . . .		C
<i>Gyrinus minutus</i> Fab. . . . .	A	C
<i>natator</i> Linn. (form <i>substriatus</i> Steph.)	A	A C
<i>opacus</i> Sahlb. . . . .		C
<i>Orectochilus villosus</i> Müll. . . . .		C
<i>Philydrus fuscipennis</i> Thoms. . . . .	A B C	A
<i>frontalis</i> Er. ( <i>nigricans</i> Zett.) . . . . .		B
<i>minutus</i> Fab. . . . .	A B C	
<i>Anacæna globulus</i> Payk. . . . .	A B C	C
<i>Laccobius alutaceus</i> Thoms. . . . .		B
<i>minutus</i> Linn. . . . .	A	
<i>Limnebius truncatellus</i> Thunb. . . . .	A B C	
<i>Helophorus porculus</i> Bedel . . . . .		C
<i>aquaticus</i> Linn. . . . .	A	
<i>viridicollis</i> Steph. . . . .	A B C	
<i>brevipalpis</i> Bedel . . . . .	A	
<i>Octhebius lenensis</i> Popp. . . . .	A	

## BIBLIOGRAPHY.

- BALFOUR-BROWNE, F. "The Aquatic Coleoptera of Caithness and Sutherland, etc.," *Scot. Nat.*, 1930, 171-188.
- BEARE, T. H. "Recapture of *Bembidium virens* Gyll. at Loch Maree" (includes record of *A. globulus*), *Ent. Mo. Mag.*, 1912, xlviii., 212, 213.
- BEARE, T. H. "Coleoptera at Culrain, East Ross," *ibid.*, 1937, lxxiii., 43.
- BOLD, T. J. *A Catalogue of the Insects of Northumberland and Durham*. Revision. (*H. gyllenhalii*, Tain, Ross-shire, mentioned), 1871.
- JOY, N. H. "Coleoptera from near Garve, Ross-shire," *Ent. Rec.*, 1907, xix., 288.
- JOY, N. H. "A New Method of collecting Coleoptera," *Ent. Mo. Mag.*, 1909, xlv., 1-3. (mentions *H. melanarius*, *H. obscurus* and *A. globulus* from Moruisg, Ross).
- D'ORCHY MONT, A. "Contribution a l'étude des Palpicornia. VIII," *Bull. Ann. Soc. Ent. Belg.*, 1933, lxxiii., 285.
- MUNSTER, T. *Norsk. Ent. Tidsskr.*, Bd. 1, 1920-23, Heft 6 (1924), 291 (see also 273).
- PETHERBRIDGE, F. R. "The Turnip Mud-beetle (*Helophorus rugosus* Ol. and *H. porculus* Bedel)," *Ann. Appl. Biol.*, 1928, xv., 659-678.
- SHARP, D. "Dytiscidæ," *Trans. Roy. Dublin Soc.*, 1880-1882, ii. (ser. 2).
- SHARP, D. "Some Records of Coleoptera from Northern Scotland (*L. truncatellus* from Dingwall)," *Scot. Nat.*, 1912, 86-88.

## BIRD NOTES FROM KINLOCH RANNOCH. 1938.

By RITCHIE SEATH.

THE following list is compiled from personal observations only, made during a stay at Kinloch Rannoch from 2nd to 16th July. Circumstances restricted these observations to a radius of a mile or two around Kinloch Rannoch, which perhaps explains the omission of many species one might have expected to find. At the same time such a list may be of interest in that it gives some idea of the variety of birds which may be seen by anyone from the roadside in a very interesting district.

RAVEN (*Corvus c. corax*).—One pair seen flying round Craig Var, east of Kinloch Rannoch.

HOODED CROW (*Corvus c. cornix*).—A few seen on vermin boards.

CARRION CROW (*Corvus c. corone*).—Seen twice near a fir plantation.

JACKDAW (*Corvus monedula spermologus*).—Extremely numerous. Nests throughout the woods around Kinloch Rannoch and does not appear to be suppressed at all.

STARLING (*Sturnus v. vulgaris*).—A few in the village itself but does not appear to be very numerous.

GREENFINCH (*Chloris c. chloris*).—Common.

LESSER REDPOLL (*Carduelis flammea cabaret*).—Quite common. Seen with young.

BRITISH TWITE (*Carduelis flavirostris pipilans*).—A few seen on the hillside behind Kinloch Rannoch.

BRITISH BULLFINCH (*Pyrrhula pyrrhula nesa*).—One or two of both sexes seen in different places. By no means common.

SCOTTISH CROSSBILL (*Loxia curvirostra scotica*).—One pair seen at close quarters with three well-grown young. They were feeding on a solitary Scots fir by the roadside near Bunrannoch House. Remarkably tame.

BRITISH CHAFFINCH (*Fringilla cœlebs gengleri*).—Common.

YELLOW BUNTING (*Emberiza c. citrinella*).—A few pairs scattered around.

- REED BUNTING (*Emberiza s. schæniclus*).—One pair with young seen at a marshy pool by the roadside.
- HOUSE SPARROW (*Passer d. domesticus*).—Common in the village.
- SKYLARK (*Alauda a. arvensis*).—Common.
- TREE PIPIT (*Anthus t. trivialis*).—A few seen around the edge of the birch woods.
- MEADOW PIPIT (*Anthus pratensis*).—Common on the moors and fields.
- YELLOW WAGTAIL (*Motacilla flava rayi*).—Two seen. One a mile east of Kinloch Rannoch in a field near the Tummel, the other about two miles west of Kinloch Rannoch in a field overlooking Loch Rannoch.
- GRAY WAGTAIL (*Motacilla c. cinerea*).—Several. One seen with young among some cut wood by a roadside pool.
- PIED WAGTAIL (*Motacilla alba yarrellii*).—Abundant. Seen with young everywhere.
- BRITISH TREE-CREEPER (*Certhia familiaris britannica*).—Quite common, several families seen at the edge of the woods.
- BRITISH GREAT TIT (*Parus major newtoni*).—A few seen but could not be called common.
- BRITISH BLUE TIT (*Parus cæruleus obscurus*).—More common than great tit but not so common as coal tit.
- BRITISH COAL TIT (*Parus ater britannicus*).—Much the commonest tit. Seen throughout the district.
- SPOTTED FLYCATCHER (*Muscicapa s. striata*).—One of the commonest of the woodland birds. One nest newly hatched seen 9th July.
- WILLOW WARBLER (*Phylloscopus t. trochilus*).—The commonest of the smaller birds. Abundant throughout the birch woods.
- WOOD WARBLER (*Phylloscopus s. sibilatrix*).—Quite common but not nearly so abundant as willow warbler.
- SEDGE WARBLER (*Acrocephalus schænobænnus*).—One heard among bushes at the Tummel side, one mile east of Kinloch Rannoch.
- WHITETHROAT (*Sylvia c. communis*).—Seen once or twice, but does not appear to be common.

- MISTLE THRUSH (*Turdus v. viscivorus*).—Quite common in the woods.
- BRITISH SONG THRUSH (*Turdus e. ericetorum*).—Not very common but seen round about.
- BLACKBIRD (*Turdus m. merula*).—A few but not common.
- WHEATEAR (*Enanthe æ. ænanthe*).—Pairs scattered over the hillside everywhere.
- WHINCHAT (*Saxicola r. rubetra*).—A pair or two seen on the little moor south of Kinloch Rannoch.
- BRITISH STONECHAT (*Saxicola torquata hibernans*).—Commoner than the wheatear on the hillside.
- REDSTART (*Phœnicurus ph. phœnicurus*).—Very conspicuous about the woodlands round Loch Rannoch side and possibly appears commoner than it really is.
- BRITISH REDBREAST (*Erithacus rubecula melophilus*).—Common.
- BRITISH HEDGE SPARROW (*Prunella modularis occidentalis*).—Common.
- WREN (*Troglodytes t. troglodytes*).—A few seen but not noticeably common.
- SWALLOW (*Hirundo r. rustica*).—Only one seen near a farmhouse east of Kinloch Rannoch. In the village itself I did not see any.
- HOUSE MARTIN (*Delichon u. urbica*).—Very common in the district. Abundant in the village, breeding on many houses.
- SAND MARTIN (*Riparia r. riparia*).—A few seen by the Tummel about two miles east of Kinloch Rannoch. Breeding place not seen.
- SWIFT (*Apus a. apus*).—Common in Kinloch Rannoch. One or two colonies.
- SPARROWHAWK (*Accipiter n. nisus*).—One seen on the hillside above Kinloch Rannoch. A few on the vermin boards.
- MALLARD (*Anas p. platyrhyncha*).—Duck with young seen on water east of Kinloch Rannoch.
- WOOD PIGEON (*Columba p. palumbus*).—Common.
- OYSTERCATCHER (*Hæmatopus o. ostralegus*).—Very common in the fields and on the moorland.
- LAPWING (*Vanellus vanellus*).—Quite common, but in small numbers, a pair or two in the fields here and there.



COMMON SANDPIPER (*Tringa hypoleucos*).—Very common round the shores of Loch Rannoch and seen with young in the fields at quite a distance away from the lochside.

BRITISH REDSHANK (*Tringa totanus britannica*).—One or two pairs with young in the fields.

CURLEW (*Numenius a. arquata*).—Seen on the moor.

SNIPE (*Capella g. gallinago*).—Seen regularly about the river banks.

BLACK-HEADED GULL (*Larus r. ridibundus*).—Very common where the Tummel leaves Loch Rannoch. Probably breeds on the marshy land east of Kinloch Rannoch as I caught young birds unable to fly near by.

COMMON GULL (*Larus c. canus*).—Common at mouth of Tummel.

HERRING-GULL (*Larus a. argentatus*).—One or two first heard and then seen among the other gulls at the mouth of the Tummel. I was rather surprised to find adults of this species so far from the sea at this time.

BRITISH LESSER BLACK-BACKED GULL (*Larus fuscus graellsii*).—A few adults always round the end of the loch.

MOORHEN (*Gallinula c. chloropus*).—Seen in suitable places.

COOT (*Fulica a. atra*).—Seen once or twice but not commonly.

RED GROUSE (*Lagopus s. scoticus*).—A few seen on the hillside behind Kinloch Rannoch but by no means plentiful.

COMMON PARTRIDGE (*Perdix p. perdix*).—One pair seen in a field at mouth of Tummel.

---

**Oystercatcher breeding in Tweed.**—One of the surprising things in the ornithology of Scotland is that the oystercatcher has never been recorded as having bred in the Tweed area. We are now, however, informed by Mr W. T. Blackwood and Major Wolfe Murray that for the last two or three years it has nested on Tweed, on a shingle bed about two miles below Peebles. A pair have also been seen this summer on the Teviot where it seems probable they are nesting.—EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL, Largo.

## NOTES ON THE BIRDS OF COLL.

By H. MACDOUGALL.

THE Island of Coll, Inner Hebrides, lies at a north-easterly tilt about seven miles west of Mull and the mainland of Ardnamurchan. Tiree is two miles to the south and separated from Coll by the island of Gunna. Three or four smaller islands lie round the coast.

Over twelve miles long and nearly three broad, Coll's higher points are not above 339 feet. Yet the grey gneiss cliffs and knolls which rise from the heather, particularly at the north-east end, give a very fair impression of height. The narrower south-west end, and most of the coast which runs up the north side right round to the north-east end, are chiefly composed of sandhills bound with marram-grass, and long, clean sandy bays. Between this and the rather boggy moors which join the rocky coast on the south-east side lies the more cultivated ground, flat fenced fields of a good size, and pasture plains.

There are many lochs, mostly heather bound, some very small and none more than half a mile in length. Several have islands, natural or artificial, and vary from being covered with vegetation of all sorts to having none at all and a rocky or stony bottom. The few streams are small, and the chief muddy inlet of the kind attractive to redshank, etc., is beside Arinagour, the capital. Trees are absent except for two or three small groups of sycamore, but whins and small willows provide a certain amount of shelter.

The following notes have been collected during two visits, 4th to 11th May 1937, and 8th to 16th June 1938, and therefore only apply to these months. Not quite all the winter visitors had left by the first visit (chiefly confined to the south-west end), and the breeders were fairly settled in the second.

The only previous lists of Coll birds which I can find are by Lt.-Col. L. H. Irby, in his "Observations on the Birds of the Islands of Tiree and Coll" in the *Annals of Scottish Natural History*, 1899, p. 206, and also a list of

British birds marked by him and added to later by others, with birds found on Coll. This marked list appears to refer to the period between 1888 and about 1905.

RAVEN.—At least two pairs breed, but are kept down.

HOODED CROW.—A few seen about. Breeds, but kept down.

ROOK.—One seen in May. Said to come over in small parties from Mull.

STARLING.—Very numerous. Nest in modern and ruined buildings and also in the sandhills in holes probably made by rabbits. Large numbers said to roost in a rock-cleft. Flocks of immatures in June.

HOUSE SPARROW.—Common. About fifteen pairs nest in a hedge of hawthorn and lilac, and many more in modern and ruined buildings.

TREE SPARROW.—Could find none. Irby records breeding.

CORN-BUNTING.—Eight singing males or pairs in 1938, and a nest with young. Regularly distributed along the cultivated fields. Four seen in 1937.

YELLOWHAMMER.—Found none. Presence recorded by Irby.

REED-BUNTING.—Estimated about a dozen pairs.

TWITE.—Small parties often seen. Breeds.

SKYLARK.—Numerous, breeding, sandhills and cultivated land.

LINNET.—Irby has "breeding, many." Saw none myself.

MEADOW PIPIT.—Common, well distributed, breeds.

ROCK PIPIT.—Breeds round the coast.

PIED WAGTAIL.—Irby mentions its presence, not breeding.

I was shown a nest, with the bird sitting, and also saw two fledged young, as well as two distinct pairs of adults collecting insects. I saw none in 1937, except a passing bird, either a pied or white.

WILLOW WARBLER.—The only warbler mentioned by Irby is "white-throat—1 pair breeding." I saw none either year, but heard three willow warblers in 1937, and two of these in June 1938, probably breeding. If they have come since Irby's time it is possibly due to the growth of the two small groups of sycamore trees, near Arinagour and Breachacha, which provide attractive feeding.

SEDGE WARBLER.—One, possibly two, pairs along the mill burn. Seen both years, and apparently breeding. Not mentioned by Irby.

SONG THRUSH.—Well distributed, nesting in whins, walls, etc. Did not distinguish as distinct from British song thrush, but may be so.

BLACKBIRD.—As thrush. Young birds less frequently noticed.

STONECHAT, WHEATEAR, WHINCHAT.—Irby marks stonechat and whinchat—"breeding, many" and merely records wheatear as breeding. I estimated about a dozen pairs of stonechats breeding in the heathery districts, and a great many more wheatears in the sandhills. I saw one pair of whinchats in 1937, but none in 1938.

ROBIN.—Saw none either visit. Understand that though chiefly a winter visitor, breeds occasionally. Irby mentions presence.

WREN.—Well distributed, breeding.

SWALLOW.—One bird 12th June, probably passing. Mentioned by Irby, but not as breeding. He refers to house-martins as nesting at Arinagour, but I understand both these birds and sand-martins only pass through now.

CUCKOO.—Estimated seven pairs or single birds.

OWL.—Saw none, but pellets suggested their presence. Irby has short-eared owl.

BUZZARD.—Several. Irby has "stragglers" but they now breed, though not encouraged.

KESTREL, MERLIN.—Irby marks both as breeding, which I understand they still do. I saw each once.

HERON.—Often saw single birds or pairs. Irby has "used to nest," but can find no evidence that it does now.

MUTE SWAN.—Two pairs in 1937, and one, with nest, in 1938. Irby, in his Coll and Tiree birds, has not marked it for Coll, and has "probably an escape" for Tiree. But in the list marked 1904, there is "Swans this winter very numerous and tame"—species not named. The present mutes are regarded as regular or resident.

