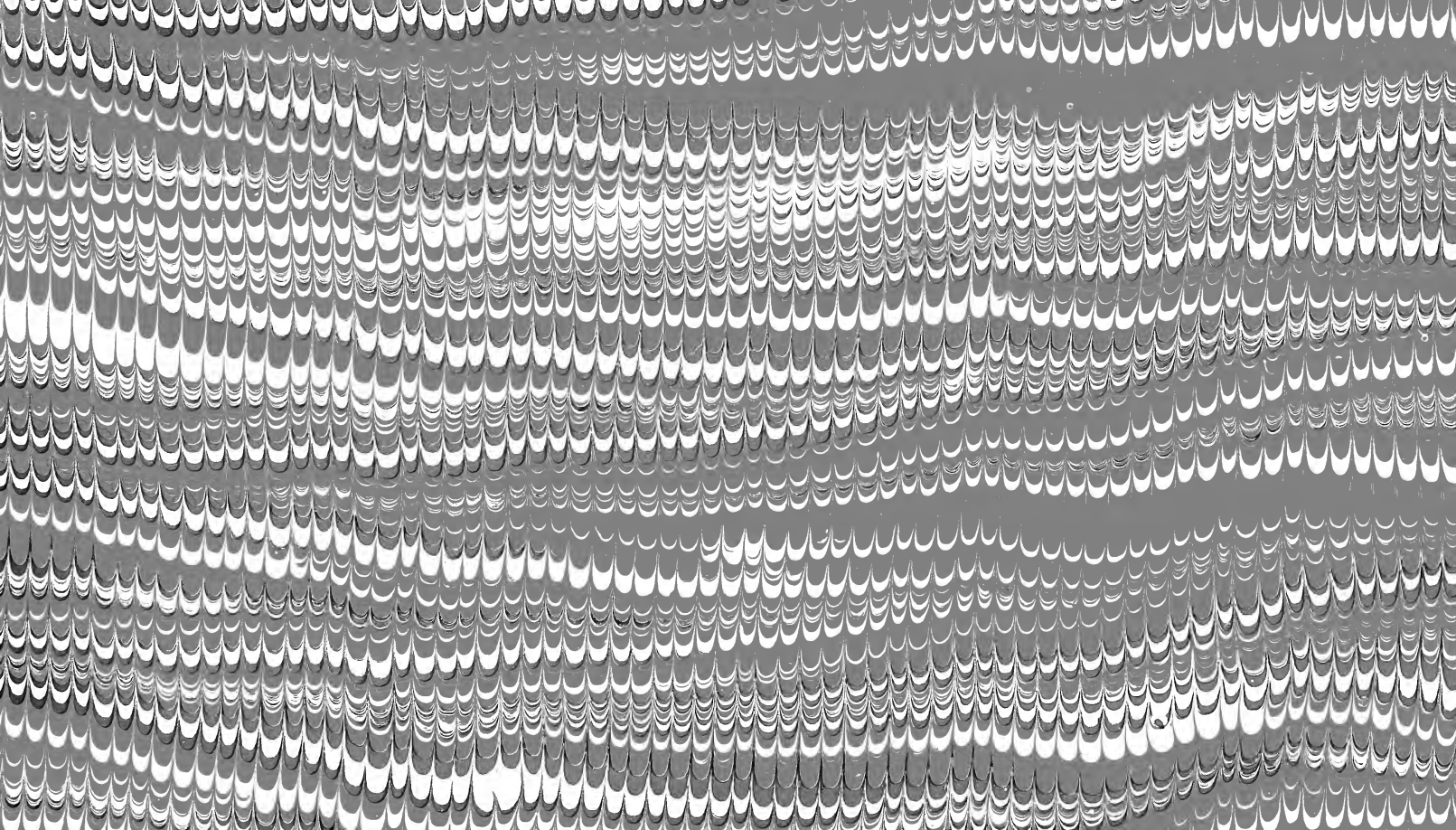

The Scottish Naturalist

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With which is incorporated

"The Annals of Scottish Natural History"

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(*Authors are responsible for nomenclature used.*)

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EDITORIAL

FAUNA OF THE OUTER HEBRIDES

Of recent years considerable attention has been paid to the fauna of the Outer Hebrides. The accounts of the fauna of South Rona were published in the Scottish Naturalist (1934, p. 113). Another survey has recently been made of the island of Barra in the summer of 1935 by the Edinburgh University Biological Society (*Proceedings Royal Physical Society*, vol. xxii., part 5, pp. 241-296). A full investigation was made of the plant and animal life, and the results have proved to be very interesting. Some idea of the value of the survey may be gauged from the fact that over seven hundred species of invertebrates were obtained during a fortnight in July. Many of the species recorded are additions to the Hebridean fauna, while several are new to the Scottish list.

The results of another interesting survey, namely that of the brackish water lochs in the neighbouring island of North Uist, have recently been published by Dr E. A. T. Nicol (*Proceedings Royal Society of Edinburgh*, vol. lvi., part 2, pp. 169-195). These brackish water lochs are influenced to varying degrees by the tidal flow. Their fauna is very varied: 59 marine, 24 fresh-water, and 25 brackish water forms were found.

WOODLAND BIRD ENQUIRY

An enquiry into the distribution of British woodland birds has been organised through the British Trust for Ornithology. Valuable data have been collected, but more are still needed,

particularly in Scotland, and particularly for Birch woods. The type of observation required is comparatively simple and need not take up much time, being primarily to provide lists of the birds occurring in different types of woods. Census work is not required. Data are needed for both winter and summer, the enquiry closing at the end of June 1936.

Would anyone interested write to David Lack, Esq., The School, Dartington Hall, Totnes, Devon. A schedule with notes on the type of observation required will then be sent.

We are glad to bring before our readers the notice of the proposed Scottish Ornithological Club sent us by the sponsors.

The Scottish Ornithologists' Club.—"It has long been felt that a common meeting ground for all those interested in Ornithology in Scotland would be of great value. To this end it has been decided to inaugurate the Scottish Ornithologists' Club, the membership of which will be open to all interested in this branch of science. Scottish Ornithology has many problems purely its own, and such a Club would provide the means for a concerted effort towards the solution of these, as well as enabling ornithologists resident in Scotland to meet and discuss their work and difficulties.

"It is proposed to hold the First General Meeting of the Club in the rooms of the Royal Scottish Geographical Society, Synod Hall, Castle Terrace, Edinburgh, on 14th January 1937 at 5.30 p.m., when all interested will be cordially welcomed. There will be Talks, Discussions, and a display of bird films.

"Enrolment of members will take place at this meeting. Annual subscription, 5s. Those interested, who are unable to attend this meeting, can obtain full particulars from the Honorary Secretary, George Waterston, 27 Inverleith Terrace, Edinburgh."

James Bartholomew.	H. F. D. Elder.
Evelyn V. Baxter.	William Rennie.
Charles G. Connell.	Leonora J. Rintoul.
Arthur B. Duncan.	George Waterston.

NOTES ON THE STATUS OF BIRDS IN SCOTLAND IN 1936.

By Evelyn V. Baxter and Leonora Jeffrey Rintoul.

One of the gratifying features of Scottish Ornithology is the number of additions and changes which fall to be made year by year in our *Geographical Distribution and Status of Birds in Scotland.* The constantly changing conditions inevitably produce such fluctuations, and it is of the utmost importance that ornithologists should remain constantly aware of these and should chronicle them as they occur. No one can work long at the ornithology of our country without recognising how much valuable information has been lost in the past from want of systematic recording. That this reproach should not be levelled at the ornithologists of to-day should be our constant aim and endeavour.

Three birds have been added to the Scottish list. New pages should be headed thus:—"The Scandinavian Jackdaw, *Colœus monedula monedula* (L)," and "OW" added to Fair Isle (xii.1936.61), and "O" to N. Sutherland (xvii.xxx.224). "The Tawny Pipit, *Anthus campestris campestris* (L)." Add "O" to Fair Isle (xii.1936.62). "The Booted Warbler, *Hypolais caligata* (Licht)." Add "O" to Fair Isle (xvii.xxx.226). This bird is also new to Britain. An interesting note, but one which we do not feel is wholly substantiated, is that of a Chough, in Westray, Orkney, on 19th October 1935 (xvii.xxix.292).

Rook, *insert* "used to be" before "R" in Arran, as Mr M'William says it has been driven out of that island.
Jackdaw, *add* "P" to the Isle of May.
Chough, *add* "used to breed" to Dumbarton.
Hawfinch, *add* "O" to Ayr.
Siskin, *add* "has bred" to Ayr.
Twite, *add* "W" to Ayr.
Holböll's Redpoll, *add* "O" to Ayr.
British Bullfinch, *add* "W" to Lanark.
Common Crossbill. Mr M'William refers all the Crossbills recorded in Clyde to the typical form *Loxia curvirostra curvirostra.* Italics may therefore be removed and an ordinary "O" substituted in all divisions.
Chaffinch, *add* "W" to Renfrew.
Cirl Bunting, *add* "O" to the Isle of May.

Meadow Pipit, *add* "S" to Midlothian.
Yellow Wagtail, *add* "O" to Kinross.
Continental Cole Tit, *add* "O" to the Isle of May. There appears to be doubt as to whether the record of this subspecies in Morayshire is authentic a "?" therefore should be added to the "O" for Morayshire.
Continental Golden Crested Wren, *add* "O" to Lanark.
Pied Flycatcher, *add* "O" to Renfrew.
Chiffchaff, *add* "O" to N. Perth.
Wood-warbler, *add* "P" to Ayr and Renfrew, and *delete* the "?" for Arran.
Sub-alpine Warbler, *add* "O" to E. Ross (xx.lvi.5).
British Song Thrush, *add* "W" to S. Argyll.
Iceland Redwing, *add* "has bred" to Fair Isle. Mr George Stout considered these breeding birds to be the Icelandic form *Turdus musicus coburni*.
Wheatear, *add* "P" to Lanark and Renfrew.
Hebridean Stonechat, *add* "R" to Bute, as birds got by Mr M'William there in the breeding season belonged to this subspecies. *Add* also "O" to Ayrshire.
Black Redstart, *add* "O" to Dumbarton.
White-spotted Bluethroat, *add* "O" to the Isle of May (xii.1936.162).
British Redbreast, *add* "P" to Ayr and Arran.
British Hedge Sparrow, *add* "P" to Ayr.
Hebridean Hedge Sparrow, *add* "R" to N. Argyll and Skye, and "O" to Dumbarton. Further investigation into the validity of these Hebridean subspecies would be welcome.
British Great Spotted Woodpecker, *delete* "O has bred" and substitute "R" in Ayr and Dumbarton.
Snowy Owl, *add* "O" to N. Fife.
Greenland Falcon, *add* "O" to Ayr.
Golden Eagle, *add* "has bred" to Ayr, *delete* "? and bred 1872" leaving "R" in Dumbarton.
Rough-legged Buzzard, *add* "OW" to Dumbarton and Arran.
Common Buzzard, *add* "used to be common and nested 1922" to Arran.
Montague's Harrier, "?" Ayr record.
White-tailed Eagle, *add* "O" to Fair Isle.
Bittern, *add* "O" to North Sutherland.
Pink-footed Goose, *add* "O" to Bute and Caithness.
Ruddy Shelduck, *add* "O" to W. Stirling.
Gadwall, *add* "O has bred" to S.E. Sutherland.
Garganey, *add* "O" to S. Fife and Kinross.
Pintail, *add* "has bred" to Forfar and "has bred, but probably the progeny of tame birds" to Bute.
Tufted Duck, *add* "W" to S. Argyll.
Eider, *add* "W" to Ayr.
Goosander, *add* "has bred" to Dumbarton, *delete* "O" *insert* "W" to Ayr, Dumbarton, and W. Stirling.
Smew, *add* "O" to S. Argyll.
Storm Petrel, *add* "O" to Dumbarton.
Slavonian Grebe, *add* "O" to Arran and S. Argyll.
Little Grebe, *add* "R" to Arran.
Black-throated Diver, *add* "O" to Fair Isle.
Pallas' Sandgrouse, *delete* "O" in Bute.
Collared Pratincole, *add* "O" to Fair Isle.

Southern Golden Plover, *add* "S" to Renfrew and Lanark.
Lapwing, *add* "W" to Morayshire.
Turnstone, *add* "P" to Renfrew.
Knot, *add* "O" to S. Argyll.
Little Stint, *add* "O" to Dumbarton and S. Argyll.
Temminck's Stint. Mr M'William retains Ayrshire record in square brackets, therefore *add* "?" to the "O" for Ayr.
Wood Sandpiper, *add* "O" to the Isle of May.
Greenshank, *delete* the "O" in "OW" for Outer Hebrides.
Avocet, *add* "O" to N. Argyll.
Sandwich Tern, *add* "used to breed" to Dumbarton.
Little Gull, *add* "O" to S. Argyll.
Herring Gull, *add* "R, not breeding" to Nairn.
Scandinavian Lesser Black-backed Gull, *add* "O" to Aberdeen.
Great Black-backed Gull, *add* "used to breed" to Dumbarton.
Ivory Gull, "?" the "O" for Ayr.
Buffon's Skua, *delete* the "O" for Ayr.
Black Guillemot, *delete* "not breeding" and *insert* "has bred" to Bute.
Baillon's Crake, *delete* the "O" for Ayr, as this and the Renfrew record refer to the same bird.
Capercaillie, *add* "died out again about 1915" to Arran.
Scottish Ptarmigan, *delete* "?" in S. Argyll, leaving "R."
Quail, *add* "has bred" to Ayr and Renfrew.