- WHOOPEE SWAN.—One on 8th May 1937, probably the last of larger winter flocks. Not specified by Irby.
- GREY LAG GOOSE.—A pair now breeds. Marked as sparse.
- SHELDUCK.—Numerous round the sandy coast. Breeds.
- MALLARD.—Ducks with young, coast and lochs. Flock of thirty ducks and drakes, 13th June.
- TEAL.—Two pairs seen in May.
- WIDGEON.—Two drakes, 1937, and a drake and also a duck in 1938. Irby mentions one nest.
- SHOVELLER.—Two drakes and one duck seen several times up till 10th May 1937; none in 1938. Not mentioned by Irby.
- LONGTAILED DUCK.—Flock of seventeen seen off coast several times up till 10th May 1937.
- EIDER DUCK.—Irby marks as breeding, and I saw many ducks with young or nests round the coasts, and islands. Also met with at the lochs.
- REDBREASTED MERGANSER.—Common in pairs round shores, less frequently on lochs. Flocks in June of fourteen and forty-eight in bay. No young seen in June.
- CORMORANT.—Twenty roosting on a cliff in May, and a flock of about fifty of this or the next seen out by Gunna in June.
- SHAG.—A few seen. No evidence of this or the latter breeding.
- GANNET.—One or two fishing round the coast all the time.
- FULMAR PETREL.—Dead bird washed up, one flying out at sea.
- LITTLE GREBE.—One pair seen twice on a loch in June; possibly may be breeding, as the weedy loch, also inhabited by coot, moorhen, and mute swans, seems suitable. Not mentioned by Irby.
- GREAT NORTHERN DIVER.—Seen fairly frequently off the coast in May in various plumages, and one, not in full breeding plumage, on 15th June.
- RED-THROATED DIVER.—Seen on many of the lochs, occasionally by the coast, and often flying overhead. Breeds.
- BLACK-THROATED DIVER.—Irby also has this as a breeding species, but I understand it is a good deal scarcer now.

ROCK PIGEON.—Nesting round the rocky parts of the coast in caves and clefts, as well as in ruined buildings.

SNIPE, COMMON.—Several in May, some with young in June.

OYSTERCATCHER.—Breeding round the coast, common. Flocks of thirty and forty in June.

TURNSTONE.—Two or three seen both in May and June.

RING PLOVER.—Fairly well distributed as breeder—estimated ten to fifteen pairs. Also a flock of five.

GOLDEN PLOVER.—Flock of thirty-five on 4th May, which had decreased to seven by the 11th. Irby has "a few pairs nest"; and possibly they may still do occasionally, though I saw none in 1938.

LAPWING.—Numerous; nests over perhaps half the island but chiefly on sandy ground. Breeding birds must run into hundreds; but there appeared to be rather less in June, and we seldom saw young or signs of flocking.

SANDERLING.—A flock of 17 on 15th June.

DUNLIN.—One pair at least seemed to be nesting both years. Pairs, single birds and small parties of five or so seen now and then.

COMMON SANDPIPER.—Many of the lochs have one or two; also found round the coast. Breeds.

REDSHANK.—Irby says "has nested at Arinagour," and I understand it has done so recently. I saw none either visit, except a dead bird, and conclude it is chiefly a winter visitor.

GREENSHANK.—One on 10th May. Not mentioned by Irby.

CURLEW.—About four pairs seem to be breeding in 1938—I heard of one nest. Irby has "nests occasionally."

WHIMBREL.—Saw three in May, twice seen in June.

COMMON TERN, ARCTIC TERN.—Irby marks both as present and breeding. Probably still so; many that I saw were arctic terns. Nests rather sparingly round the S.W. coast, on the islands of Soa, and probably Gunna, and a large colony on the N.E. islands. Arrived 8th May 1937.

LITTLE TERN.—Two on 10th May and two, possibly four, in June. Not mentioned by Irby.



- COMMON GULL.—Numerous. The breeding colonies seem distributed rather than large. Nests round the S.W. coast and islands, as well as by two or more lochs, with from twelve to twenty pairs at each.
- BLACKHEADED GULL.—Mentioned as “breeding occasionally” in the Coll and Tiree notes, although not ticked off at all on the marked Coll list. I understand it was practically absent ten years ago. Later a pair or two nested, and since then, although discouraged, has increased. I saw seven pairs at one loch, and six at another, breeding.
- HERRING GULL.—Common, but apparently less so as a breeding species than the next.
- LESSER BLACK-BACKED GULL.—Nesting colonies on the island of Soa, also on the moors and lochs, one of which had twenty-five pairs.
- GREATER BLACK-BACKED GULL.—Fewer. Breeds on the islands?
- KITTIWAKE.—Found dead only.
- ARCTIC SKUA.—At least two colonies, about five pairs breeding in each. Irby has marked the Coll list—“7 June 1894,” but gives it as breeding in the Coll and Tiree notes of 1898.
- COMMON GUILLEMOT.—Swimming offshore.
- BLACK GUILLEMOT.—Three or four seen each visit. Breeds.
- PUFFIN.—Once seen swimming off shore.
- CORNCRAKE.—Estimate about twelve pairs.
- COOT.—Three pairs seen.
- MOORHEN.—One pair seen.
- PHEASANT.—Being introduced. A cock, of last year’s hatching, seen.
- GROUSE.—Common, breeding.
- PARTRIDGE.—Breeding in the sandhills, common.

---

**Goat Moth in Caithness : a correction.**—I regret that in a previous note (*Scot. Nat.*, 1937, p. 114), this species was recorded in error for the common Puss Moth (*Cerura vinula* L.).—A. R. WATERSTON, B.Sc., Royal Scottish Museum.

NATURAL HISTORY NOTES FROM CERTAIN  
SCOTTISH ISLANDS—NORTH RONA, THE  
FLANNAN ISLES, HANDA ISLAND.

By ROBERT ATKINSON.

I. NORTH RONA.

THIS island was visited on 27th to 28th July 1937 through the kindness of the tenant, Mr MacFarquhar.

A colony (new since 1936) of storm petrels was noticed in part of the rough sheep wall across the neck of Fianuis. Unfortunately the colony was destroyed when the shepherds rebuilt the wall. The annual visit to Rona is unhappily made an occasion for wanton destruction of the wild life. Some half dozen grey seals were killed or badly wounded during the day in the name of sport; needless to say the bodies were not recovered. Great numbers of puffins, guillemots, razorbills and even shags were shot—for food I was told. Young fulmars were killed with a stone or pulled out of the nest and left helpless. Yet the only birds whose numbers would be better thinned—the great black-backed gulls—went unscathed. The island is littered with the carcasses of their prey, chiefly puffins (invariably turned inside out) and kittiwakes; unfortunately a few Leach's and storm petrels are also taken. An examination of the remains of birds eaten by black-backed gulls was made in early August 1936, when John Ainslie and myself were staying on the island; eight different species occurred in 166 carcasses, as follows:—

Kittiwake (adult)	.	.	.	.	.	36
Kittiwake (young)	.	.	.	.	.	26
Puffin (adult)	.	.	.	.	.	80
Leach's petrel (adult)	.	.	.	.	.	10
Storm petrel (adult)	.	.	.	.	.	1
Great black-backed gull (young)	.	.	.	.	.	8
Lesser black-backed gull (adult)	.	.	.	.	.	3
Oystercatcher (adult)	.	.	.	.	.	1
Black guillemot (adult)	.	.	.	.	.	1

Twelve castings examined on one day were composed of the remains of guillemots or razorbills (5 adult, 2 young, 2 eggs),

kittiwakes (2 adult, 2 young), fulmars (2 young), great black-backed gull (1 young), small petrel (1 adult), puffin (1 adult), some fish bones and fragments of a shag's egg. It would be much in the shepherds' own interest to reduce the numbers of these big gulls, for they are suspected of doing damage to the sheep during the lambing season; forty sheep were lost from the flock during the year July 1935 to July 1936.

The Flannan Isles and Handa were visited by John Ainslie and myself during the summers of 1935 and 1937; the Flannans through the kindness of the tenant, Mr Malcolm Macleod.

## 2. THE FLANNAN ISLES.

Rona and St Kilda and the Flannan Isles are the three certainly proven breeding stations of the Leach's fork-tailed petrel in Britain. Eggs, young and adults were seen on Eilean Mor in July 1937, where the Leach's petrels were found to be concentrated in three large colonies and in two smaller subsidiary ones. One of the main colonies was situated on ground which is swept by stray beams from the lighthouse. I would guess an absolute minimum of 200 breeding pairs for Eilean Mor. The lighthouse men said that Leach's petrels were increasing; certainly Leach's were much more numerous than storm petrels. Many of the larger burrows were definitely shared by rabbits, puffins and Leach's petrels.

The most noticeable feature of the bird life was the extraordinarily abundant population of puffins. Puffins and rabbits and the lighthouse hens were seen side by side along the cliff edge. Young puffins were seen at night on their way down to the sea. Fulmars were curiously scarce in that their original home, St Kilda, is quite close; not more than 10 pairs were nesting on Eilean Mor. Shags, rock pipits, kittiwakes, guillemots and razorbills were all numerous. Gulls were also curiously scarce, there being only some half dozen each of great and lesser black-backed gulls, and about 20 pairs of herring gulls. No young gulls were seen at all. The super-abundance of puffins,

much more plentiful than on Rona, has probably resulted from the scarcity of black-backs. A single raven, a redshank, starlings and two pairs of oystercatchers were also noted on Eilean Mor. The lighthouse men said that two pairs of ravens nested annually and several meadow pipits (I saw none). They reported "grey geese" and curlews as winter visitors to the group.

### 3. HANDA ISLAND.

Kittiwakes, guillemots, razorbills, puffins and shags nest in great numbers on all the cliffs. At the beginning of August 1935 about half the guillemots and razorbills had already departed for the open sea. Practically every puffin left on the night of 2nd August, though a few afterwards returned. At this date many burrows still contained half-fledged young. The puffins of the outlying islands definitely leave later. Guillemots and kittiwakes were nesting along the topmost edges of an isolated, inaccessible pillar of rock standing a few yards out from the north-west cliffs. This open position may be compared to the nesting sites of fulmars on Rona, where the birds breed all over the flat ground of the island, as a result of being undisturbed by man. In 1935, 66 fulmars' nests were counted, in five different colonies, the largest of which contained 19 nests. Nearly all their nests were inaccessible and on different parts of the cliffs from the rest of the cliff colonists. I was interested to find house sparrows nesting under the eaves of the single croft. The black guillemot does not breed on Handa, but nests fairly commonly on the several islets in the Sound of Handa.

---

**Garganey in Orkney.**—On 5th July 1938 at North Ronaldsay, while working a marsh, five garganey duck were put up, and as two were drakes with their brightly coloured speculums, there was no mistaking them even although they were in eclipse.

This duck has been rarely recorded from Orkney, and it is all the more interesting as in the last few years records of them have increased in Scotland.—D. I. MOLTEÑO, Fortingall.

## BOOK NOTICES

**The International Committee for Bird Preservation—British Section.** Annual Report for 1937. "For the British Section of the International Committee for Bird Preservation the year 1937 has been one of much attempted and much achieved." These are the words with which the Report begins, and the account of the work done or inspired by the Committee show them to be amply justified. The work is comprehensive and likely to increase our knowledge of all branches of ornithology. The first part of the Report gives a digest of the work of the special sub-committee appointed to draw up proposals for the better protection of birds in Europe. These are in the form of a revision of the Paris Convention of 1902. And "whereas in the Paris Convention the provisions applied to birds useful to agriculture only, the salient point in the present proposals is that they recognise the necessity for protecting all birds, and state that to this end birds shall be protected in each country at such times determined by the laws and regulations peculiar to that country, but always during the times of their return to their nesting sites, notably during the months of March, April, May and June. Exceptions to the term of the Convention are allowed in the interests of science and of restocking and falconry, and special provisions are made in cases where a species may become a menace to agriculture, pisciculture, viticulture and allied interests, or where the balance of nature is being disturbed." A clause deals with the destruction of birds by oil pollution of the sea, by lighthouses, electric wires, etc. Establishment of reserves and education of school children in bird protection is also advocated. The aim of the Committee is "to bring about an agreement in wide terms leaving the individual countries to work out the details and afford further protection so far as their own needs and conditions require." Above all the Committee's desire is to "attain that international protection which is so vital so far as migratory birds are concerned."

The inquiry into the status of the wildfowl of Europe is another branch of work dealt with in this Report. The work of the sub-committee concerned began in the summer of 1936. For this investigation the whole of Great Britain has been divided into areas, every area being in charge of a recognised ornithologist or sportsman responsible for collecting information from observers, as to the status of duck and geese, both resident and migratory in that area. Questionnaires were circulated for the assistance of this work and the Chairman of the British Section, Dr Percy Lowe, brought the matter before the Vienna meeting of the International Committee in a speech in which he reviewed the world situation as it stands to-day. He gave special stress to the changed conditions in northern Europe and Asia, with the ever-increasing spread of population there and the effect this is having on the geese and duck which used to nest there. He appealed to the European Sections

to conduct inquiries on the same lines as that arranged by the British Section "so that the European Committee as a whole may be able to speak with an authority which will induce the governments concerned to take proper action." It was agreed that all possible help should be given to the British Section in the Inquiry. The Report deals with further lines on which the investigation might be carried out, with work done for the protection of the quail, with the destruction of birds by waste oil at sea and the transport of birds. Altogether it is full of interest for the student of ornithology and well worth careful and thoughtful consideration.

**Quest for the Griffon.** By ROBERT ATKINSON. Heinemann. 1938. Price 7s. 6d. In *Quest for the Griffon* the author gives an account of an expedition by himself and two other Cambridge undergraduates to Southern Spain in 1935 in order to photograph the griffon vulture at close quarters. In this quest they were, despite the attention of the Civil Guards, very successful, and the photographs are extremely good. The accompanying text, if containing little new, is fresh and vivacious. We have heard many descriptions of Joppa, the Edinburgh suburb, where the bee-eaters attempted to nest, but on page 116 we find it called "the sober English landscape"! This is a book that can be thoroughly recommended as light and pleasant ornithological reading.

**Wild Birds in Britain.** By SETON GORDON. With 2 plates in colour and 100 illustrations from photographs. London: B. T. Batsford Ltd. Price 8s. 6d. This moderately-priced book should prove of considerable value to those who love our wild birds and wish to know how to identify them.

The book is divided into chapters on: "Birds of the Field and Common, Birds of the Sea-coast and Islands, Mountain Birds," etc., but it is not to be taken that these are by any means serious ecological studies.

The illustrations have been well chosen, but we are sorry to see two rather careless mistakes in titling, viz. Plate 40, a "Brown Owl"—obviously a barn owl, and Plate 40, "Sanderlings"—depicting dunlin, with their black bellies, feeding in tidal water. We are glad to see that the author stresses the distinctive characteristics whereby certain similar birds can be most surely identified, and we feel that even more importance might have been attached to this point.

**More Songs of Wild Birds.** By E. M. NICHOLSON and LUDWIG KOCH, with three double-sided gramophone records. H. F. & G. Witherby Ltd. Price 15s.

The authors of *Songs of Wild Birds* unite again to give us another sound-book. This time we are provided with three gramophone records instead of two, and the quality of the reproduction is slightly better. Songs and calls of the following birds are included in this work:—



skylark, curlew, woodlark, tree pipit, redstart, blue tit, willow tit, chiffchaff, mistle thrush, stock dove, heron, nightjar, wood wren, blackcap, garden warbler, little owl, carrion crow, jackdaw, jay, magpie, rook, as well as snatches of song from other birds.

A side of one record is devoted to a composite programme of bird voices commencing with a woodland at dawn in the spring and including such sounds as the hooting of the little owl and the clamour of a rookery. Perhaps the most popular reproduction will be that of the curlew, but most are very good, and all the deeper call notes are accurately reproduced.

The book is little more than a commentary on the records, and in it the authors give us an account of their experiences in trying to obtain material for the records and the many difficulties with which they were faced. E. M. Nicholson gives a brief biographical sketch of every bird featured on the records and there is, as in the previous book, a timed programme from which the records may easily be followed.

A number of photographs illustrate the book.

The authors are to be complimented on advancing further this most important aspect of bird literature ; and it is to be hoped that Mr Koch will succeed in achieving his aim, "to collect in further sound-books the voices of all British field, woodland, marsh and water birds, as an indispensable aid to science and education, and as a source of lasting inspiration to the bird-lover."

## NOTE

### **Recovery of Ringed Puffins in Orkney where Marked.**

—Only 60 of the special clip rings being available for ringing puffins this year, preference was given to re-marking those already bearing rings. No fewer than 28 were so captured. Twenty-three were marked as adults last summer, and two in the summer of 1936, whilst three older rings could not be read due to attrition ; but as they were worn quite bare they would not be those of 1935 but earlier. One of those captured had been marked twice before, for it bore a ring when caught last year the number of which unfortunately was unreadable, only the last figure 4 being left.

They were more plentiful than ever this year on the island, and hundreds were handled but could not be ringed, as the "powers that be" could not see their way to issue any more special clip rings, overlapping being useless against their powerful beaks.

1743 adult puffins have now been marked on this island. Last year 18 out of 220 were re-marks ; in 1936 17 out of 120, and in 1935 9 out of 72 (see *Scot. Nat.*, 1938, p. 84, and 1937, p. 24).—  
H. W. ROBINSON, Lancaster.

## The Scottish Ornithologists' Club

(OFFICIAL SECTION)

### Second General Meeting, Session II.

Miss E. V. Baxter presided at the Second General Meeting, Session II, of the Club, which was held in the Rooms of the Royal Scottish Geographical Society, Edinburgh, on 29th April 1938, at 7.30 P.M. There was an attendance of about fifty persons.

“Notes on an Ornithological Trip to Lapland, Summer 1937.”  
A Paper by J. H. B. Munro, illustrated with slides.

Mr Munro gave an account of a trip to Lapland in company with Mr G. Waterston in June 1937. The trip was undertaken in order to gain a rough idea of localities which were good for birds and which would repay a visit at a later date, as it was impossible to gain any real intensive knowledge of the resident species in each district visited during the course of a three weeks' holiday.

Details were given of species encountered during short visits to Bergen, Oslo, Stockholm, Ekolsund, Rovaneimi, Liinahamari, Vaitolahti (on the Fisher Peninsula—the northmost portion of Finland, 400 miles north of the Arctic Circle), Vertaneimi, and Aulanko-Carlberg near Hameenlinna in Central Finland.

A week was spent at Vaitolahti in the tundra zone, and there such species as the mealy and Coue's redpoll, Lapland and snow bunting, shore lark red-throated pipit, grey-headed wagtail, fieldfare and redwing, Norwegian bluethroat, rough-legged buzzard, pintail and long-tailed duck, common and velvet scoter, divers, dotterel, turnstone, red-necked phalarope, arctic and long-tailed skuas, and willow grouse were all found breeding.

On the way south a stop was made at Vertaneimi in the forest zone, and among the more interesting birds seen were Siberian jays, pine grosbeaks, Siberian tits, three-toed woodpeckers and hazel hen. A great grey shrike was seen from the bus on the journey south. Munro described the scenery through Finland to Abo, the ancient capital, as being rather monotonous with dense forests interspersed with lakes. One hundred and forty-three species and sub-species were seen during the entire trip.

---

“How to Compile a Bird Library.” A Paper by the Rev. J. M. McWilliam, with exhibits from his collection.

Mr McWilliam discussed the various problems connected with the formation of public and private ornithological libraries. He urged the desirability of every library being complete on some one branch of the subject.

Amongst other rare books he exhibited the following : Pliny's *Historia Naturalis*, Venice, 1487 ; Merret's *Pinax*, 1667 ; Smith and D'Oyly's *Oriental Ornithology*, 1829, a copy with the rare text ; Martin Barry's *List of the Birds of Arran*, one of the six known copies ; *The History of British Birds*, published by Richard Phillips, 1807, one of two known copies ; *Description and Natural History of S. Polito's Collection of Living Beasts and Birds*, 1803 ; *The Cry of Nature on Behalf of the Persecuted Animals*, by John Oswald, 1791 ; Fairbairn's *Peeps into Natural History, circa 1800* ; *My Tiny Alphabet of Birds and Beasts*, the smallest book on Natural History. He also exhibited a letter sent to him by the " St Kilda Mail-boat " in 1935 by Lord Dumfries. This was one of three letters which were despatched at the same time in July and arrived together on the coast of Norway several months later.

---

" Exhibition of Specimens of Antarctic Birds " collected by Mr Tom Bruce in South Georgia.

Mr Tom Bruce, who had just arrived back in Leith from whaling in South Georgia, exhibited the following birds and commented on their habits : ice petrel, cape petrel, wandering albatross, sooty albatross, black-browed albatross, white-chinned black fulmar, antarctic penguin, sheathbill, South Georgia shag and South Georgia duck. He mentioned that a large number of species were becoming rare as so many were shot for food and had their eggs taken.

---

Mr H. S. Gladstone moved a hearty vote of thanks to the three speakers. The Meeting adjourned at 10 P.M.

### General Notices.

The Committee would welcome any Papers from Members of the Club, and those wishing to contribute same should get in touch with the Hon. Secretary at the earliest opportunity, as the programme for the winter session is being drawn up immediately.

The next Meeting of the Club will be held in Glasgow on 4th November, and notices will be sent out in due course.

GEORGE WATERSTON,  
*Hon. Secretary and Treasurer.*

27 INVERLEITH TERRACE,  
EDINBURGH.

# A Vertebrate Fauna of Forth

By LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER

With 16 full-page illustrations and a map of  
the Forth Area. 8vo. 456 pages. 25s. net.

---

EDINBURGH: OLIVER AND BOYD LTD., TWEEDDALE COURT  
LONDON: 98 GREAT RUSSELL STREET, W.C.

---

## THE NATURALIST

A Monthly Illustrated Journal of Natural History for the North of England

Edited by W. H. PEARSALL, D.Sc., F.L.S., and

W. R. GRIST, B.Sc., The University, Leeds.

With the assistance of a Panel of Referees.

*All Communications to be addressed to—*

THE EDITORS, "THE NATURALIST," THE UNIVERSITY, LEEDS

Annual Subscription, 15s. Single Numbers, 1s. 6d. net

---

LONDON: A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.

---

## READ The Irish Naturalists' Journal

The Official Organ of Irish Scientific Societies

The only popular Scientific and Archæological periodical published  
in Ireland.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.

Issued Quarterly.

Annual Subscription, 6s. post free. Single Copies, 1s. 6d. each.

*All Communications to be addressed to—*

W. M. CRAWFORD, F.R.E.S., F.Z.S., Orissa, Marlborough Park South, Belfast

---

## The North Western Naturalist

A Scientific and Educational Journal for Lancashire, Cheshire, Shropshire,  
Stafford, Derbyshire, North Wales, Cumberland, Westmorland, the  
Isle of Man and the North West

EDITED BY A. A. DALLMAN, F.C.S.

Published Quarterly. Annual Subscription, 7s. 6d. (post free). Single Copies, 2s.

All Articles and Communications intended for Publication, and all Books, etc., for  
Review, should be sent to The Editor, A. A. DALLMAN, 12 Tickhill Road, Doncaster.

Subscriptions and Advertisements should be addressed to the Publishers, T. BUNCLE  
& Co., Market Place, Arbroath, Angus.

# CONTENTS

	PAGE
The Antler Moth on Scottish Hill-Pastures— <i>A. E. Cameron</i> . . . . .	125
The Aquatic Coleoptera of Ross and Cromarty (East and West Ross), including an <i>Octhebius</i> new to Britain— <i>Frank Balfour-Browne</i> . . . . .	129
Bird Notes from Kinloch Rannoch— <i>Ritchie Seath</i> . . . . .	135
Notes on the Birds of Coll— <i>H. MacDougall</i> . . . . .	139
Natural History Notes from Certain Scottish Islands—North Rona, The Flannan Isles, Handa Island— <i>Robert Atkinson</i> . . . . .	145
Book Notices . . . . .	148
The Scottish Ornithologists' Club . . . . .	151

## Notes:

Late Nesting of Terns in Forth, 1938—*Ritchie Seath*, 127; Note on Some Summer Birds of Selkirkshire—*P. F. Holmes*, 128; White-fronted Goose near Glasgow—*James Bartholomew*, 128; Oystercatcher breeding in Tweed—*Evelyn V. Baxter and Leonora Jeffrey Rintoul*, 138; Goat Moth in Caithness: a correction—*A. R. Waterston*, 144; Garganey in Orkney—*D. I. Molteno*, 147; Recovery of Ringed Puffins in Orkney where marked—*H. W. Robinson*, 150.

---

## PUBLISHERS' NOTE.

The Annual Subscription for 1938, payable in advance, 12s. 6d. post free, should be addressed to the Publishers, Oliver and Boyd Ltd., Tweeddale Court, Edinburgh

---

## COVERS FOR BINDING "THE SCOTTISH NATURALIST."

Special Cloth Cases for Binding the 1937 Volume can be supplied at 1s. 6d. each (by post 1s. 9d.), by Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

75.47

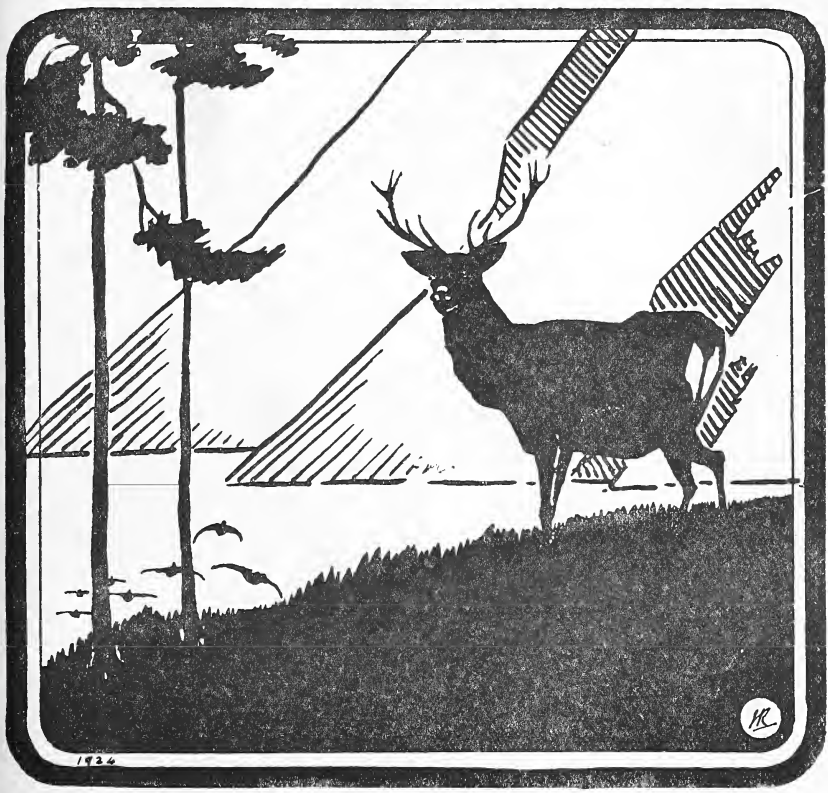
SMITHSONIAN INSTITUTION  
NOV 21 1938  
NATIONAL MUSEUM

# The Scottish Naturalist



No. 234]

1938 [NOVEMBER-DECEMBER



EDINBURGH: OLIVER & BOYD, TWEEDDALE COURT  
LONDON: GURNEY & JACKSON, 98 GREAT RUSSELL STREET

*Price 2s. 3d. Annual Subscription, payable in advance, 12s. 6d. post free*



# The Scottish Naturalist

*A Magazine devoted to Zoology*

With which is incorporated

“The Annals of Scottish Natural History”

EDITED BY

A. C. STEPHEN, D.Sc., F.R.S.E.

*Keeper, Natural History Department, Royal Scottish Museum.*

AND

PERCY H. GRIMSHAW, I.S.O., F.R.S.E., F.R.E.S.

*Formerly Keeper, Natural History Department, Royal Scottish Museum.*

ASSISTED BY

PROFESSOR JAMES RITCHIE, M.A., D.Sc.,  
F.R.S.E.

EVELYN V. BAXTER, F.Z.S., H.M.B.O.U.

LEONORA J. RINTOUL, F.Z.S., H.M.B.O.U.

H. S. GLADSTONE, M.A., F.R.S.E., F.Z.S.

C. H. O'DONOGHUE, D.Sc., F.R.S.E.

ANDERSON FERGUSSON, F.R.E.S.

A. R. WATERSTON, B.Sc.

All Articles and Communications intended for publication, and all Books, etc., for notice, should be sent to THE EDITORS, Royal Scottish Museum, Edinburgh.

Subscriptions and Advertisements should be addressed to the Publishers, MESSRS OLIVER AND BOYD LTD., Tweeddale Court, Edinburgh.

Authors of General Articles will receive 25 Reprints (in covers) of their Contributions gratis. Additional Copies, in covers, may be had from the Printers, at the ordinary prices ruling, provided such orders accompany the Manuscript.

---

---

## EVERY NATURALIST SHOULD READ

The following major articles which have appeared in recent numbers of *The Scottish Naturalist*:—

Scottish Insect Immigration Records.

Notes on Highland Diptera. (Illustrated.)

Ferrets and Polecats.

Notes on Whales stranded on the Scottish Coast. (Illustrated.)

The Natural History of South Rona. (Illustrated.)

The Occurrence of *Gammarus* in Scottish Waters.

Notes from Gairloch in Wester Ross.

Scottish Sand-eels.

Further Notes on the Parasites of the Magpie Moth.

Land Planarians of the British Isles.

Lesser Redpoll in Midlothian.

Isle of May Bird Observatory Report.

The Eider in Sutherland and Shetland.

Notes on the Birds of Loch and Forest. (Illustrated.)

Wild and Domestic Cat compared. (Illustrated.)

Kingfishers breeding in Juvenile Plumage.

As well as numerous shorter notices of interesting events in the Wild Life of Scotland.

# The Scottish Naturalist

No. 234]

1938 [NOVEMBER-DECEMBER

## THE MACROLEPIDOPTERA OF THE PARISH OF BARRA.

By J. L. CAMPBELL, M.A., Northbay, Barra.

THE following list of records is based largely upon my own observations for the periods 1st June to 11th October 1936 and 24th April to 28th July 1937, but it also incorporates records of the Edinburgh University Biological Society made during their visits to the island from 1st to 14th July 1935<sup>(2)</sup> and in July 1936, and a number of records made by A. R. Waterston, B.Sc., in August 1936 and June 1937, R. B. Freeman in July 1936 and July 1937, and by Dr J. Heslop Harrison in 1937<sup>(3)</sup>. I am indebted to Mr Waterston for assistance in the identification of a number of the species.

### TOPOGRAPHY AND VEGETATION.

The topography and vegetation of Barra and its satellite islands have already been described<sup>(2)</sup>. It is enough to say that Barra is rocky and mountainous (highest hill 1200 feet), the soil on the hills and east side of the island being peaty, while on the west, between the headland of Scurrival and Ben Tangaval, are areas of sandy pasture or "machair." There is a number of streams and lochs in the hills, and along the banks of these streams are numerous sallows, aspen, a few birches, and brambles, which support a considerable proportion of the lepidoptera.

There are three small plantations in the island; one of pines at Ardmhór; one at Northbay, the biggest, containing poplar, rowan, ash, sycamore, alder and chestnut; and one at Brevig containing mostly sycamore and ash.

The adjacent small islands are devoid of planted trees and some, like Hellisay, Fuiay and Flodday, consist only of moorland and rough pasture, while others like Sandray and Fuday are more predominantly machair. In Pabbay and Mingulay the machair is on the east and the rocky soil on the west. Some of these small islands appear better collecting grounds than the mainland of Barra.

#### AREA WORKED \* AND METHODS OF COLLECTION.

For the purposes of these records, the name " Barra " applies to the Civil Parish of Barra including all the small islands from Fiaray to Barra Head. The area worked most consistently was: the great part of the area between Ben Eoligarry in the north, and a line from Ben Cliat to Loch na h-Ob; the small islands of Fuiay, Flodday, Hellisay, Garbh-Lingeidh and the Black Islands; Northbay plantation, the machair at Allasdale, Borge and Traigh Hamara; the area around Loch na Doirling. Single visits have been made to Leideag, Brevig plantation, and the Island of Pabbay.

#### METHODS OF COLLECTING.

About half (69 species out of 131) of the macrolepidoptera of Barra are noctuids, and these were mostly collected on sallow blossoms in April and May; by sugaring in the plantations at Northbay and Brevig and on fence posts at Suidheachan, Vaslain, Loch an Dùin, Loch an Ail, Cuier and Borge, from May to August, besides which the fence posts around my own house were sugared regularly throughout the summer; at blossoms of stock in my garden in June and July, and of elder at Cnoc a' Chonaisg, Northbay, during the same months; at ragwort blossoms at Vaslain, Northbay, Allasdale and Traigh Hamara from July to September. It was very noticeable that the moths did not come readily to sugar while the sallows or the ragwort were in bloom. The sugaring mixture used consisted of treacle, beer and whisky.

\* See map of Barra in *Proc. Roy. Phys. Soc. Edinb.*, 1936, vol. xxii., p. 241.

A number of hibernated noctuid larvæ, e.g. *N. brunnea*, *T. ianthina*, *T. comes*, found feeding at night on sallow in May, were successfully reared. A large proportion of the geometers were netted at the Northbay plantation.

In addition to sugar and flowers, car head-lamps were used on the machair with success. A light-trap was also tried occasionally, but met with small success.