NOTES

Bottle-nosed Whale ashore in Islay.—On the 17th October 1936 a male Bottle-nosed Whale (*Tursiops truncatus*) was washed ashore on the east side of Loch Gruinart, Islay. The animal measured 22 feet 3 inches.

The front part of the lower jaw was forwarded to the Museum by Mr E. J. Combes. At first the teeth were not visible above the gum but on boiling and removing the flesh the two usual pairs of teeth were found, a large pair near the tip of the jaw and a very much smaller pair a little way back. The measurements of the teeth were as follows:—

Right side.	Large tooth.	Length 42 mm.	Max. diam. 15 mm.
	Small tooth.	Length 12 mm.	Max. diam. 3 mm.
Left side.	Large tooth.	Length 41 mm.	Max diam. 15 mm.
	Small tooth.	Length 10 mm.	Max. diam. 2 mm.

The large teeth were very solid and had only a small pulp cavity left at the base. The small teeth had no cavity but were solid.—A. C. Stephen, Royal Scottish Museum.

Storm-Petrel, *Hydrobates pelagicus* (L.), in Edinburgh.—On Monday evening the 26th October 1936 in Princes Street, Edinburgh, during the height of a S.W. gale, a gentleman picked up a strange bird. The bird, which was in an exhausted condition, was brought to me on the 30th October for identification. I saw that it was a fine specimen of the Storm-Petrel which had evidently been driven from the sea by the gale. It succumbed shortly after I saw it.

On the 19th October 1864 a Storm-Petrel was picked up at 10 P.M. by a policeman in the Cowgate, Edinburgh. There was a gale on that date also.—BRUCE CAMPBELL, Edinburgh.

Mottled Hairworm, *Gordius villoti* (Rosa), in Dumfries.—A single male of this species was sent to the Royal Scottish Museum for identification in early November 1936. The specimen came down a tap in a house, and was sent to the Museum by Mrs Morgan of Collin, Dumfries. Ritchie, in his account of the Scottish Hairworms (SCOT. NAT., 1915, p. 261) gives records of the occurrence of this species in the Tweed, Forth, Tay and Moray Areas.—A. R. WATERSTON, B.Sc., Royal Scottish Museum.

Ballan Wrasse in Banff.—In my notes *re* Ballan Wrasse in Banff, published in the last issue of THE SCOTTISH NATURALIST, I carelessly named the species *Labrus mixtus* instead of *L. maculatus* Day = *bergylta* Smitt, which is in accordance with my records at the Marine Laboratory.—HENRY WOOD, Marine Laboratory, Aberdeen.

A Rare Fly, *Ectinocera borealis* Zett. (Dipt.), in Dumfriesshire.—I have been fortunate in taking a pair of this rare fly on Nutberry Moss in south-eastern Dumfriesshire, one, a ♂, on 21st May 1931 and the other, a ♀, on 31st May 1932. Both were taken by sweeping alongside a small mixed wood in the evening. They remained some time unidentified until Mr J. E. Collin kindly determined them as this species. In returning them he wrote: "This is a northern insect and I do not possess a ♂ though I have taken a few ♀ ♀ at Aviemore." It has been recorded from Nethy Bridge (Inverness) and Bonhill (Dumbarton) in June.* The ♂ is less than the ♀, and the antennæ attract attention.—JAS. MURRAY, Gretna.

* Also West Sutherland [EDS.].

SUMMER BIRD NOTES FROM NORTH RONA.

By John A. Ainslie and Robert Atkinson, B.A.

All previous notes on the birds of North Rona were combined with T. H. Harrisson's own observations in his paper "Resident and Migratory Birds of North Rona" (*Ibis*, July 1932, pp. 441-57)—the result of a visit to the island from 28th August to 3rd September 1931. All records have thus been brought up to date to 1931; since then no further work has been published and no one has landed on Rona for more than a few hours. The present paper is a result of a stay on the island from 16th July to 12th August 1936, when we camped in the ruined village in order to study the breeding habits of Leach's Fork-tailed Petrel (*Oceanodroma l. leucorrhoa*), an account of which we hope to publish in due course.

The middle of August is, of course, too early for the autumnal migration, which was just beginning when we left, but in view of the previous work on so remote and inaccessible an island any records of the bird life are likely to be of interest. Of the 39 species remarked during our stay, 4 are new records for North Rona. Previous records are referred to when significant.

As few people are in any way acquainted with North Rona a brief description of its topography is a necessary prelude to the full understanding of the bird life. The island lies 40 miles due north of a point midway between Cape Wrath and the Butt of Lewis, has a maximum length and breadth of 1 mile and a coast-line of 5 miles. A ridge, with a highest point of 355 feet to the east, runs east and west, with steep cliffs at either end. To the north and south-west the ridge slopes down into flat peninsulas. The acreage is approximately 300. The ruins of half a dozen semi-underground crofters' houses—"the village"—stand on the south slope of the hill ridge. Above the thrift-covered rocks the land is grown with rough grasses, sedges and rushes. Chickweed, Sorrel, Autumnal Hawkbit, Silverweed,

Scurvy Grass and Corn Feverfew occur commonly. Trees, shrubs and heather are unknown. Apart from the birds the only vertebrates are seals and sheep. North Rona has been uninhabited since 1844; only the tenant now pays an annual one-day visit to shear his sheep.

Our thanks are due to W. Stirling, of the Royal Scottish Museum, and to H. F. Witherby who kindly identified two species of which we were uncertain.

A list of references is appended.

Systematic List.

Starling, *Sturnus vulgaris vulgaris.*

In July there were still seven pairs nesting among the ruins; in addition a flock of about 70 birds fed among the sheep. Starlings are the only birds here dependent on the sheep.