Visits were frequently paid to the moorlands, stream-valleys and small islands to collect the diurnal species.

#### GAELIC NAMES.

There do not appear to be distinctive Gaelic names in use for the different species. A butterfly in Barra is called *dealan-dé*, apparently originally meaning "God's fire." \* Different types may be described as *dealan-dé donn*, *gorm*, *geal*, *buidhe*, *dearg*, etc., "brown, blue, white, yellow, red butterfly." The only species having a definite name in Gaelic is the false clothes-moth (*Borkhausenia pseudo-spretella* Stn.) called *leómhann*. The hairy caterpillar of *Macrothylacia rubi* is well known and called *bratag*.

#### ABBREVIATIONS.

A.R.W. = A. R. Waterston.

R.B.F. = R. B. Freeman.

E.U.B.S. = Edinburgh University Biological Society, 1936 expedition.

J.L.C. = J. L. Campbell. [Unless otherwise stated, the records are my own.]

#### RHOPALOCERA.

*Pieris brassicæ* (L.) (Large White). Common from June to September 1936; possibly some immigrants, but a living pupa found on a house wall in January 1937 emerged on 1st June 1937. The larvæ of this species do a good deal of damage to cabbages in Barra.

*Pieris rapæ* (L.) (Small White). One in Barra, 1937<sup>(3)</sup>.

*Pieris napi* (L.) (Green-veined White). Two in August 1936 at Northbay; one near Loch an Dùin on 6/6/37; two at same spot on 21/6/37. One in 1937<sup>(3)</sup>.

*Colias croceus* (Fourc.) (Clouded Yellow). A single specimen was seen on Ben Scurrival on 5/9/33, and reported in the *Field* of 14/10/33. In September 1936 this butterfly turned up in Barra in large numbers<sup>(1)</sup>. All the specimens, which were mostly males in very

\* MacBain, *Etymological Dictionary*,

- good condition, were seen or taken on the machair near Allasdale between 15/9/36 and 28/9/36. The butterfly was also seen at Borve and Cuier but never on the east side of the island, always on or near the machair, where it made a splendid spectacle.
- Aglaia urticae* (L.) (Small Tortoise-shell). Common and apparently double-brooded (June and September); specimens in hibernation turn up from time to time. Seen in February 1936 and April 1937.
- Nymphalis io* (L.) (Peacock). The larva was recorded in 1935<sup>(2)</sup>; an adult was seen in 1937<sup>(3)</sup>.
- Vanessa cardui* (L.) (Painted Lady). A few adults reached Barra in June 1936; larvæ were found in fair numbers on thistles at Northbay and Allasdale at the end of July, and some specimens reared. They emerged at the end of August and beginning of September, when the butterfly was often seen. No records for 1937, except a pupa at Castlebay on 3/7/37.
- Vanessa atalanta* (L.) (Red Admiral). Autumn immigrant, usually appearing in September.
- Argynnis aglaia* (L.) (Dark Green Fritillary). Common in many places including Hellisay, Pabbay and Sandray (R.B.F.), from June to August; both sexes are darker and have a richer ground colour than the mainland type<sup>(2)</sup>.
- Eumenis semele* (L.) (Grayling). Near Loch na h-Ob in 1935<sup>(2)</sup> and by R.B.F. and J.L.C. in 1936. One specimen found on Flodday (J.L.C. 16/7/37), on Sandray (R.B.F.). Description of the type<sup>(2)</sup>.
- Maniola jurtina* (L.) (Meadow Brown). Common, June to August. The colouring is much brighter than that of southern specimens<sup>(2)</sup>.
- Cænonympha tullia* (Müll.) var. *scotica* (Stdgr.) (Large Heath). Mingulay<sup>(3)</sup>.
- Polyommatus icarus* (Rott.) (Common Blue). Abundant, June to August, all over the islands, particularly on machair and sand hills. A fine series was taken on Pabbay on 19/6/37. Most of the males are large and brilliantly coloured. Both sexes have the spots and lunules on the under side of the wings large and brightly coloured in most cases<sup>(2)</sup>.

## HETEROCERA.

### SPHINGIDÆ.

- Acherontia atropos* (L.) (Death's Head Hawk-Moth). One from Barra, 2/9/20, collected by W. L. Macgillivray, now in the possession of the Royal Scottish Museum, Edinburgh.

### NOTODONTIDÆ.

- Dicranura vinula* (L.) (Puss Moth). This species is quite unusually common (in relation to its food-plant). Hardly a sallow bush is without its larvæ in June and July, and these seem to be fairly free from parasites. The moth is sometimes seen in April (one

found 20/4/36) and May, *e.g.* sitting on telegraph posts, but is never so easy to find as the larvæ. The females are often very dark.

*Pygæra pigra* (Hufn.) (Small Chocolate-tip). Larvæ on willow, on Sandray (R.B.F., August 1936) and on Flodday (J.L.C. and R.B.F., July 1937) and near Loch an Ail (R.B.F.). Some of the latter pupated in August and emerged in January and February in captivity.

## LASIOCAMPIDÆ.

*Lasiocampa quercus* (L.) var. *calluna* (Palmer) (Oak Eggar). Larvæ near Northbay, 1935<sup>(2)</sup>; at Leideag, small and about to hibernate, 4/10/36; on Hellisay (8/5/37), Garbh-Lingeidh (15/5/36), Fuiay (22/5/37), Flodday (19/7/37) and Ben Erival (May 1936). They are easiest to find when just out of hibernation and before the willow leaves have grown to any size. The adult males can sometimes be seen flying at a great pace on warm days in July.

*Macrothylacia rubi* (L.) (Fox Moth). Larvæ frequent on moors, August and September; imagines in May.

## SATURNIIDÆ.

*Saturnia pavonia* (L.) (Emperor). One larva near Northbay, July 1935<sup>(2)</sup> and another by E.U.B.S. in 1936; two larvæ on Flodday (16/7/37); 4 on Sandray 1935 (R.B.F.).

## ARCTIIDÆ.

*Spilosoma menthastri* (Esp.) (White Ermine). One specimen, attracted by car head-lamps, Borve machair, 21/6/37.

*Phragmatobia fuliginosa* (L.) (Ruby Tiger). One larva beaten from ragwort, near Cuier, September 1936.

*Parasemia plantaginis* (L.) (Wood Tiger). Not uncommon on Ben Erival in June. J.L.C., and E.U.B.S. Two near Loch na Doirling, 21/6/37, A.R.W.

*Arctia caia* (L.) (Tiger Moth). Four recorded in 1935<sup>(2)</sup>; small larvæ abundant on willow in October 1936, and after hibernation on nearly everything in May 1937; a number reared, and the moth often seen wild, in June and July 1937.

## NOCTUIDÆ.

*Acronycta menyanthidis* (View.) (Light Knotgrass). Specimens reared from larvæ found on Hellisay on 28/8/36, one which had the outer margin of the fore-wings nearly entirely black, and the whole inner portion a blurred grey, emerged 23/5/37, others emerged on 24/5/37, 29/5/37 and 1/6/37. In addition three specimens were found on fence posts near Loch an Dùin on 27/5/37, and another on 6/6/37.

*Acronycta rumicis* (L.) (Knotgrass). One taken at sugar in Brevig wood, 21/6/37. Two larvæ Flodday, July 1937 (R.B.F.).



- Agrotis tritici* (L.) (White-line Dart). Abundant on ragwort blossoms at night during August.
- A. ypsilon* (Rott.) (Dark Swordgrass). Worn specimens June 1936 at sugar in Northbay plantation; fresh specimens on ragwort at Vaslain at end of September 1936, and in Northbay plantation, 8/10/36.
- A. exclamationis* (L.) (Heart-and-Dart). Fairly common at sugar, Northbay wood, June and July 1936; at sugar at Cuier and Borve, June and July 1937.
- A. strigula* Thnbg. = *porphyrea* (Schiff.) (True Lover's Knot). One specimen Northbay plantation, 1935 (?); one in my garden, 1/7/37.
- A. præcox* (L.) (Portland Moth). Seven specimens found on ragwort on the sandhills between Vaslain and Ben Scurrival in August and September 1936.
- A. saucia* (Hbn.) (Pearly Underwing). One at sugar in Northbay plantation, August 1936, and one on ragwort at Vaslain, 20/9/37.
- A. lucernea* (L.) (Northern Rustic). One entered my house, 20/6/37; another was seen in Suidheachan House (J.L.C., and R.B.F.), 8/7/37; one taken at Northbay by E.U.B.S., July 1936.
- A. agathina* (Dup.) (Heath Rustic). One on ragwort, August 1936.
- Noctua glareosa* (Esp.) (Autumnal Rustic). One reared, 1937.
- N. castanea* (Esp.) (Grey Rustic). One (grey form), Northbay plantation, July 1936; one (red form) reared in 1937.
- N. c-nigrum* (L.) (Setaceous Hebrew Character). Northbay plantation, at sugar, July 1936; Brevig plantation, 21/6/37.; Borve machair, 7/7/37.
- N. brunnea* (Schiff.) (Purple Clay). Northbay plantation, E.U.B.S. in 1935; J.L.C. in July 1936; reared from hibernated larvæ found on sallow in May 1937, emerged 13/6/37, 14/6/37.
- N. primula* (Esp.) (Ingrailed Clay). Northbay plantation, July 1936; Cuier, at sugar, July 1937.
- N. rubi* (Hbn.) (Small Square-spot). Northbay plantation, July 1936; Cuier, July 1937.
- N. sobrina* (Bsd.) (Cousin German). Several specimens from various localities around Northbay, 1937, none from the machair, R.B.F.
- N. xanthographa* (Schiff.) (Square-spot Rustic). Abundant at sugar and ragwort, July and August.
- N. plecta* (L.) (Flame Shoulder). Common, double brooded, June and September; sugar and ragwort.
- Axylia putris* (L.) (Flame). One, 1936; one at sugar near house, 14/6/37.
- Triphæna comes* (Hbn.) (Lesser Yellow Underwing). Four on ragwort near Vaslain during August 1936; three reared from hibernated larvæ found on sallow, May 1937. Six are var. *curtisii* Newm.
- Triphæna pronuba* (L.) (Large Yellow Underwing). Abundant, July and August. Very variable. A specimen with lemon-coloured hind wings was taken in 1936.

- T. ianthina* (Schiff.) (Lesser Broad Border). One on ragwort at Vaslain, 16/8/36; four reared from hibernated larvæ found on sallow in May 1937, one emerged 23/6/37, one 27/6/37, one 8/7/37.
- Mamestra oleracea* (L.) (Bright-line Brown-Eye). Common at sugar in June. One emerged from pupa found under sallow bush at Leideag 4/10/36, on 10/6/37.
- M. thalassina* (Rott.) (Pale-shouldered Brocade). Common at sugar in June.
- M. pisi* (L.) (Broom Moth). Two at sugar near Loch an Dùin, 8/6/37; two at sugar on Borve machair, 21/6/37. The larva is sometimes seen on sallow and heather in August.
- M. glauca* (Hbn.) (Glaucous Shears). Two on sallow blossoms near Ardveinish, May 1937.
- M. dentina* (Schiff.) (The Shears). One Castlebay, June 1936; common around Northbay, on sallow blossoms and at sugar, May and June 1937; taken in the light-trap.
- Dianthæcia cucubali* (Fuesl.) (The Campion). Two near Northbay in June 1936; one on sugar near Borve, 30/6/37; one on sugar near my house, 7/7/37. On Mingulay<sup>(3)</sup>
- Tholera cespitis* (F.) (Hedge Rustic). One on ragwort at Vaslain, August 1936.
- Ceraapteryx graminis* (L.) (Antler). Abundant on ragwort near Allasdale, 6/8/36; near Northbay, July 1935<sup>(2)</sup>; one July 1937.
- Eumichtis adusta* (L.) (Dark Brocade). Abundant at sugar in June. [A.R.W. informs me that the *Diloba cæruleocephala* recorded<sup>(2)</sup> is an error for *Abrostola tripartita* q.v.]
- Luperina testacea* (Hbn.) (Flounced Rustic). On ragwort near Vaslain, August 1936.
- Celena haworthii* (Curt.) (Haworth's Minor). On Ben Erival, August 1936; Allasdale, 19/9/36; July 1937.
- Apamea obscura* (Haw.) (Dusky Brocade). At sugar in Northbay wood, July 1936, and also near Borve.
- A. basilinea* (F.) (Rustic Shoulder Knot). At sugar at Borve, 21/6/37; Northbay, 23/6/37.
- A. secalis* (L.) (Common Rustic). Abundant on ragwort (by day as well as night) at Vaslain and Allasdale, August 1936.
- Miana fasciuncula* (Haw.) (Middle-barred Minor). Common at sugar in June and July.
- M. bicoloria* (Vill.) (Cloaked Minor). "Not uncommon . . . on Mingulay," in 1937<sup>(3)</sup>.
- Xylophasia rurea* (F.) (Clouded-bordered Brindle). At sugar at Northbay, July 1936; Borve, 7/7/37. Both typical form and var. *alopecurus* Esp. occur in about equal proportions.
- X. lithoxylea* (F.) (Light Arches). One specimen at sugar in Northbay wood, June 1936.
- X. monoglypha* (Hufn.) (Dark Arches). Abundant from June to September. Probably the commonest moth on the island.

- Aporophyla lutulenta* (Bkh.) (Deep-brown Dart). One at sugar near my house in middle of August 1936 (var. *seidi* Dup.). Two others on ragwort near Vaslain, August 1936, one var. *seidi* Dup., the other var. *lüneburgensis* Frr.
- Euplexia lucipara* (L.) (Small Angle-shades). Common on sugar in June and July.
- Phlogophora meticulosa* (L.) (Angle-shades). Double-brooded, June and September; common on sugar and ragwort.
- Nenia typica* (L.) (Gothic). At sugar and on ragwort, Northbay and Vaslain, July and August 1936; at Borve, 7/7/37.
- Gortyna leucostigma* (Hbn.) (Crescent). On ragwort at Vaslain, 16/8/37; one specimen var. *fibrosa* Hbn.
- Hydræcia lucens* (Freyer) (Ear Moth). Abundant on ragwort in August and early September. Three varieties occur—(a) white reniform spot and brown background, (b) dark reddish reniform spot and dark brown background, (c) reddish reniform spot and brown background.
- Mr Tams has kindly examined the whole series, and refers them all to this species.
- H. micacea* (Esp.) (Rosy Rustic). Abundant on ragwort in August and September.
- H. petasitis* (Dhl.) (Butterbur). One on ragwort, August 1936, A.R.W.
- Leucania pallens* (L.) (Common Wainscot). Northbay, July 1936; at sugar at Vaslain, 11/7/37; seen Cnoc a' Chonaisg, 14/7/37.
- L. impura* (Hbn.) (Smoky Wainscot). At sugar near Loch an Ail, June and July 1937.
- Stilbia anomala* (Haw.) (Anomalous). One taken by A.R.W. near Ardmhór, August 1936.
- Athetis taraxaci* (Hbn.) (The Rustic). In car head-lights at Borve, 21/6/37.
- A. clavipalpis* (Scop.) (Pale Mottled Willow). Vaslain and Allasdale, common on ragwort August and September; at Vaslain, July 1935 (?).
- Amphipyra tragopogonis* (L.) (Mouse). Abundant at sugar and ragwort, July to September.
- Pachnobia rubricosa* (Esp.) (Red Chestnut). Abundant at willow blossoms in April and May.
- Taniocampa incerta* (Hufn.) (Clouded Drab). One on willow blossom, April 1938.
- Amathes lota* (L.) (Red-line Quaker). Common on ragwort at Vaslain, September 1936. Darker and more richly marked than southern specimens.
- A. circellaris* (Hufn.) (The Brick). On willow near Vaslain, 23/9/36 and 10/10/36.
- Xanthia fulvago* (Esp.) (The Sallow). One on ragwort near Vaslain, 16/8/36.
- Calocampa vetusta* (Hbn.) (Red Swordgrass). One on ragwort at Vaslain, 17/9/36, and another on 23/9/36. One on willow blossom, April 1938.

- Cucullia umbratica* (L.) (The Shark). Specimens were taken by A.R.W. and R.B.F., one each, at Vaslain in August 1936. In 1937 it was more common: on sallow blossom at Northbay, 17/5/37; on telegraph pole at Loch an Dùin, 2/6/37; on fence post at Eoligarry, 3/6/37; at sugar near Loch an Dùin, 5/6/37; at flowers in my garden on 8/6/37 and 29/6/37; at sugar at Borve on 21/6/37 and 30/6/37; near Northbay plantation, 14/6/37, on a stone.
- Plusia chrysitis* (L.) (Burnished Brass). One, Northbay, July 1936; one, Vaslain, 16/8/36; two, Northbay, July 1937.
- P. bractea* (F.) (Gold Spangle). One at Castlebay, found by R.B.F., July 1936.
- P. festucae* (L.) (Gold Spot). One, in good condition, found on the radiator of my car, 23/7/37, near Northbay.
- P. pulchrina* (Haw.) (Beautiful Golden Y). Northbay, July 1936 and 1937.
- P. gamma* (L.) (Silver Y). Worn specimens seen in June 1936; fresh ones abundant in September.
- Ambrosiola tripartita* (Hufn.) (The Spectacle). Caught coming to stock in my garden on 17/6/37 and subsequently. (Recorded as *D. caeruleocephala* in 1935<sup>(2)</sup>.)

## GEOMETRIDÆ.

- Pseudoterpna pruinata* (Hufn.) (Grass Emerald). On machair near Vaslain, 1935<sup>(2)</sup>
- Anaitis plagiata* (L.) (Treble Bar). One in Northbay plantation, 1935<sup>(2)</sup>. Taken and seen occasionally on the moorland in July; near Loch na h-Ob, 17/7/37.
- Lygris testata* (L.) (Chevron). Several specimens on Ben Erival, August 1936.
- Cidaria truncata* (Hufn.) (Common Marbled Carpet). One recorded in 1935<sup>(2)</sup>. Not uncommon on moorland in July.
- C. concinnata* (Steph.). A few specimens taken with *C. truncata* on moorland in July 1936 and 1937.
- C. immanata* (Haw.) (Dusky Marbled Carpet). Recorded by R.B.F.
- C. siterata* (Hufn.) (Red-green Carpet). One at Vaslain, 10/10/36.
- C. miata* (L.) (Autumn-green Carpet). One at Vaslain, 4/10/36.
- C. suffumata* (Schiff.) (Water Carpet). One on sallow blossom at Northbay, 3/5/37.
- C. munitata* (Hbn.) (Red Carpet). One on Ben Vaslain, 1935<sup>(2)</sup>; Vaslain, July 1936, J.L.C.
- C. designata* (Hufn.) (Flame Carpet). Northbay plantation, June 1936.
- C. pectinataria* (Knoch.) (Green Carpet). Northbay plantation, June 1936 and 1937.
- C. salicata* (Hbn.) (Striped Twin-spot Carpet). Two specimens on sallow blossom, Northbay, May 1937.
- C. didymata* (L.) (Twin-spot Carpet). Common on machair in July and August.

- C. montanata* (Schiff.) (Silver Ground Carpet). In plantation at Northbay and Ardmhór, 1935<sup>(2)</sup>; not uncommon in Northbay plantation and around Cnoc a' Chonaisg, July 1937.
- C. fluctuata* (L.) (Garden Carpet). One near my house, 28/4/37; others from Northbay plantation, June 1937; fairly common.
- C. alternata* (Müll.) (Common Carpet). Common on machair in July.
- C. ocellata* (L.) (Purple Bar). Northbay plantation in June 1935<sup>(2)</sup>; J.L.C.; 1936 and 1937.
- C. alchemillata* (L.) (Small Rivulet). Two in June 1937.
- C. albulata* (Schiff.) (Grass Rivulet). Common on the machair everywhere in June; also in Northbay and Ardmhór plantations, and on Ben Vaslain<sup>(2)</sup>.
- C. bilineata* (L.) (Yellow Shell). Abundant on the moorland in June and July. Very variable, ranging in colour from generally dark (*atlantica*, Stgr.) to the normal yellow. No particular form predominates.
- C. cærulata* (F.) (May High-Flyer).
- C. lignata* (Hbn.) (Oblique Carpet). One in 1937.
- Eupithecia centaureata* (Schiff.) (Lime Speck Pug). One on Ben Vaslain, 1935<sup>(2)</sup>; one at Vaslain, August 1936, J.L.C.
- E. distinctaria* (H.-Sch.) (Thyme Pug). One in Northbay plantation<sup>(2)</sup>; one in 1936, J.L.C.
- E. nanata* (Hbn.) (Narrow-winged Pug). On Fuiay and Garbh-Lingeidh, 22/5/37.
- Pelurga comitata* (L.) (Dark Spinach). Common on Borge machair, and at Vaslain, July 1937.
- Abraxas grossulariata* (L.) (Magpie). Abundant on moorland in July. The larva feeds here on heather and sallow, often pupating in the crevices of rocks. There is no noticeable tendency towards a dark form. Great numbers of the adults can often be seen dead in the mountain streams, caught by the surface tension. Also on Fuiay and Hellisay (E.U.B.S., 1936).
- Cabera exanthemata* (Scop.) (Common Wave). Common in Northbay plantation during June.
- Opisthograftis luteolata* (L.) (Brimstone). Common in Northbay plantation during June. One reared from a larva found on a rowan tree there emerged 4/6/37.
- Nyssia zonaria* (Schiff.) (Belted Beauty). The larva abounds on the machair in June and July; I have also seen it on Pabbay (and Eriskay and South Uist). The adults are about in April and the beginning of May. Four males taken at a lighted window at Suidheachan House on 21/3/38, at 12 P.M. The wingless females, sitting on fence posts and telegraph poles, are much more in evidence than the males, which are difficult to see in flight against the background of sandy machair. When caught in the net the males sometimes feign death and then resemble the posture of a dead wasp.

*Boarmia repandata* (L.) (Mottled Beauty). One, brown form, from Northbay and one, grey form, from Vaslain 1935<sup>(2)</sup>; several reared from hibernated larvæ found on sallow in Northbay plantation in May 1937, emerged in June; others caught on Cnoc a' Chonaisg the same month, the grey form predominating; Sandray, var. *sodorensium* Weir, R.B.F.

*Gnophos myrtillata* (Thnbg.) (Scotch Annulet). Larvæ on heather in Barra<sup>(3)</sup>.

*Ematurga atomaria* (L.) (Common Heath). Very common on moorlands in May.

*Scodionia fagaria* (Thnbg.) (Grey Scallop Bar). One on Fuday, 22/5/37; two caught in 1936.

#### ZYGÆNIDÆ.

*Zygæna filipendulæ* (L.) (Six-spot Burnet). Widespread, but local and not very common. Found on Ben Erival and Hellisay (July and August 1936); pupæ on Pabbay on 19/6/37; on Flodday on 16/7/37.

[A.R.W. informs me that *Zygæna lonicera* reported from Orosay and Hellisay in 1935<sup>(2)</sup> were erroneously named, and should be referred to the above species.]

#### HEPIALIDÆ.

*Hepialus humuli* (L.) (Ghost Moth). None caught, but an empty pupa case found near Loch na Doirling, 21/6/37; another the same month on the Black Island, A.R.W.

*H. velleda* (Hbn.) (Map-winged Swift). One found on Fuiay by A.R.W. on 15/6/37; another near my house at Northbay in June 1937. One in May 1938, at Northbay.

#### REFERENCES.

- <sup>1</sup> CAMPBELL, J. L. 1936. "Migrant Lepidoptera in Barra, 1936," *Scot. Nat.*, pp. 173-5.
- <sup>2</sup> FORREST, J. E., WATERSTON, A. R., and WATSON, E. V. 1936. "The Natural History of Barra, Outer Hebrides," *Proc. Roy. Phys. Soc. Edinb.*, vol. xxii., 5, pp. 241-96.
- <sup>3</sup> HARRISON, J. W. HESLOP. 1938. "A Contribution to our Knowledge of the Lepidoptera of the Islands of Coll, Canna, Sanday, Rhum, Eigg, Soay and Pabbay (Inner Hebrides), and of Barra, Mingulay, and Berneray (Outer Hebrides)," *Proc. Univ. Durham Phil. Soc.*, vol. xi., 1, pp. 10-23.



*TODARODES SAGITTATUS* (LAM.) IN THE  
FIRTH OF CLYDE.

By RICHARD ELMHIRST, Director of the Millport  
Marine Biological Station.

IN the *Scot. Nat.*, 1937, p. 77, Dr A. C. Stephen recorded a "Recent Invasion of the Squid, *Todarodes sagittatus* (Lam.) on the East Coast of Scotland." This invasion took place in February 1937.

In August 1937 the spawn of a squid of a type not recognised here was trawled in Millport Bay. This spawn consisted of clusters of gelatinous sheaths; each sheath rather elongate pear-shaped, containing 12 to 14 eggs. The sheaths are 30 mm. long by 8 mm. broad, very like those of *Alloteuthis subulata* Lam. as figured by Grimpe (*Wissenschaftliche Meeresuntersuchungen*, vol. xvi., p. 63, 1925). Young squids, hatched in late August, with short tentacles and round-lobed fins were identified as *T. sagittatus*, although there were no local records for this species.

On 16th July 1938 Mr W. R. Hornby, of Dunoon, reported "several hundreds of a strange type of fish left on the shore of Loch Fyne at Cairndow." He obtained specimens which proved to be *T. sagittatus*. A few days later, 21st July, Mr H. McVean sent in to the Millport Laboratory a tube containing several of the toothed chitinous rings from the suckers of this species found on the hooks of his lines at Strachur. During August several specimens were taken in Millport Bay.

The body lengths of the July specimens examined were 9,  $9\frac{1}{4}$ ,  $9\frac{1}{4}$ ,  $9\frac{1}{2}$ ,  $9\frac{1}{2}$ ,  $9\frac{3}{4}$  inches long. The stomachs of three contained broken-up fish, chiefly if not all herring about  $2\frac{1}{2}$  years old. The gonads appeared to be spent. No spawn was found this year.

ALGÆ STUDIES FROM BOGHALL GLEN  
(MIDLOTHIAN), IV.

## SOIL ALGÆ.

By E. WYLLIE FENTON, M.A., D.Sc.

A PREVIOUS study (Fenton, 1938) showed that the algæ commonly occurring in Boghall Glen were neither likely to survive for long in the darkness of the soil, nor to reach the surface of the soil if washed down to a depth below 0.5 cm. It seemed desirable, however, to discover what algæ occurred in certain of the soils of Boghall Glen at depths of 1, 2, and 3 inches.

Soil samples were removed from five selected sites—A, B, C, D, and E—at depths of: surface to 1 inch, 1 to 2 inches, and 2 to 3 inches. This was done by opening a small trench and removing the soil with sterile knives.

It was first necessary to test our various methods of culturing the soils to produce algæ growth. Soil was placed in petri dishes, large enamelled mugs covered with glass, stand test-tubes plugged with cotton-wool, and half-pint large mouthed milk bottles plugged with cotton-wool. The petri dish method was not a success and was discontinued. The large enamelled mugs were not very successful for algæ, and were also discontinued. Both stand test-tubes and half-pint milk bottles gave good results with algæ. The test-tubes proved rather difficult when it came to abstracting soil with algæ. For such purposes the milk bottle method was the best. The milk bottles were filled up with soil to a third of the height from the base. The test-tubes gave equally good results at either a third or half full of soil. The soil in both cases was kept moist and examined at frequent intervals. For plant growth other than algæ the milk bottle method gave the best results.

Five sites were selected as typical of Boghall soils and terrain for testing the presence of algæ. All soils gave an acid reaction.

*Site A.*—Soil red-brown colour, light and sandy, overlying a rubble of stones a few inches below the surface—acid.

*Vegetation.*—Top canopy of *Pteridium aquilinum* and *Ulex europæus* on slopes ; ground vegetation *Agrostis* spp. and *Festuca ovina*, D\* ; *Hylocomium squarrosum*, v.c. ; *Holcus mollis*, c ; *Galium saxatile*, f ; *Campanula rotundifolia*, o ; *Potentilla Tormentilla*, f ; *Viola canina*, f.

*Algæ.*—*Pleurococcus Nægeli* (Chod.). Moss protonema plentiful to depth of 3 inches.

*Site B.*—Soil : top layer dark brown, rest light yellow changing to a lighter coloured clay, very wet and badly drained.

*Vegetation.*—*Juncus communis*, f ; *Carex* spp., f ; *Hypnum* (several species), f ; *Agrostis* spp., f.c. ; *Festuca ovina*, o ; *Ranunculus repens*, c ; *Lotus corniculatus*, f.c. ; *Potentilla Tormentilla*, f.c. ; *Holcus mollis et lanatus*, f.c. ; *Nardus stricta*, c ; *Cnicus palustris*, f.c. ; *Juncus bufonius*, f.c. ; *Trifolium repens*, t.

*Algæ.*—*Pleurococcus Nægeli* (Chod.) a little. The soil from this area gave the poorest plant growth of all soils. The soil seemed almost devoid of seed and spores. Iron salts were present.

Moss protonema decreasing in quantity to a depth of 3 inches.

*Site C.*—Soil : Shallow peat overlying rubble of stones.

*Vegetation.*—*Calluna vulgaris*, D ; *Vaccinium Myrtillus*, S.D. ; *Deschampsia flexuosa*, f ; *Nardus stricta*, c ; *Festuca ovina*, c ; *Agrostis* spp., c ; Musci.

*Algæ.*—*Pleurococcus Nægeli* (Chod.).

<i>Chlamydomonas</i> spp.	}	Slight traces.
<i>Euglena</i> spp.		
<i>Hormidium</i> spp.		
<i>Ulothrix zonata</i>		

Moss protonema present but gradually decreasing with depth.

*Site D.*—Soil : Peat, several inches deep above rubble with plentiful bracken remains and rhizomes. Wet in winter, surface drying out in summer.

\* D = dominant

f = frequent

v.c. = very common

c = common

o = occasional

f.c. = fairly common

t = trace

S.D. = sub-dominant

*Vegetation.*—*Pteridium aquilinum*, D; *Deschampsia flexuosa*, f.

*Algæ.*—*Pleurococcus Nægелиi* (Chod.); *Hormidium* (Prasiola stage); *Euglena* spp., t.; *Nostoc* spp., t. Moss protonema present to depth of 3 inches.

*Site E.*—Soil: Red-brown colour, sandy, dry, overlying rubble of stones.

*Vegetation.*—*Festuca ovina*, D; *Agrostis vulgaris*, f; *Vaccinium Myrtillus*, f; *Deschampsia flexuosa*, c; *Galium saxatile*, c; *Potentilla Tormentilla*, f.c.; *Hylocomium squarrosum*, f.

*Algæ.*—*Pleurococcus Nægелиi* (Chod.); *Schizochlamys gelatinosa* (trace). Moss protonema present but decreasing in quantity at depth of 3 inches.

Soil from the five sites at the three depths was placed in milk bottles and the soil submersed in water. The mouths of the bottles were plugged with cotton-wool and then placed in the window of the laboratory in a good north light. The following algæ were obtained:—

A. *Pleurococcus Nægелиi* (Chod.); *Mougeotia*, a trace; *Euglena* spp., a trace; *Sphærocystis Schræteri*, a trace; a few strands of *Ulothrix zonata* were also found. Moss protonema developed in quantity. *Pleurococcus* and *Mougeotia* were found in the soil to a depth of 2 inches.

B. *Pleurococcus Nægелиi* (Chod.) and a little *Chlamydomonas* spp., and Moss protonema.

C. *Pleurococcus Nægелиi* (Chod.) and Moss protonema.

D. *Pleurococcus Nægелиi* (Chod.) and a trace of *Ulothrix zonata*, *Hormidium* spp., *Microspora* spp. and *Chlamydomonas* spp. Moss protonema was also present.

E. *Pleurococcus Nægелиi* (Chod.); Moss protonema; and a slight trace of *Mougeotia* spp. Moss protonema developed in these "water cultures" from soil at all depths but algæ—except *Pleurococcus Nægелиi* (Chod.)—were very scarce in soil even at a depth of 2 inches.

#### DISCUSSION.

The chief feature of the algæ found is the universal distribution of *Pleurococcus Nægелиi* (Chod.). This alga is very frequent in nature and is just the type one might expect

to find at or near the surface of any soil. *Schizochlamys gelatinosa* is a chance and solitary record. It is not a common alga in Boghall Glen (Fenton, 1936). This is also true of *Chlamydomonas* spp., but it is recorded by James (1935) and Kapterev (1936). *Hormidium* (Prasiola) occurred plentifully at one location. This is easily explained as it is one of the earliest colonists on bare stone rocks and peaty soil in the hill slopes near Site D. *Hormidium* is also recorded by James (1935). *Euglena* spp. though only recorded at Site C occurs elsewhere. Its presence will be determined largely by water supply. *Euglena* spp. is recorded by Petersen (1935). The presence of a little *Microspora* spp. and *Mougeotia* spp. is not of general significance.