Crossbill, *Loxia curvirostra curvirostra.*

On 22nd July a single immature bird, very tame, feeding on the flower-heads of Chickweed (*Stellaria media*). On 29th July 1927,[2] 30, including a red male, were recorded feeding on Sea-Pink (*Armeria maritima*) flower-heads.

White Wagtail, *Motacilla alba alba.*

A small party first seen on 4th August. On 9th August three flocks, totalling about 150 birds, flew in from the south-east. Subsequently, until we left, the bird was fairly numerous about the rocks.

Meadow Pipit, *Anthus pratensis.*

None appeared to be breeding and none was seen until 10th August when 3 or 4 birds appeared on the north peninsula.

Rock Pipit, *Anthus spinoletta petrosus.*

About 30 pairs have usually been recorded as breeding. It was difficult to make an estimate as many of the young had flown, but we reckoned at least 50 pairs. No migration was noted.

Barred Warbler, *Sylvia nisoria nisoria.*

A young bird on 12th August. One on 1st September

and one on 3rd September 1931. As these occurrences were recorded during the only two late summer visits yet paid to Rona, they indicate a regular migration route for the species.

COMMON WHEATEAR, *Œnanthe œnanthe œnanthe.*

As in most years there were 3 or 4 pairs nesting, but we never saw any young. An increase was noted on 28th July, and on 5th August there was a considerable invasion; most of these visitors had departed by 7th August.

GREENLAND WHEATEAR, *Œnanthe œnanthe leucorrhoa.*

A female Wheatear shot on 12th August proved to be of this race.

HERON, *Ardea cinerea cinerea.*

Two birds frequented opposite ends of the island throughout our stay. They were constantly mobbed by gulls and terns.

GREYLAG GOOSE, *Anser anser.*

On 17th July a much emaciated immature bird was found, apparently trapped in a declivity in the rocks. There were no signs of birds having bred on the island, nor has this species previously been recorded here.

TEAL, *Anas crecca crecca.*

On 8th August a female was flushed from a freshwater rock pool. There are no previous records.

COMMON EIDER, *Somateria mollissima mollissima.*

There were not more than 20 breeding pairs, although in both 1930 and 1931[3] about 60 pairs were recorded. The only old nests seen, for by July all the eggs had hatched, were on high ground in thick sedge, several hundred yards from the sea.

SHAG, *Phalacrocorax graculus graculus.*

Numerous and breeding all round the island. (One young bird, when disturbed, regurgitated 22 small fish!)

GANNET, *Sula bassana.*

There are breeding colonies on both Sula Sgeir and Stack Skerry. Parties of birds were continually seen flying past the island and, especially in rough weather, fished close inshore. Nothing like genuine migration, however, was seen.

STORM PETREL, *Hydrobates pelagicus.*

First recorded in 1885.[5] About 20 pairs now nest among the ruins; many more lay under boulders in other parts of the island.

LEACH'S FORK-TAILED PETREL, *Oceanodroma leucorrhoa leucorrhoa.*

Reported as numerous in 1883;[6] in 1931 Harrisson[3] estimated 120 pairs. By means of marking occupied burrows as they were discovered, each night during our stay, we arrived at a total of 327 pairs for the ruined area. There were, in addition, at least 50 pairs nesting in other parts of the island.

[MANX SHEARWATER, *Puffinus puffinus puffinus.*

Swinburne[6] suspected breeding in 1883. We were out every night studying the previous species, and had there been even a small colony I do not think we could have overlooked it.]

FULMAR, *Fulmarus glacialis glacialis.*

About 600 pairs in 1931;[3] in 1936 a careful census revealed 587 occupied nests. As in past years many were nesting on the ground among the ruins, several hundred yards from the sea.

TURTLE DOVE, *Streptopelia turtur turtur.*

One on 12th August on the south-west peninsula. Previous records: One at the north end 29th August and 2nd September 1931; one at the south-west point 1st September 1931.[3]

[LAPWING, *Vanellus vanellus.*

A bird (or birds) flying from west to east, calling, on the night of 25th July. As only the call was heard and as there appear to be no previous records, the note must remain in square brackets.]

OYSTER-CATCHER, *Hæmatopus ostralegus ostralegus.*

About 8 pairs in 1931.[3] Very few young birds were seen in 1936, but at least 30 adults were always present.

RINGED PLOVER, *Charadrius hiaticula hiaticula.*

Small parties of up to half a dozen birds were noted

irregularly during our visit. The majority were immature, as in 1931.[3]

GOLDEN PLOVER, *Charadrius apricarius* subsp.?

None was shot so the subspecies is uncertain. Golden Plover were noted as follows: 28th July, one flying west to east, calling; 5th August, one on the south-west corner; 10th August, one flying north to south, calling; 11th August, a party of 7 on the high ground in the centre of the island. Both races have been recorded in the past.[3]

TURNSTONE, *Arenaria interpres interpres.*

There was always a small party on some part of the island; 15 on 9th August.

DUNLIN, *Calidris alpina*, subsp.?

On 7th and 11th August, one adult in summer plumage.

PURPLE SANDPIPER, *Calidris maritima maritima.*

A single bird feeding with Turnstones on 5th August. Two in transition plumage on 3rd September 1931.[3]

SANDERLING, *Crocethia alba.*

One adult in summer plumage, 10th August. In 1931 a single bird was noted on 31st August and 2nd September.[3]

COMMON SANDPIPER, *Tringa hypoleucos.*

One on 24th and 27th August, feeding by a freshwater pool. A new record.

REDSHANK, *Tringa totanus*, subsp.?

Always a small party present; 11 on 28th July. Both "totanus" and "robusta" have been recorded.[3]

CURLEW, *Numenius arquata arquata.*

Usually about half a dozen birds present. On 20th July, 12; on 12th August, 22 flying round the island.

WHIMBREL, *Numenius phæopus phæopus.*

Suspected by Harvie-Brown[5] to be breeding in 1885. The only other record is of a pair seen on the high ground on 21st June 1914.[1] Four on 4th August 1936 were feeding with Curlew, and on 12th August a single bird was seen on the south-west peninsula.

ARCTIC TERN, *Sterna macrura.*

About 60 pairs were divided among small colonies all

round the island. A few young were seen on the wing on 10th August, when the adults seemed to be congregating, although on this date at least one bird was still brooding eggs. Very few nests were found. The location of the colonies appears to vary from year to year.

HERRING-GULL, *Larus argentatus argentatus.*

A few breed annually; in 1936 there were not more than 20 pairs.

LESSER BLACK-BACKED GULL, *Larus fuscus grællsii.*

A few breeding, not more than 6 pairs. Previous estimates of breeding pairs are much higher.[1a, 5]

GREAT BLACK-BACKED GULL, *Larus marinus.*

Numerous: at least 250 pairs in three colonies. They began to leave as soon as the young could fly reasonably well; by 12th August not more than 70 adults remained. The numbers appear to vary considerably from year to year.[3, 4] In 1936 the number seemed quite disproportionate to the size of the island and the rest of the breeding population. In 1935 Handa Island, with a comparable population of Puffins, Auks and Kittiwakes, supported only about 30 pairs of Great Black-backed Gulls. It is probable that their numbers on Rona will fall off after a few years. At present the island is strewn with the carcases of their prey—chiefly Kittiwakes and Puffins. They are also suspected of considerable damage to the sheep during the lambing season.

KITTIWAKE, *Rissa tridactyla tridactyla.*

About 700 occupied nests and as many empty. The first young were seen on the wing on 1st August.

RAZORBILL, *Alca torda.*

Fairly numerous. The last bird was seen on 3rd August.

GUILLEMOT, *Uria aalge aalge* (?)

More numerous than Razorbills; both left at the same time.

BLACK GUILLEMOT, *Uria grylle grylle.*

Probably 3-5 pairs in 1930;[3] in 1936 there were 15-20 pairs. It is to be hoped that this engaging species will continue to increase.

PUFFIN, *Fratercula arctica grabæ.*

Abundant. Birds were congregating on 12th August when half-fledged young still remained in many burrows.

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[1a] BEDFORD, DUCHESS OF. "On Visits paid to the Island of North Rona," *Ann. Scot. Nat. Hist.*, 1910, pp. 212-14.

[2] DOUGALL, J. WILSON. "Crossbills on North Rona," SCOT. NAT., 1927, p. 160.

[3] HARRISSON, T. H. "Resident and Migratory Birds of North Rona, the Remotest Scottish Island," *Ibis*, July 1932, pp. 441-57.

[4] HARRISSON, T. H. "Numerical Fluctuations of the Great Black-backed Gull in England and Wales," *Proc. Zool. Soc., London*, 1933.
[Does not directly concern Rona birds.]

[5] HARVIE-BROWN, J. A. "Additions to John Swinburne's List" (see below), *Proc. Roy. Phys. Soc., Edin.* (1885-8), ix., pp. 284-99.

[6] SWINBURNE, JOHN. "Notes on the Islands of Sula, or North Barra, and North Rona," *Proc. Roy. Phys. Soc., Edin.* (1883-5), viii., pp. 51-67.

NOTE

The Bark Beetle, *Dryocœtes villosus*, Fabr., and the Longicorn Beetle, *Phymatodes testaceus*, L. (*Callidium variabilis*, L.), in Scotland.—When examining under the bark of a dead Oak on 16th August 1936, near Tyninghame, East Lothian, I was fortunate enough to find a considerable number of the Bark Beetle, *D. villosus*. Although quite common in the South of England it appears to get scarcer northwards, and this is the first record for Scotland.

I was further handed two Longicorn Beetles by Mr David Russell of Leith, found by him in a Leith timber yard in September. These proved to be two very distinct forms of the very variable species *Ph. testaceus* (*C. variabilis*), the one being with yellowish elytra and the other with the blue elytra referred to by Joy as being a common form. This species ranges from England south to Notts. Fowler states that it was reported on one occasion from Scotland by Dr Sharpe, who did not consider it indigenous but as having been imported with timber. Its occurrence in this instance can probably be explained in the same way, but it is impossible definitely to state whether it would have arrived in foreign timber or in timber from English sources. It is, however, very interesting to place on record the second known occurrence of this beetle in Scotland.—D. K. KEVAN.

BOOK NOTICES

British Grasshoppers and their Allies. A Stimulus to their Study. By MALCOLM BURR, D.Sc., F.R.Ent.S. London: Philip Allan & Co., Ltd. Pp. xvi+162, 6 plates, 40 maps, and 56 drawings in the text. Price 6s. Out of five to six hundred species of Orthoptera occurring in Europe, only thirty-two are on the British list, while in addition there are five earwigs. It is surprising how little is known of the distribution and bionomics of these, and the aim of this book is to bring these much neglected insects to the notice of all entomologists. As the author says: "All entomologists could add the Orthoptera to their scope and so greatly increase our knowledge, and their own pleasure, with a minimum of effort." Throughout the book Dr Burr draws attention to the gaps in our knowledge of their stridulation, behaviour, life-histories, geographical distribution, and ecology. The distribution of many of the species is shown on maps, but we are disappointed to see that the county divisions used are political and not the more serviceable vice-comital areas of Watson. Some idea of the lack of observation in the north may be gathered from the distribution in Scotland of *Gryllotalpa*, *Mecostethus grossus*, and *Tettigonia viridissima* still based on the ancient records of Don (*circa* 1830). *Acrydium bipunctatum* L. owes its place on the British list to two specimens from "Abernethy" in the Cambridge Museum. Records such as these are very unsatisfactory material on which to base local distribution, and it is hoped that Scottish entomologists will respond generously to Dr Burr's appeal for information. The book certainly justifies its sub-title and we heartily recommend this study to all our readers.

British Animal Tracks. By J. S. R. CHARD. London: C. Arthur Pearson, Ltd., 80 pp. Price 3s. 6d. net. This is an entertaining book written with a keen insight into the lives and behaviour of our land mammals. The volume is divided into two parts. The first deals with general considerations of tracking, and one is shown how to deduce the pace, age, sex and physical state of animals from a study of their footprints. The second part contains a detailed and clearly illustrated account of the tracks of each species. Two appendices on how to take plaster casts and how to photograph tracks increase the practical value of this useful book.

The author has written a fascinating account of British mammals from an unusual aspect; his book is a store of interesting information and should appeal to all naturalists.

HYMENOPTERA ACULEATA FROM THE NORTH-WEST HIGHLANDS.

By G. M. Spooner, M.A., Weymouth.

The following records of Aculeate Hymenoptera, obtained during a tour of Skye and the northern part of the west mainland coast in June of 1936, are given in full in consideration of the scarcity of data from this area, particularly from the more extreme north-west. Indeed, as far as can be ascertained, West Sutherland seems to have been entirely neglected. In view of our growing knowledge of the insect fauna of the Scottish Isles, and of the distribution of certain species and subspecies which are peculiar to them, our ignorance of the mainland forms in outlying regions is to be deplored. In addition, the northern limits of the comparatively small proportion of British species which range into the Highlands is still very imperfectly known, particularly on the more inhospitable western coasts.