With the exception of Site B, all the other sites investigated tend to dry out very badly in summer or during spells of dry weather. This may to some extent explain the very poor algal flora found in the soil. It may be that a richer flora may occasionally be found, but the results clearly indicate that the algal flora of the streams and ditches is not derived from the general terrain. Conversely, the flora of streams, ditches and pools does not occur in typical Boghall Glen soils.

The most striking feature of the investigation is the poverty of algæ found in the soils. This is, as previously stated, probably explained by the fact that many (if not most) soils in the Pentland Hills and the Southern Uplands of Scotland are very liable to summer drought. This is particularly true of the southern slopes of Boghall Glen. Within recent years there have been exceptionally dry spells in spring and summer, so that the desiccation has probably affected the surface layers of the soil. It certainly has seriously reduced the algæ of the streams and ditches both in amount and species. In very wet years it was not unusual to find quite a number of algæ on the soil surface, and spores and fragments must have been washed down into the first few inches of the surface soil. These algæ were carried on to the soil surface by flood water from the streams and ditches. Only traces of a very few of these algæ have been found in the samples examined. Again, as

the soil samples were gathered in late summer and early autumn and cultured during the winter and spring in the laboratory, it was possible that if the same soil were gathered in spring and cultured during the summer and autumn, the flora might have been much richer. This was not verified by later experiments. On the other hand, some algæ were recorded by Bristol (1919-1920) for their retention of vitality in old stored soil. Intermittent moistening and desiccation such as may occur in nature may, however, prove fatal. The moisture relation of terrestrial algæ is a very complex problem (Fritsch, 1922).

Moss protonema, although not an alga, shows certain similarities. As many investigations of soil algæ have included moss protonema in their work, it is included in this publication. Moss protonema was extraordinarily plentiful. So plentiful was the growth that it suggested several years' accumulation of spores. This was true of all the soils. It is evident from the growth of protonema and moss that the spores of moss are capable of surviving for a long time in darkness buried in the soil. This is quite in keeping with the results of Bristol (1916), except that the soils and general conditions of Boghall Glen (Fenton, 1933) are not comparable with these of average farmlands (Bristol and Roach, 1927) (James, 1935), but in places (during winter) may approach to a slight extent conditions described by Kapterev (1936). The vigorous growth of moss protonema explains how bare soil in many of these rough grazings tends in the early stages to get a covering of moss. Where this covering occurs early it is a matter of great importance for soil fixation and for preventing the inevitable soil erosion. Where such a covering fails to materialise, erosion of surface soil may be very evident (Fenton, 1937) B.

It may be that with a profuse growth of moss protonema most algæ find it difficult to compete with such a strong growth. This may partially explain the poverty of algæ occurring below soil level. Previous works showed that one alga may suppress another (Fenton, 1936). This is a problem which will require further investigation. The mosses identified were *Hylocomium squarrosum* (very common in Boghall Glen and heathy grasslands), *Webera*



*nutans* and *Campylopus flexuosus*, frequent colonisers of bare ground, especially peat (Fenton, 1937); later, *Dicranium scoparium* and *Sphagnum acutifolium* developed.

It would seem from the results obtained that drought has a very destructive action on the survival of algæ, particularly in view of the algæ surviving in frozen soils as recently described by Kapterev (1936). Another noticeable feature has been the absence of algæ from soils or water containing iron salts. This is in agreement with results obtained by Esmarch (1914). The results show a much more restricted flora than that obtained by Moore and Carrier (1919) and Moore and Carter (1926), in America, but there are significant resemblances. The scarcity of life in Boghall Glen soil is also in accordance with the results of Esmarch for bog soil (1914).

The algal flora developed for soils immersed in water is practically identical with that obtained from moistened soil. The only difference was traces of *Nostoc* spp. in moistened soil and not in soil immersed in water, and *Sphærocystis Schræteri* in the latter but not in the former. It was thought that perhaps a richer flora might develop by providing an adequate supply of water. The water might tend to encourage filamentous algæ—if present—to develop. The results show that beyond very slight traces of *Ulothrix zonata*, *Hormidium* spp., *Sphærocystis Schræteri*, *Mougeotia* spp., *Chlamydomonas* spp., *Euglena* spp., and *Microspora* spp., only *Pleurococcus Nægeli* (Chod.) and Moss protonema are plentiful. There was also a decrease of these algæ present in traces to be found at the lower depths of soil, especially at 3 inches. This points to accidental superficial contamination with these algæ. It is quite evident from the absence in any quantity of filamentous algæ that the soils of Boghall Glen are not the source or origin of the algal flora of the ditches and streams.

#### SUMMARY.

*Pleurococcus Nægeli* (Chod.) is of universal occurrence. Moss protonema was the chief growth and suggests a high concentration of moss spores in the soil; even to a depth of 3 inches.

The Mosses—*Hylocomium squarrosum* and *Webera nutans* and *Campylopus flexuosus* were identified. Later, *Dicranum scoparium* and *Sphagnum acutifolium* occurred.

Other algæ found were *Hormidium* (Prasiola) in two localities, a little *Chlamydomonas* spp. and *Euglena* spp. in one locality, and traces of *Ulothrix zonata*, *Nostoc* and *Schizochlamys gelatinosa*, *Microspora* spp. and a little *Mougeotia* spp.

The soil of Site B was most deficient not only in algæ growth but in Moss protonema and phanerogams. The most striking feature of the present work is the very sparse algal flora of the soils investigated compared with the flora of streams and ditches. It would appear that the frequent drying out of the surface layers is the chief cause of this scarcity of algæ. Very few algæ were found in soils or water containing an appreciable amount of iron salts.

The algal flora obtained by submersing the different soils in water was very similar to that obtained from moistened soil. *Nostoc* spp. occurred in moist soil but not in the water cultures, while *Sphærocystis Schræteri* occurred in water culture but not in moist soil.

The algal flora of the ditches and streams of Boghall is not derived from the soil.

#### REFERENCES.

1914. ESMARCH, F., "Untersuchungen über die Verbreitung der Cyanophyceen auf und in verschiedenen Boden," *Hedwigia*, 55.
1916. BRISTOL, B. M., "On the Remarkable Retention and Vitality of Moss Protonema," *New Phytol.*, vol. xv., No. 7.
1919. MOORE, G. T., and CARRIER, J. L., "A Subterranean Algæ Flora," *Rep. Mo. bot. Gdn.*, 6, pp. 281-303.
1919. BRISTOL, B. M., "On the Retention and Vitality by Algæ from Old Stored Soils," *New Phytol.*, vol. xviii., Nos. 3 and 4.
1920. BRISTOL, B. M., "On the Alga Flora of some Desiccated English Soils," *Ann. appl. Biol.*, vol. xxxiv., No. 1.
1922. FRITSCH, F. E., "The Moisture Relations of Terrestrial Algæ I," *Ann. bot. Lond.*, vol. xxxvi., p. 1 *et seq.*
1926. MOORE, E. G. T., and CARTER, N., "Further Studies on the Subterranean Algal Flora of New Missouri Bot. Garden," *Rep. Mo. bot. Gdn.*, 13, pp. 101-140.
1927. BRISTOL, B. M., and ROACH, W. A., "On the Algæ of some Normal English Soils," *J. agric. Sci.*, vol. xvii., pp. 563-588.
1933. FENTON, E. WYLLIE, "The Vegetation of an Upland Area (Boghall Glen, Midlothian)," *Scot. geogr. Mag.*, vol. xlix., No. 6.

1935. JAMES, E. J., "An Investigation of the Algal Growth in some Naturally occurring Soils," *Beih. bot. Zbl.*, 53 A, pp. 519-553.
1935. PETERSEN, T. B., "Studies in the Biology and Taxonomy of Soil Algæ," *Dansk. bot. Ark.*, Band 8, No. 9.
1936. FENTON, E. WYLLIE, "The Periodicity and Distribution of Algæ in Boghall Glen (Midlothian)," *Scot. Nat.*, pp. 143-148.
1936. KAPTEREV, P., "Experiments in the Revitalization of Organisms from the Permanently Frozen Subsoil," *C.R. (Doklady) Acad. Sci. U.S.S.R., Moscou*, vol. iii. (xii.), No. 3 (98).
1937. (A) FENTON, E. WYLLIE, "The Use of Certain Mosses in detecting Old Woodland Sites," *Rep. Fourth. Int. Grassland Congress, Aberystwyth*, pp. 159-163.
1937. (B) FENTON, E. WYLLIE, "The Influence of Sheep on the Vegetation of Rough Hill Grazings in Scotland," *J. Ecol.*, vol. xxv., No. 2.
1938. FENTON, E. WYLLIE, "Algæ Studies from Boghall Glen (Midlothian)," III., *Scot. Nat.*, pp. 87-92.

---

## NOTES

**Some Dumfriesshire Aculeata.**—In my garden here in Gretna, which faces the open country, I have a dozen black currant bushes which most years are more or less infected with aphids. These seem a great attraction to aculeates, some of which I have not met with elsewhere in the district. The "honeydew" and not the aphids themselves seems the attraction. Among these visitors are *Pemphredon lugubris* Fab., which is not rare some years in June, males far outnumbering the females. *Cemonus* (*Pemphredon*) *lethifer* Shuck. is rare in June. *Coelocrabro* (*Crabro*) *capitosus* Shuck. odd examples in June and July. *C. (C.) leucostomus* Lin. comes also in June and July and is not rare. It preys on small diptera. *Crossocerus* (*C.*) *palmipes* Lin., almost daily in June and July when weather conditions are favourable. *C. (C.) anxius* Wesm., frequent from June to August. *C. (C.) elongatulus* V. der Lind. rare in June. *Ancistrocerus* (*Odynerus*) *parietum* Lin., sometimes frequent in July. *A. (O.) pictus* Curt. is common from the end of May until the end of July. *Halictus calceatus* Scop. (*cylindricus* Fab.) most frequently in the late summer. *Andrena jacobii* Perk. (*trimmerana* auctt.), occasionally in May and June. *A. coitana* Kirb., once in July. *Megachile centuncularis* Lin., occasionally at the "honeydew"; but more frequently I have watched it cutting circles for its nest from the leaves of my rose bushes, which it does with amazing speed and mechanical precision. *Chrysis ignita* Lin. has visited my bushes once or twice, but is more frequently seen prospecting along sunny walls.—JAS. MURRAY, Gretna.

**Recent Cetacean Strandings in Scotland.** — On 10th September 1938 Station Officer J. Ford, H.M. Coastguard Station, Lossiemouth, reported that a whale had stranded three-quarters of a mile west of Covesea Lighthouse. Examination of the jaw, which was sent to the Royal Scottish Museum, Edinburgh, confirmed previous identification that the animal was a Bottle-nose Whale, *Hyperoodon rostratus* (Müller). It was a male 24 feet 10 inches in length.

A male Common Porpoise, *Phocæna phocæna* (L.), 5 feet in length, was stranded in Brunerican Bay, Southend, Argyll, on 20th September. The lower jaws were sent to the British Museum (Natural History) for confirmation of identification.

On 1st October a whalebone whale, 65 feet in length, was stranded on Start Point, Sanday, Orkney. The position of stranding was inaccessible and no portion of the body has been secured which might help to determine the specific identity of the animal.—F. C. FRASER, London.

**Migrant Lepidoptera in Canna.**—This has been a poor season for lepidoptera. One *Vanessa cardui* (L.) seen near Canna House on 7/8/38; one *Vanessa atalanta* (L.) seen on the cliffs near the south-west end of Canna on 14/8/38. Fresh specimens of *Rhyacia ypsilon* (Rott.) and *Plusia gamma* (L.) fairly common on blossoms of veronica after dark at the end of September and beginning of October.—J. L. CAMPBELL, Isle of Canna.

**Varieties of Bean Geese.**—I was interested to read that a bean goose shot on the 5th January on Loch Leven was of the orange-billed variety (*Scot. Nat.*, 1938, p. 93).

Two shot on the Scottish side of the Solway during the past winter were examined by me. The first belonged to the *arvensis* type, the bill being all yellow except for a narrow black line on the culmen. The second belonged to the *segetum* type, with the bill black with an orange band. This latter used to be the commonest form found in these islands, *arvensis* being very rare. Nowadays *arvensis* is as often found as *segetum*, as first shown by John Berry. The two subspecies are not now recognised as distinct, although the very different colours of their beaks is so marked, with no variations between the two. Many subspecies have been created on far smaller differences than these.—H. W. ROBINSON, Lancaster.

***Sirex (Urocerus) gigas* Lin. in Dumfriesshire.**—The giant horntail seems to be not uncommon in this part of the county this year. In August I had five specimens brought to me by

different people, mostly from the Easttriggs district. They probably came from imported timber, quantities of which are being used there at present. This timber, I am told, came from Latvia. I have a pair in my collection taken near Lockerbie on 2/8/37. Several of the Easttriggs specimens were brought to me as hornets!—JAS. MURRAY, Gretna.

**Magpies in Fife.**—When we wrote our Fauna of Forth in 1935 we stated that the magpie had become very scarce in Fife. Two years later, when the enquiry on the magpie was taking place, we found no reason to alter this statement. This year (1938), however, we are informed that at places in north and west Fife the magpie has increased in numbers and it has bred not uncommonly. It is much to be hoped that it will re-establish itself in the county.—EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL, Largo.

**Two Rare Diptera (Asilidæ) in Perth Mid.**—On 27th June 1936 a few hours were spent collecting on the slopes of Ben Lawers, near Lawers, in glorious sunshine. Among the diptera collected are two species which seem worthy of record. A single ♂ *Neoitamus cyanurus* Loew was hawking flies over birches in company with several *Dioctria ælandica* (L.) of which four were netted. There are few previous records of either species for Scotland. Verrall (*British Flies, Stratiomyidæ*, etc., 1909, p. 684) says for *N. cyanurus*, "at Forres and Spey Bridge." C. Stewart (*Mem. Wern. Soc.*, i., 1811, p. 577) was first to record "*Asilus Ælandicus*" from the neighbourhood of Edinburgh, and nearly a century elapsed before Carter (*Ent. Mo. Mag.*, 1909, p. 65) recorded the capture of a ♀ in a wood at Comrie, and so re-established this species as a Scottish insect. These are apparently the only recorded captures for Scotland.—A. R. WATERSTON, B.Sc., Royal Scottish Museum, Edinburgh.

***Cidaria obstipata* Fab. = *fluviata* Hbn. (Lepidoptera, Geometridæ) in Scotland.**—A female of this small moth has been sent to me for identification by Mr J. Bain, who captured it with several *Phytometra gamma* (L.) at the light of the Lighthouse at Duncansbay Head, Wick, on 13th October 1937. In England *obstipata* has been recorded as far north as Yorks and Lancs, but chiefly from the seaboard counties. This is an immigrant species, and I am not aware of a previous occurrence in Scotland.—A. R. WATERSTON, B.Sc., Royal Scottish Museum, Edinburgh.

## BOOK NOTICES

**Animal Life in Freshwater: A Guide to British Fresh-water Invertebrates.** By HELEN MELANBY, B.Sc., Ph.D. With a Foreword by Professor L. E. S. Eastham, M.A., M.Sc. London: Methuen & Co. Ltd. Pp. viii+296, 211 text-figures. 1938. Price 8s. 6d. net.

This book deals with all types of invertebrates occurring in fresh-water and fills a long-felt gap in our literature on aquatic life. With it the student or amateur should be able to identify a great many of the genera of animals found in ponds and streams. The book is written with a clear style and the numerous outline drawings render easy the task of identifying the animals. A list of references to more technical literature is given at the end of most of the sections. This is eminently a practical book which should have a wide appeal. Our only complaint is of the author's sad disregard of zoological nomenclature and this, coupled with repeated inconsistencies in the spelling of the Latin names, tends to mar what is otherwise a most attractive book.

**Bird Watching Days.** By A. W. P. ROBERTSON and R. D. POWELL, with photographs by the Authors. London: Collins & Co. Price 7s. 6d.

This book is pleasantly written and the photographs with which it is illustrated are attractive and interesting. The authors approach birds principally from a photographic standpoint, and they tell the story of their various adventures, in search of the nests of our less common breeding species, simply and well. They also give many hints which will be of service to other bird photographers. But it is not only photographers who will find much of value; the authors are observant and all through the book one finds delightful little incidents telling of the habits of birds as they have seen them and amusing stories of the various happenings on their journeys. They show, too, how much the bird watcher endures from the vagaries of the weather—a point too often forgotten or ignored. Altogether, this is a book to be recommended to bird lovers.

**The Flora of Westmorland.** By ALBERT WILSON, F.L.S., F.R.Met.Soc. Pp. 413. Arbroath: T. Buncle & Co., Ltd. 1938. Price 25s.

Those who are interested in the distribution of the British Flora will welcome this modern treatise. The author has over sixty years' acquaintance with the flora of the county and is well equipped for his task. Few counties possess such varied natural scenery and appeal to the naturalist, yet it is surprising that this should be the first book to deal exhaustively with the flora. There are valuable chapters on topography, geology, climate and botanical features, which preface the



account of the distribution of the various species. Besides the true flowering plants, the conifers, ferns, horse-tails, mosses, liverworts and lichens are fully listed. A pleasing feature of this book is the wealth of beautiful illustrations. This book should have a wide appeal to naturalists in Britain and should prove a valuable asset to all who visit this delightful county.

**The *Critica Botanica* of Linnæus.** Translated by the late Sir ARTHUR HORT, Bt., M.A. Revised by Miss M. L. GREEN, B.A., F.L.S. With an Introduction by Sir ARTHUR HILL, K.C.M.G., M.A., Sc.D., D.Sc. (Adel.), F.R.S., F.L.S. Pp. xxvii+239. London: Printed for the Ray Society, Bernard Quaritch, Ltd. 1938. Price 12s. 6d.

Botanists owe a deep debt of gratitude to the late Sir Arthur Hort for his masterly translation of this classical thesis. In the seventeenth and eighteenth centuries plant nomenclature was in a state of confusion since there was no conformity with regard to the use of generic and specific names. Out of this state of chaos Linnæus produced the ordered system which botanists of the present day too often take for granted. In the *Critica* Linnæus gives an expansion of the *Fundamenta*, which had appeared earlier, in which he laid down rules for the formation of generic as well as specific names. Many of these rules elaborated resemble closely the modern International Rules of Botanical Nomenclature. The book is divided into four sections—Generic Names, Specific Names, Varietal Names and Synonymous Names.

This book is an important addition to the series of Ray Society Monographs, and we recommend it to all who take a serious interest in the problems of nomenclature and the philosophy of Botany.

**The Behaviour of Animals: An Introduction to its Study.** By E. S. RUSSELL, O.B.E., D.Sc., F.L.S. London: Edward Arnold & Co. Second Edition. 1938. Pp. viii+196. 6 plates and 26 text-figures. Price 10s. 6d. net.

Dr Russell's book was first published in 1934 (vide *Scot. Nat.*, 1934, p. 111) and its rapid success has caused the appearance of this new edition. The book outlines the main aspects of behaviour and ecology, normal maintenance activities, development of behaviour and learning, and perception. The author quotes frequently from personal observation and from numerous authorities on animal behaviour. In discussing the method of approach to this study he adopts an "organismal" or "holistic" attitude and urges workers "to determine by direct observation, preferably of animals in their natural surroundings exactly to what they do respond." This is opposed to the well-known mechanistic approach of those who "assume *a priori* that single physical or chemical stimuli are the controlling factors" of animal behaviour. As the thesis is developed it is made abundantly clear that animals react

to rather complex situations and relations rather than to simple stimuli. He goes on to discuss the perceptual world of animals and includes a discussion of the "Gestalt" theory. The final chapter is a new one entitled "Perceptual Worlds as Functional." Dr Russell explains that as there is a diversity of animals so there is a diversity of private worlds and "each animal selects from the possible perceptual environment only those features that are significant in relation to its life and ignores the rest." This is a most stimulating book which has a wide appeal to all who are interested in the ways of animals.

**Common Objects of the Microscope.** By the late Rev. J. G. WOOD. *Revised and rewritten* by W. J. FERRIER. London: George Routledge & Sons Ltd. 1938. Pp. ix+184, 14 plates. Price 4s. 6d. net.

We welcome the reappearance of this well-known "classic." Mr Ferrier has entirely revised and rewritten the text and we can safely say that it has lost none of its original charm. A wide field is covered and we easily capture the author's enthusiasm as we follow him from one common object to another. This is a book which deserves a wide circulation and we hope that this new edition will make an ever-increasing circle of new friends.

---

## NOTES

**Flamingo in Lewis.**—A flamingo appeared at the estuary near Sand Street, Coulregrein, on the shores of Broad Bay, in June, and was seen frequently from then on until the end of August or early September. It was possible to approach the bird to within a hundred yards or so, and many scores of people went to see it, although, fortunately, it was not molested.—J. S. GRANT, Stornoway.

**Rosy Pastor in Kincardineshire.**—A specimen was shot near the village of Luthermuir, Kincardineshire, in the beginning of August 1938. It was killed by a boy guarding fruit trees in mistake for a partially white blackbird. It was in good plumage and is being set up for the Museum at Montrose.

The rosy pastor is an occasional visitor to Scotland and has already been recorded from southern Kincardineshire.—D. DUNCAN, Montrose.

# INDEX

## OBITUARY.

Clarke, William Eagle, 97

## AUTHORS.

- Absalom, R. Gregory, 116  
Anderson, J. Alasdair, 55  
Atkinson, Robert, 145  
Bain, John, 84  
Balfour-Browne, Frank, 33, 129  
Bartholomew, James, 128  
Baxter, Evelyn V., 47, 55, 59, 84, 138, 163, 174  
Boase, Harry, 93  
Boase, Philip M., 8  
Burr, Malcolm, 82  
Cameron, A. E., 125  
Campbell, J. L., 153, 173  
Clancey, Philip A., 59, 115  
Colyer, Sir J. F., 53  
Crichton, M. I., 3  
Duncan, A. B., 65  
Duncan, D., 177  
Elmhirst, R., 99, 164  
Evans, C. Ethel, 9  
Fenton, E. Wyllie, 87, 165  
Ferguson, Roy Y., 115, 116  
Fitzgerald, Brian Vesey, 115, 116  
Forrest, J. E., 3, 10  
Fraser, Francis C., 82, 106, 173  
Grant, J. S., 177  
Hamilton, David, 52, 83  
Harrison, George Heslop, 60  
Harrison, J. W. Heslop, 28  
Hill, A. R., 82  
Holmes, P. F., 128  
Hopkins, Nicol, 117  
Johnson, Norman M., 30  
Kevan, D. K., 119  
MacDougall, H., 139  
Midlothian Ornithological Club, 103  
Molteno, D. I., 30, 86, 93, 147  
Murray, James, 51, 92, 102, 172, 174  
Peacock, A. D., 118  
Platt, Margery I., 117  
Pullen, O. J., 85  
Rennie, William, 93, 116  
Rintoul, Leonora Jeffrey, 47, 55, 59, 84, 138, 163, 174  
Ritchie, James, 46  
Robinson, H. W., 85, 150, 173  
Ross, Winifred M., 115  
Seath, Ritchie, 127, 135  
Serle, Rev. William, 52  
Southern, H. N., 1  
Spence, Tom, 83  
Stephen, A. C., 119  
Stewart, Malcolm, 107  
Stewart, W., 8, 81  
Swanson, Albert, 55  
Temperley, George W., 11  
Warwick, Tom, 57  
Waterston, A. R., 144, 174

## GENERAL.

Natural History Notes from Certain Scottish Islands, 107, 145

## MAMMALS.

- Cetacea, Recent, stranded in Scotland, 173  
Grampus, Dento-Alveolar Abscess in, 53  
Mammals of the Isles of Barra, Mingulay, and Berneray, Outer Hebrides, Notes on the, 57  
Otter, Food of, in the Marine Littoral Zone, 99  
Risso's Dolphin, Orkney, 82  
Rorqual, Lesser, stranded at Bressay, Shetland, 106  
Stoat, Record, near Glasgow, 116

## BIRDS.

- Chaffinch, Continental, in Renfrewshire, 115  
 Flamingo in Lewis, 177  
 Garganey in Orkney, 147  
 Geese, Bean, Varieties of, 173  
 Godwit, Black-tailed, wintering in Scotland, 84  
 Godwit, Black-tailed, in Possil Marsh, 116  
 Goose, White-fronted, in Ayrshire, 55  
 Goose, White-fronted, near Glasgow, 128  
 Grebe, Great Crested, Breeding of, on Duddingston Loch, 52  
 Grebes, Black-necked, Nesting of, in South Fife, 59  
 Grebes, Great Crested, on the Town Loch, Dunfermline, 30  
 Ibis, Glossy, in Aberdeenshire, 116  
 Isle of May, Breeding Census, 1936, 1  
 Isle of May, Autumn Report, 1937, of Observatory, 103  
 Magpie in Scotland, 65  
 Magpie, Status of, in Inverness-shire, 115  
 Magpies in Fife, 174  
 Martins, House, in Fife, 8  
 Notes:  
   Coll, 139  
   Edenmouth, Fife, 86  
   Kinloch Rannoch, 1938, 135  
   Loch Leven, Kinross, 93  
   Noss Head, 84  
   Raasay, Inner Hebrides, 11  
 Notes:  
   Upper Loch Fyne, 81  
   Seen during 1937, 93  
   Seen at Balgray and Summerston, 117  
   Some Summer, of Selkirkshire, 128  
 Owl, Dark-breasted Barn, at Bothwell, 8  
 Oystercatcher breeding in Tweed, 138  
 Pastor, Rosy, in Kincardineshire, 177  
 Pine Grosbeak in Inverness-shire, 115  
 Pintail at Linlithgow Loch, 52  
 Puffins, Recovery of Ringed, 85  
 Puffins, Recovery of Ringed, in Orkney, 150  
 Redshank, Dusky, in Fife, 30, 55  
 Sandpiper, Green, in Lanarkshire, 93  
 Scottish Ornithological Club, Official Section, 32, 94, 123, 151  
 Siskin at Musselburgh, 83  
 Sparrow, Tree, in Dumfriesshire, 85  
 Starlings making Casts, 83  
 Status of, in Scotland in 1937, 47  
 Terns, Late Nesting of, in Forth, 1938, 127  
 Waxwings at Cromarty, 55  
 Wigeon at Motherwell, 115  
 Woodcock, Scottish, migrating to Ireland, 46  
 Woodpecker, British Greater Spotted, in Lanarkshire, 116  
 Wren, Continental Golden-Crested, in Renfrewshire, 59

## FISHES.

- Oar-Fish, *Regalecus glesne*, at Westhaven, 118  
 Skate, Skull of a Large, Orkney, 117

## MARINE INVERTEBRATES.

## GENERAL.

From Warships salvaged at Scapa Flow, 3

## INSECTS.

## ORTHOPTERA.

- Grasshopper, an Alpine, to be looked for in Scotland, 82  
 Perth E. and Forfar, 82

## PLECOPTERA.

- Of Raasay, etc., 28

## EPHEMEROPTERA.

- Of Raasay, etc., 28

## ODONATA.

- Æschna cærulea*, etc., from Mid-Perth and Argyllshire, 9

## HEMIPTERA.

- Heteroptera, Dumfriesshire, 51, 102

NEUROPTERA and MECOPTERA,  
including MEGALOPTERA.

- Of Raasay, etc., 28  
 Megaloptera of Raasay, etc., 28

INSECTS—*continued.*

## LEPIDOPTERA.

- Antler Moth on Scottish Hill-Pastures,  
125  
*Cidaria obstipata* in Scotland, 174  
Goat Moth: a correction, 144  
Macrolepidoptera of the Parish of  
Barra, 153  
Migrant, in Canna, 173

## COLEOPTERA.

- Aquatic, Outer Hebrides, 33  
Aquatic, of Raasay, etc., 60  
Aquatic, of Ross and Cromarty, 129

COLEOPTERA—*continued.*

- Dumfriesshire, 92  
*Elater tristis* in Rothiemurchus  
Forest, 119  
*Octhebius*, new to Britain, 129

## HYMENOPTERA.

- Some Dumfriesshire Aculeata, 172  
*Sirex gigas* in Dumfriesshire, 173

## DIPTERA.

- Asilidæ, Two Rare, in Perth Mid, 174

## MOLLUSCS.

- Squid, *Stenoteuthis caroli*, in Orkney, 119  
*Todarodes sagittatus* in Firth of Clyde, 164

## CŒLEENTERATES.

- Velella spirans*, Outer Hebrides, 10

## BOTANY.

- Algæ Studies from Boghall Glen, III., 87; IV., 165

## BOOK NOTICES.

- A Contribution to our Knowledge of the Lepidoptera of the Islands of Coll, etc., 80  
A Pocket Book of British Butterflies, Moths and Other Winged Insects, 120  
Animal Life in Freshwater: a Guide to British Freshwater Invertebrates, 175  
Bird Flocks and the Breeding Cycle, a Contribution to the Study of Avian Sociality, 121  
Bird Watching Days, 175  
Common Objects of the Microscope, 177  
Evolution and its Modern Critics, 56  
Giant Fishes, Whales and Dolphins, 31  
More Songs of Wild Birds, 149  
Nature Study Above and Below the Surface: a Bridge between Amateur and Professional, 122  
Oyster Biology and Oyster Culture, 56  
Quest for the Griffon, 149  
Snakes of the World, 80  
Systematic Notes upon British Aquatic Coleoptera, 120  
The Animal Year Book, 122  
The Arctic Whalers, 122  
The Behaviour of Animals: an Introduction to its Study, 176  
The Call of the Koala, 31  
The *Critica Botanica* of Linnæus, 176  
The Dragonflies of the British Isles, 64  
The Flora of Westmorland, 175  
The Handbook of British Birds, 120  
The International Committee for Bird Preservation, British Section, 148  
The Nation's Sea-Fish Supply, 56  
Wild Birds in Britain, 149  
World Natural History, 86

# A Vertebrate Fauna of Forth

By LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER

With 16 full-page illustrations and a map of  
the Forth Area. 8vo. 456 pages. 25s. net.

EDINBURGH: OLIVER AND BOYD LTD., TWEEDDALE COURT  
LONDON: 98 GREAT RUSSELL STREET, W.C.

---

---

## THE NATURALIST

A Monthly Illustrated Journal of Natural History for the North of England

Edited by W. H. PEARSALL, D.Sc., F.L.S., and

W. R. GRIST, B.Sc., The University, Leeds.

With the assistance of a Panel of Referees.

*All Communications to be addressed to—*

THE EDITORS, "THE NATURALIST," THE UNIVERSITY, LEEDS

Annual Subscription, 15s. Single Numbers, 1s. 6d. net

LONDON: A. BROWN & SONS, Ltd., 5 Farringdon Avenue, E.C.

---

---

## READ The Irish Naturalists' Journal

The Official Organ of Irish Scientific Societies

The only popular Scientific and Archæological periodical published  
in Ireland.

EDITED BY J. A. S. STENDALL, M.R.I.A., M.B.O.U.

Issued Quarterly.

Annual Subscription, 6s. post free. Single Copies, 1s. 6d. each.

*All Communications to be addressed to—*

W. M. CRAWFORD, F.R.E.S., F.Z.S., Orissa, Marlborough Park South, Belfast

---

---

## The North Western Naturalist

A Scientific and Educational Journal for Lancashire, Cheshire, Shropshire,

Stafford, Derbyshire, North Wales, Cumberland, Westmorland, the

Isle of Man and the North West

EDITED BY A. A. DALLMAN, F.C.S.

Published Quarterly. Annual Subscription, 7s. 6d. (post free). Single Copies, 2s.

All Articles and Communications intended for Publication, and all Books, etc., for  
Review, should be sent to The Editor, A. A. DALLMAN, 12 Tickhill Road, Doncaster.

Subscriptions and Advertisements should be addressed to the Publishers, T. BUNCLE  
& Co., Market Place, Arbroath, Angus.