Special attention was given to the humble-bees of subgenus Agrobombus. Richards (1935) has drawn attention to some arresting problems which arise when consideration is given to the distribution of four British species (of which three, *muscorum* L., *smithianus* White, and *agrorum* F., range into the area with which we are concerned). If reference is made to Richards' discussion, it is at once evident that further information on the distribution and habits of these species in the west and north highlands is much to be desired.

For the purpose of investigating the area as efficiently as possible in the time available—since either the number of localities visited or the thoroughness with which each locality was worked had to be sacrificed—a method of sampling the Bombus population was adopted. At a chosen station all Bombus captured or identified on the wing were recorded, until, in localities in which Bombus were frequent, the number of specimens reached at least 20. In situations in which Bombus were scarce, an attempt was made to give at least two hours' search. Specimens seen but not identified

for certain were also noted; but these proved a small fraction of the total and for most purposes can be disregarded. Twenty-two stations worked, in Skye, Wester Ross, and West Sutherland, satisfied the above requirements; but records were also obtained from eighteen others, including two in Caithness. The method proved useful for procuring a balanced selection of localities; and in subsequent analysis of the data it has made it possible to abstract readily any correlations that could have emerged between occurrence of a species and such factors as altitude, vegetation, latitude, etc. I wish gratefully to acknowledge the help given me, during the course of collecting, by my companion, Dr H. B. Moore.

Other aculeates (excluding ants) were collected as occasion afforded.

In the following list of records the localities are grouped under their respective comital or vice-comital area. The latter are indicated by abbreviations. Thus: **S.** = Skye, which constitutes the greater part of area **104** (Ebudes N.); **W. R.** = Wester Ross, area **105**; **W. S.** = West Sutherland, area **108**; **Ca.** = Caithness, area **109**. The ordinary numerals refer to the number of specimens noted, which, in the case of Bombus (unless otherwise stated), indicate queens.

Apoidea.

Bombus muscorum (L.), subsp. *pallidus* (Evans). **S.**: Dunvegan Castle, 3; Bracadale, at 340 ft., 3; Drynoch, 4; Glen Brittle, at 950 ft., 1; Elgol, 2; Beinn na Caillich, E. slope, 450-500 ft., 2. **W. R.**: Glencarron Lo., 500 ft., 2; Aultgrishin (coast N. of Gairloch), 5; Braemore Forest, 1050 ft. and 1250 ft., 2. **W. S.**: Stoer, 4; Geodha Chobhair (coast, 12 miles S. of Cape Wrath), 8; Strath Melness, 1; Skullomie, Tongue Bay, 12. **Ca.**: Nybster, 3. E. Sutherland (**107**): Helmsdale, 2. Partial to the flowers of *Lotus*, and only once taken on Rhododendron.

Though scarce on the east side, and outnumbered by *agrorum* generally, the species seemed well spread along the western regions of Skye. It was traced up the western side of the mainland, both inland and in outlying parts of the coast, being found more plentifully in the extreme north,

where *agrorum* proved scarce. It appears more inclined to range into high ground than *agrorum*, as is indicated by the following figures, which, though small, show a consistent trend. The ratios express numbers of *muscorum* to *agrorum* in stations grouped according to height above sea-level. The northernmost localities are excluded.

Above 900 ft.	3 : 4
350-900 ft.	8 : 15
100-350 ft.	8 : 45
0-50 ft.	8 : 71

Throughout the district visited the metanotal hairs of fresh specimens show a relatively bright colour, contrasting with the pale colouring of those on the collar and scutellum. In this feature, and others, my whole series conforms well with Richards' description of subsp. *pallidus*, the characteristic form of the mainland of Ireland and Scotland. In W. Ross and Skye, however, there is more darkening on the hairs ventrally, *e.g.* on middle femora and reflexed margin of 1st and 2nd tergites, than is typical.* (One specimen from W. Skye has very considerable infuscation ventrally.) In this respect variation is in the direction of the Orkney subspecies (*orcadensis* Richards). But, passing northwards, one finds this tendency lost. Indeed, the specimens from Tongue include the most unquestionably typical examples I procured. There were no indications of a gradation between *pallidus* and *orcadensis* on the north coast; and this suggests that the differences of the latter are not purely climatic, and serve to justify its subspecific status.

Bombus agrorum F. Dumbartons. (**99**): E. shore of Loch Long, 2 on bluebells. Argylls. (**98**): Glencroe, 3 visiting *Ulex*. **S.**: abundant through the island from Ardmore Point to Kyleakin, outnumbering other species (116 recorded out of total of 244); particularly numerous at Dunvegan Castle, visiting the blossoms of *Rubus Idaeus*. **W. R.**: Inversheil; Stromemore; Glencarron Lo.; Gairloch; Aultgrishin. **W. S.**:

* Richards (1935, p. 77) observed that black hairs, on the middle femora posteriorly, were more numerous in specimens from the North-West.

Elphin; Loch Assynt; Lochinver; Stoer (1 only); Tongue Bay (1 only). E. Sutherland (**107**): Helmsdale.

The scarcity of records in the extreme north is almost certainly to be attributed to a general decline of the species, and not to the nature of the habitats investigated.

It is well known that the form in which the species occurs in the west highlands northwards, namely var. *septentrionalis* Vogt, shows but little dark colouring on the abdominal hairs. The majority of specimens in the north-west belong to the more distinctive "pale-haired" type, in which black hairs are only apparent on close inspection. Two examples from Elgol, W. Skye, are completely devoid of them. Only six examples, in a series of over ninety, show conspicuous dark patches on the sides of the 2nd and 3rd tergites, and three of these are from one locality at the head of Loch Duich, W. Ross. In spite of their pale colour, there is no difficulty in distinguishing *with the naked eye* members of this species from *muscorum*. If the abdomen is viewed posteriorly from a ventral angle, the clothing of the more apical segments (at least) shows a decided ochreous tinge, contrasting with the duller or yellowish shade of other pale hairs visible from this aspect. In addition, segmental tufts of dark or sordid hairs at the sides often cause conspicuous interruptions in the continuity of the pale colouring. A very different impression is given by the uniformly pale yellow clothing of *muscorum*.

Bombus donovanellus (K.) (*derhamellus*, *ruderarius*). **S.**: Drynoch, 2; Elgol, 10. **W. R.**: Aultgrishin, 4. **W. S.**: Elphin, 1; Loch Assynt, 1; Stoer, 5; Geodha Chobhair, 1; Skullomie, Tongue Bay, 1. Mainly restricted to low-lying localities, on meadowland round crofts or sandy ground on the coast.