# CONTENTS

	PAGE
The Macrolepidoptera of the Parish of Barra— <i>J. L. Campbell</i> . . . . .	153
<i>Todarodes sagittatus</i> (Lam.) in the Firth of Clyde— <i>Richard Elmhirst</i> . . . . .	164
Algæ Studies from Boghall Glen (Midlothian) IV.— <i>E. Wyllie Fenton</i> . . . . .	165
Book Notices . . . . .	175
Notes :	
<p style="margin-left: 2em;">Some Dumfriesshire Aculeata—<i>Jas. Murray</i>, 172; Recent Cetacean Strandings in Scotland—<i>F. C. Fraser</i>, 173; Migrant Lepidoptera in Canna—<i>J. L. Campbell</i>, 173; Varieties of Bean Geese—<i>H. W. Robinson</i>, 173; <i>Sirex gigas</i> Lin., in Dumfriesshire—<i>Jas. Murray</i>, 173; Magpies in Fife—<i>Evelyn V. Baxter and Leonora Jeffrey Rintoul</i>, 174; Two Rare Diptera (Asilidæ) in Perth Mid.—<i>A. R. Waterston</i>, 174; <i>Cidaria obstipata</i> Fab. = <i>fluviata</i> Hbn. (Lepidoptera, Geometridæ) in Scotland—<i>A. R. Waterston</i>, 174; Flamingo in Lewis—<i>J. S. Grant</i>, 177; Rosy Pastor in Kincardineshire—<i>D. Duncan</i>, 177.</p>	
Index . . . . .	178

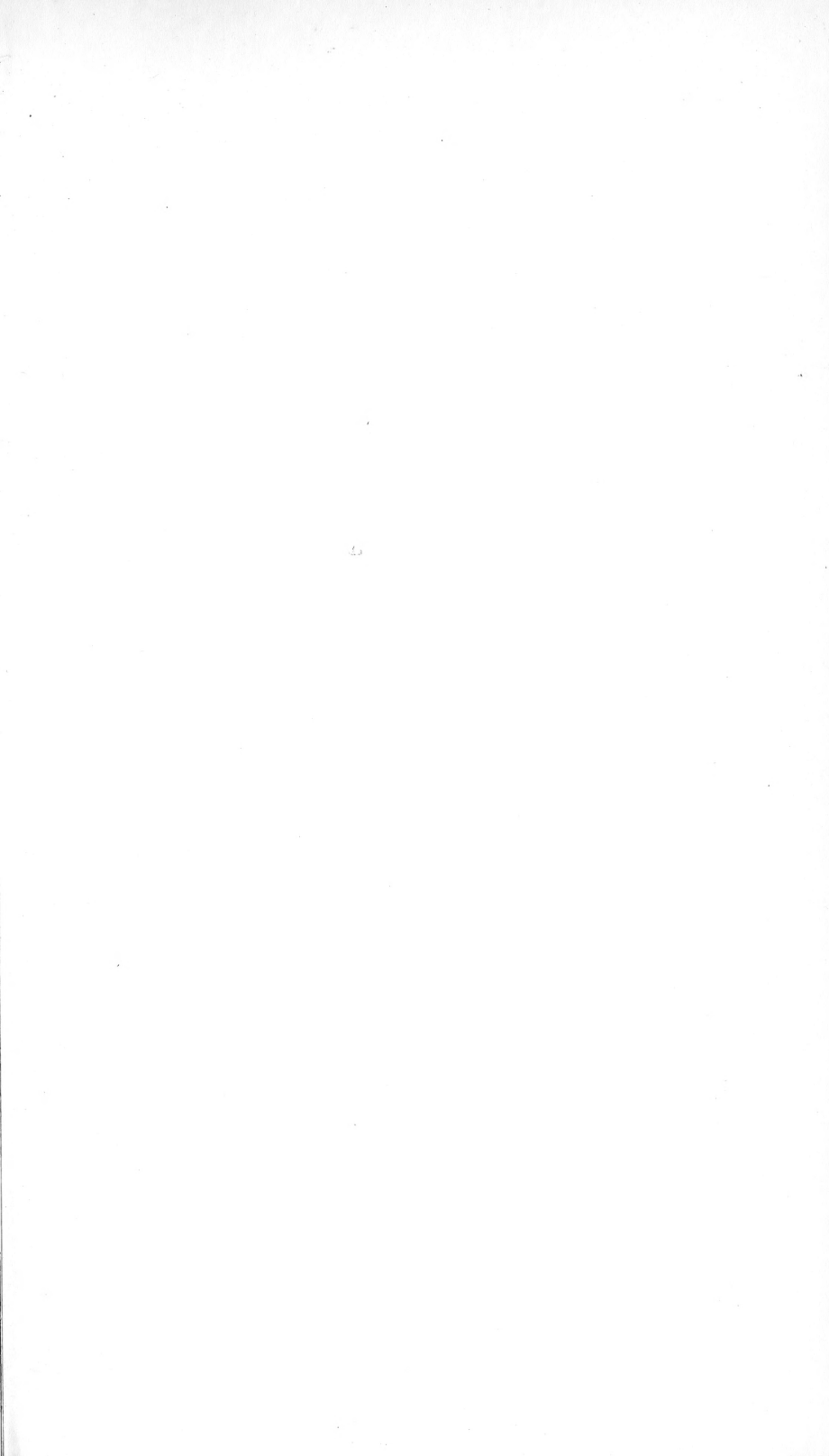
## PUBLISHERS' NOTE

The Annual Subscription for 1939, payable in advance, 12s. 6d. post free, should be addressed to the Publishers, Oliver and Boyd Ltd., Tweeddale Court, Edinburgh.

## COVERS FOR BINDING "THE SCOTTISH NATURALIST"

Special Cloth Cases for Binding the 1938 Volume can be supplied at 1s. 6d. each (by post 1s. 9d.), by Oliver and Boyd Ltd., Tweeddale Court, Edinburgh

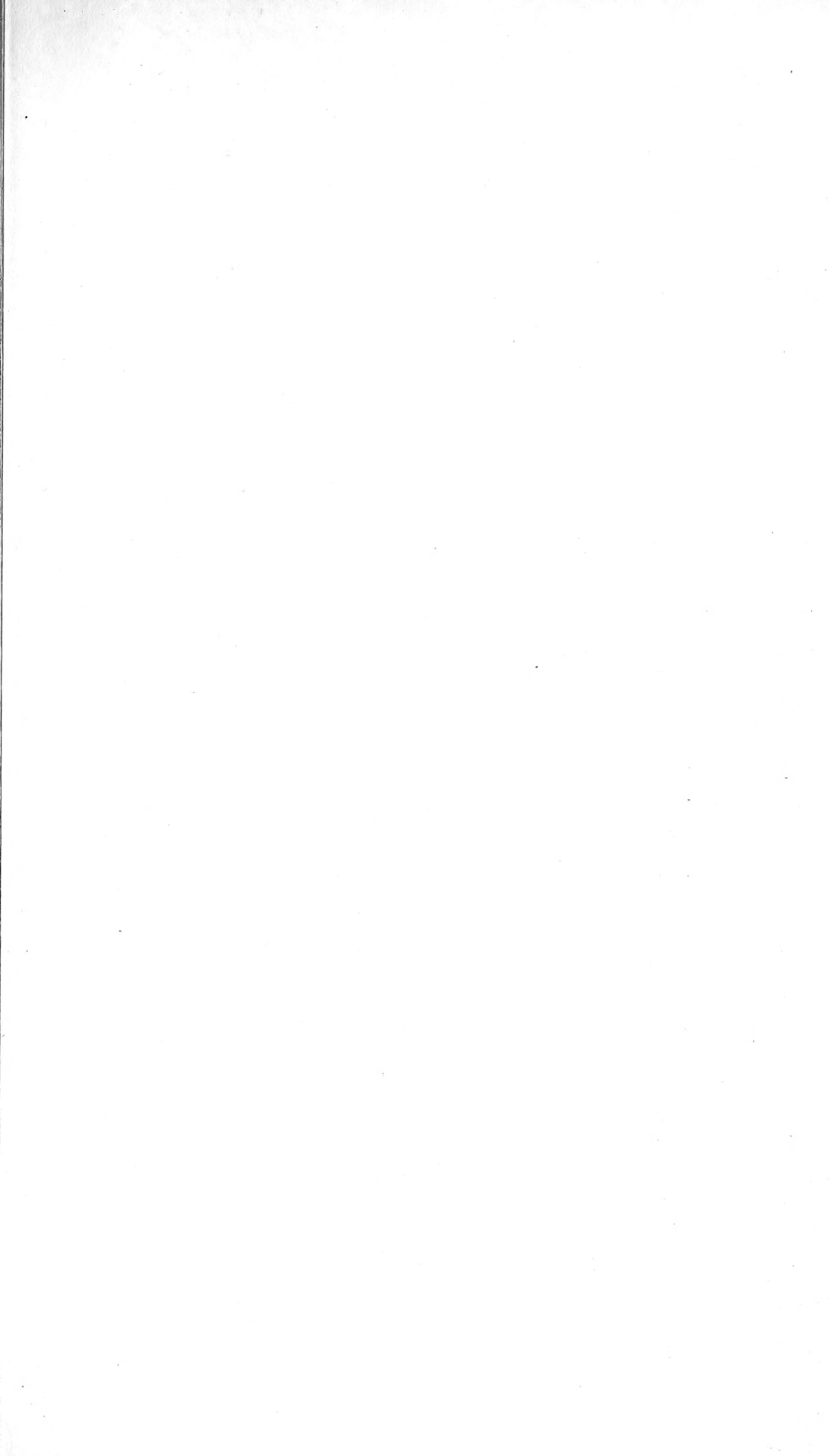
X



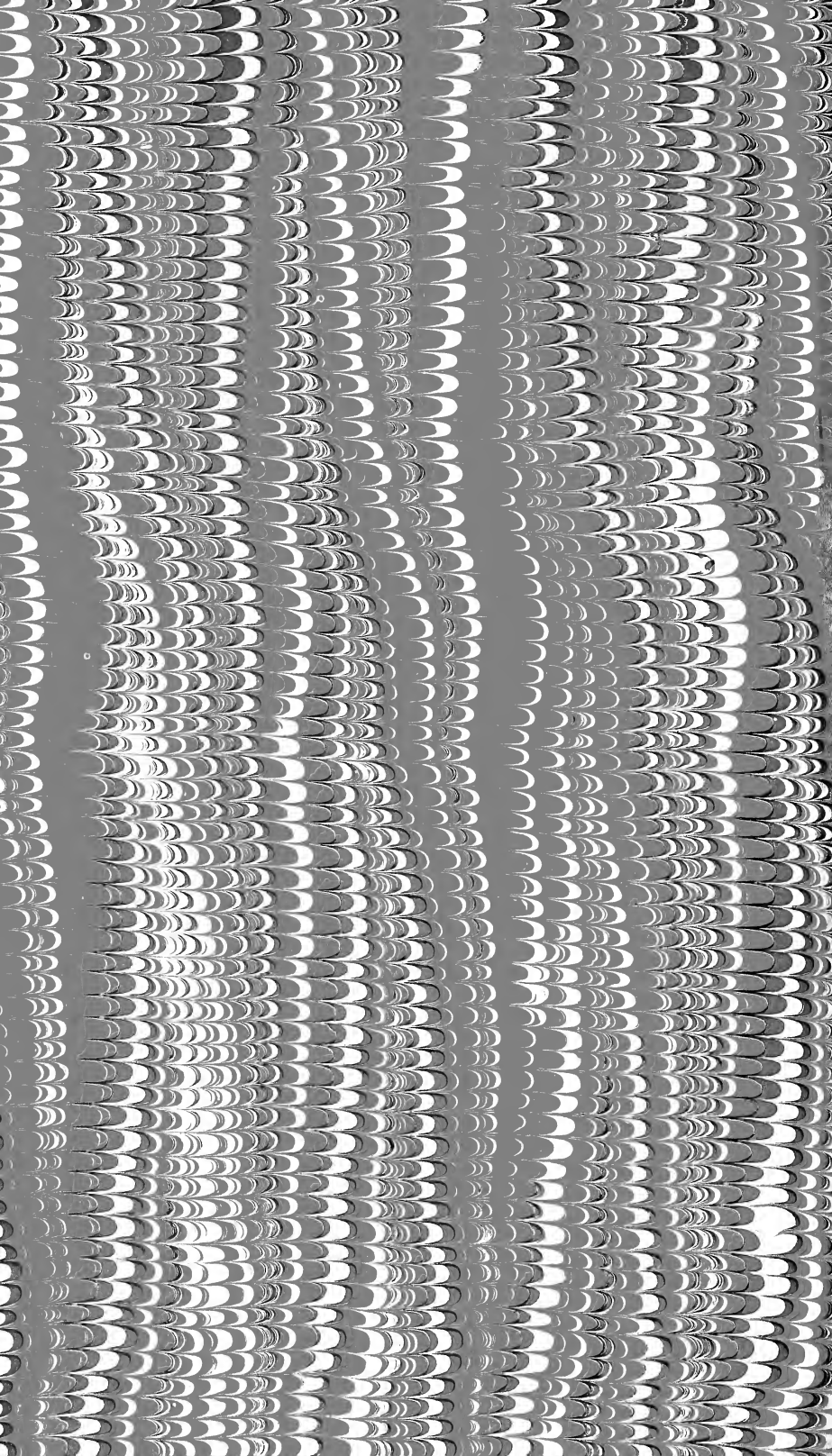




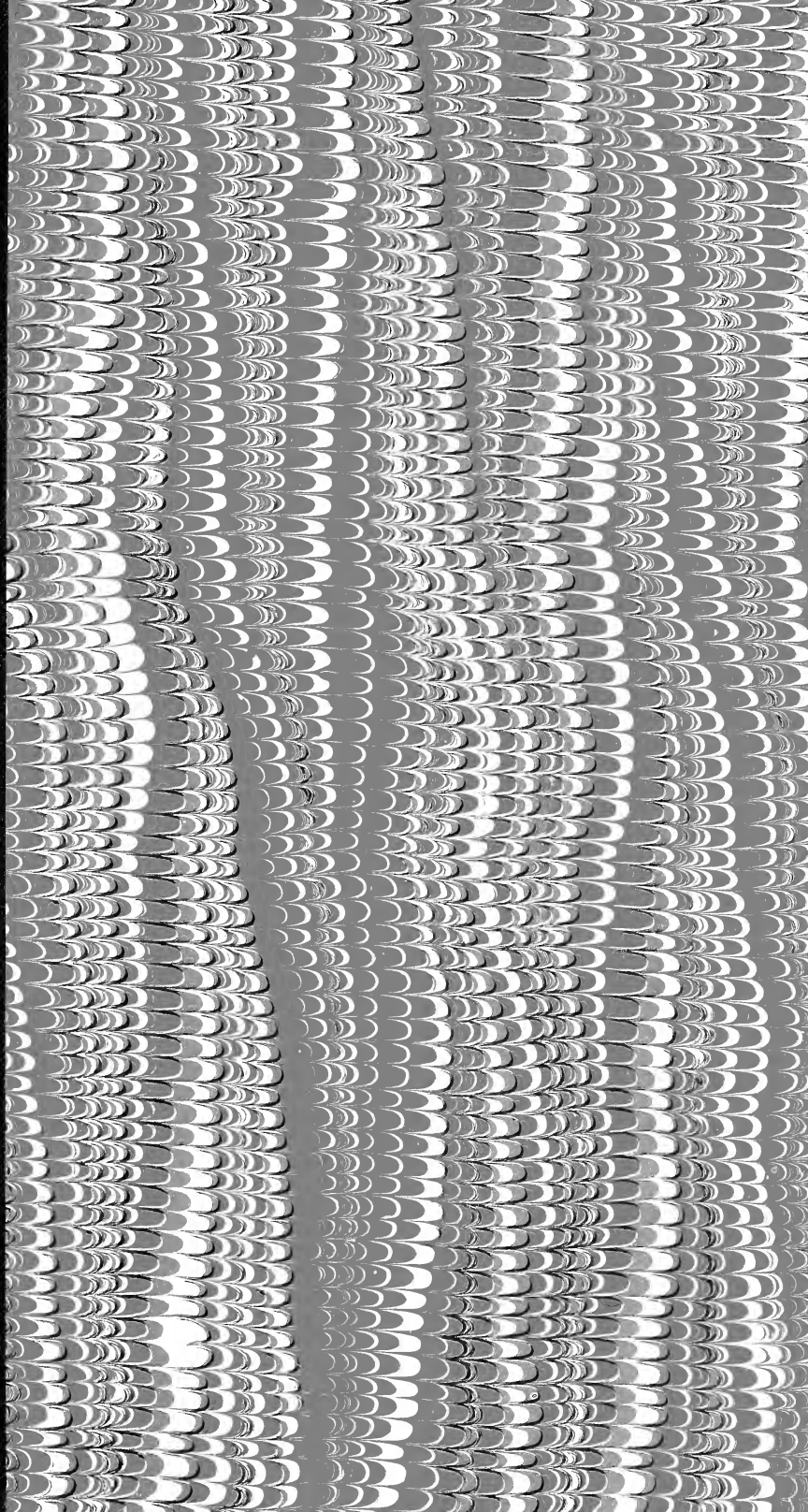












SMITHSONIAN INSTITUTION LIBRARIES



3 9088 01313 5298