Bombus distinguendus Mor. **S.**: Broadford, 1. **W. S.**: Skullomie, Tongue Bay, 5. **Ca.**: Nybster, 2. E. Sutherland (**107**): Helmsdale.

Laidlaw did not find this species at Ullapool. It is evidently scarce along the N.W. coast, becoming more numerous in the north, in the direction of Caithness. Duncan (1935) has found it plentiful in the Orkneys.

Bombus hortorum (L.). Skye, W. Ross, and W. Sutherland: widely spread, but not found plentifully anywhere, except for one locality in S.W. Skye, on Rhododendron. One in Skye at 900 ft.

Bombus jonellus (K.) subsp. *jonellus*. **S.**: Dunan, 2; Glen Arroch, 1000 ft., 1; Broadford Bay, on thrift, 5; not met with on the western part of the island. **W. R.**: Braemore Forest, 1150 ft., 1. **W. S.**: moor on coast near Whiten Head, 9 ♀ ♀ and 3 ♀ ♀, on *Erica*. **Ca.**: Dunnet Head, 1; Dunnet dunes, 1.

All specimens are of typical mainland form. It is interesting to note that not even in the two extreme northern localities is there any variation in the direction of subsp. *hebridensis* (O. Hebrides) or *vogtii* (Shetlands).*

Bombus lucorum (L.). Generally distributed in various habitats from Skye to Caithness, often plentiful. In Cluanie Forest, W. Ross, one was taken at 2200 ft., and another seen at the top of a 3000 ft. peak. It was, however, sometimes scarce or absent in places where other species were numerous —notably on grass-land and waste ground around croft holdings.

Bombus soroënsis F. **S.**: Dunvegan Castle, 6; Elgol, 5. **W. S.**: Lochinver, 2.

Bombus lapidarius (L.). **W. R.**: Aultgrishin, coast N. of Gairloch, 2. **W. S.**: Stoer, 17, predominant species; Geodha Chobhair, 23, again predominant; Skullomie, Tongue Bay, 4. **Ca.**: Dunnet sand-dunes, 1.

The species, not found in Skye, became increasingly frequent along the mainland west coast passing northwards, especially on blown sand deposits bordering sandy bays and dunes. At Stoer, however, it also occurred freely on adjoining rocky ground, though absent from similar localities farther south. It was more noticeably restricted to low altitudes than other species. These observations have bearing on Laidlaw's remarks on the scarcity of *lapidarius* in the north-west, and its recent increase.

The absence of certain other species may be noted. Laidlaw's experience at Ullapool in 1932 in failing to note any *B. lapponicus* was repeated in our case. The general

* See Richards, 1933.

sparseness of *Vaccinium myrtillus* throughout the district covered was considered the probable cause, as Laidlaw suggested for the Ullapool district. Our failure to discover any signs of *B. smithianus* White is referred to below; and the area is presumably beyond the northern limits of *B. terrestris*. Perhaps, however, the most striking absentees are species of the genus *Psithyrus*. In 470 records of Bombids, cuckoo-bees are completely lacking.

Osmia parietina Curt.*—**S.**: Elgol, one abraded ♀ flying over ruined wall on undercliff, 18th June. There seems to be only a single previously published record for Scotland.† *Nomada flavoguttata* (K.)—**W. R.**: Strath Cluanie, 1200 ft., 2 ♂ ♂; Inverinate. **W. S.**: Lochinver, 4 ♀ ♀. No doubt here inquiline on *Andrena subopaca*. *Andrena fucata* Sm.—**S.**: Elgol, ♂. *Andrena tarsata* Nyl.—**W. R.**: Aultgrishin, both sexes numerous on cliff slopes, 20th June. **W. S.**: Lochinver, both sexes, 22nd June; Loch Assynt, both sexes, 24th June. *Andrena subopaca* Nyl.—**W. R.**: Inverinate, ♀. **W. S.**: Lochinver, 2 ♀ ♀. *Halictus fratellus* Perez.—**W. R.**: Inverinate, Loch Duich, ♀ ♀ at roadside bank. *Halictus leucopus* (K.)—**W. R.**: Inverinate, roadside bank. **W. S.**: Lochinver, ♀. *Halictus* sp. allied to *smeathmanellus* (K.)†—**S**: coast at Elgol.

SPHECOIDEA.

Crossocerus tarsatus (Shuck.) (*palmipes* auctt.).—**W. S.**: Lochinver, ♀.

VESPOIDEA.

Vespa sylvestris Scop.—**S.**: Dunan.

Vespa norvegica F.—**S.**: Dunan; Kirkibost.

Vespa rufa L.—**S.**: Kirkibost; Dunvegan Castle.

Ancistrocerus pictus (Curt.).—**S.**: Elgol, ♂; Glen Arroch, at 800 ft., ♂. **W. R.**: Aultgrishin, males freely along the coast, 20th June, and mud-cells irregularly placed on loose stones and boulders, in one case freshly stocked. **W. S.**: Stoer, freely along the rocky shore, some visiting thrift, as well as on rocky ground inland, both sexes; Geodha Chobhair,

* See E. Saunders, *Ent. Mo. Mag.*, 36 (1900), p. 51.

† See R. C. L. Perkins, *Ent. Mo. Mag.*, 71 (1935), p. 105.

distributed along the cliff-tops, 10-12 miles S. of Cape Wrath. Evidently a widely spread species in the north-west, nesting on exposed rock surfaces on the rocky coast and in hill country.

Psammochares spissus (Schd.). **S.**: near Kyleakin, ♂, 12th June.

Psammochares nigerrimus (Scop.) (*niger* pars). **S.**: Elgol, ♂ ♂ on grassy ground on undercliff, etc., 18th June. **W. R.**: Aultgrishin, ♂ ♂ on cliff slopes, 20th June. **W. S.**: Loch Assynt, ♂ ♂ on rough ground by roadside, 24th June. Easterness (96): Lochness, ♂ roadside, 29th June. Probably well distributed in the north. Older Scottish records of *niger* may thus include this species.

Psammochares trivialis (Dhlb.) (*gibbus* L.). **W. R.**: Aultgrishin, one ♂.

Priocnemis minor (Zett.). **W. S.**: Lochinver, 22nd June, a number of ♂ ♂ on bare patch by roadside; one ♀ on cliff-top 10 miles S. of Cape Wrath, 25th June.

Chrysis ignita (L.). **W. R.**: Aultgrishin, accompanying *A. pictus*.

General Remarks.

Persistence of Mainland Types in the North-West.—Nine species of Bombus were traced round the north-west coast. Of these, two, *distinguendus* and *lapidarius*, are scarce in Skye and W. Ross, but become more plentiful in the north. Among the others, *agrorum* was found to decline in the north, and possibly the same is true for *soroënsis*. It is of some interest that two species, *muscorum* and *jonellus*, which are represented by distinctive types in the Outer Isles, maintain the typical mainland form on the north coast, and were not found to show any variation in the direction of the island forms.

Poverty of the Aculeate Fauna.—The small number of solitary bees and wasps recorded is not solely the result of sporadic collecting. It largely reflects the well-known progressive decline in number of species passing northwards in Great Britain. The real poverty of species was so strikingly apparent in certain localities as to provide valid

"negative" data. Thus at Stoer, north of Lochinver, there are expanses of sandy ground, providing various adequate sites for burrows, and supporting a variety of flowering plants. There was also no apparent scarcity of dipterous and arachnid prey. Yet, on 22nd-23rd June, in ideal weather, not a single burrowing aculeate (other than Bombus) was observed. Exactly similar conditions were experienced on sheltered sandy ground at Geodha Chobhair, 24th-25th June, and again on Dunnet sand-dunes, 28th June. It is likely, of course, that one or two species may appear later in the season.

The smithianus-muscorum Problem.—Bombus muscorum, though seen to be well established along the west and north coast, does not occur in the Outer Hebrides or Shetlands, where it is replaced by the allied *smithianus* (see Richards, 1935). The curious "fringing" distribution of the latter species is compared by Richards to the suggestive parallel afforded by two groups of voles. It looks very much as if *muscorum*, when it originally spread through Britain, somehow displaced *smithianus*, which survived only in such outlying regions of its former range as had become geographically inaccessible by the time *muscorum* arrived. At the same time account has to be taken of a single specimen captured recently in S.W. Ross. Richards suggests that the species still survives on higher ground in Skye, W. Ross, and Westerness, implying that competition with mainland Agrobombus may here be relaxed.

Some attempt was made in Skye to test the latter hypothesis. No *smithianus* were found. With increasing altitude individuals of all Bombus become scarcer, and an adequate search would take up much time. But it is perhaps suggestive that no species were met with on higher ground which did not occur freely in suitable low-lying habitats, and that, moreover, *muscorum* was found to penetrate upwards as far as any species. It may, of course, be that Skye is a peculiarly unsuitable area for this investigation, since the high ground in the region of 1000-1500 ft. comprises mainly sharply rising slopes, which are typically barren, stony, and windswept, and which, before the heathers are in bloom, support very few flowering plants suitable for Bombus.

In the less explored north-west, again, no evidence of the occurrence of *smithianus* was procured. Unless a different state of affairs is revealed on the mainland south of Skye, it seems that *smithianus* is at best a very scarce species in the area through which *muscorum* and *agrorum* are distributed. There is, indeed, nothing to show that its status in these regions depends on anything more than occasional chance dispersal from the islands which constitute its headquarters.

The geographical segregation of the two species undoubtedly presents a peculiar problem. It is, after all, only necessary for a single *smithianus* queen to stray landwards to give the possibility of the growth of a mainland colony (and *vice versa*). Even if the Minch provides an effective barrier for such dispersal, it is unlikely that Bombus do not get across the narrow channel which separates Coll.

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BOOK NOTICE

Aquariums and Fish Ponds. By A. LAURENCE WELLS. Warne's Information Series, London and New York: Frederick Warne & Co. Ltd., 64 pp. Price 1s. 6d. The keeping of aquaria and out-door ponds has become increasingly popular in recent years and this little book outlines the general principles to be followed by the beginner. There are many practical hints from the author's own experience regarding the proper balancing of aquaria and ponds. An illustrated chapter on the plants for the pond and aquarium enhances the value of this modestly priced book.

Peacock Butterflies (*Vanessa io*) in Dumfriesshire.—The occurrence of the Peacock Butterfly in Scotland is somewhat uncommon, and I therefore think it worth recording the following records for Dumfriesshire, 1936.

(1) 14th September 1936. Two on Buddleia at White Hill, Lockerbie (Mrs Bell-Irving).

(2) Second and third week September. One or two with Red Admirals (*V. atalanta*), in garden at Woodlea, Moniaive (Mrs Hall).

(3) Second and third week September. One in garden, Dunesslin, Dunscore (Mrs Milne). The latter insect was seen by my wife, who knows the insect well. Mrs Bell-Irving also knows the insect well, and Mrs Hall gave me a very good description, so that I have no hesitation in accepting all three records.—A. B. DUNCAN, Closeburn.

Ringing Puffins: Good Percentage of Recoveries on Breeding Ground.—Of 120 adult Puffins (*Fratercula arctica grabæ*) we marked on an island in Orkney this summer, no less than 17 bore rings of former years; but unfortunately after two years' wear most of the numbers are unreadable, if not worn quite away, due to attrition against the rocks. Eleven of these were marked as adults in 1935, and one had been marked in a previous year, the ring there being too worn to read. Two others were probably marked as adults in 1934, but the other four rings were quite unreadable, two of them being quite blank. In 1935 out of 72 marked, 9 bore rings. Two of these were quite blank, but the other seven were marked as adults in 1928, two in 1929, 1930, and three in 1934.

1463 Puffins in all have been marked with rings on this particular island, but none recovered at all in their winter quarters.—H. W. ROBINSON, M.B.O.U., A.M.A.O.U., Lancaster.

Pintail in Sutherland.—In the SCOTTISH NATURALIST, No. 222, 1936, p. 163, your correspondent reports watching Pintail with a young duck on a Sutherland loch.

In *British Birds*, vol. xxvi., p. 165, a juvenile Pintail was mentioned by Dr W. Norman May, which he had seen as a skin while in Sutherland in the spring of 1933.

I also saw the bird which had been shot with another in Caithness in the first week in August 1931.

The bird still had large patches of nesting down all over its body, through which the feathers were pushing their way.

There was no doubt that it was a local bird.—MARY G. S. BEST, Andover.

BIRD NOTES FROM SHETLAND.

By GEORGE WATERSTON, Midlothian Ornithological Club.

FEW notes have appeared in recent years on passage migrants and other birds in the Shetlands. Much interesting information has been accumulating lately in these islands, but no one seems to have taken the trouble to publish these records in any scientific journal.

Accompanied by Mr D. Q. Sandeman, I visited Whalsay, Lerwick, and Sumburgh in September 1936. On Whalsay we were introduced, through the kindness of Mr R. Stuart Bruce of Symbister House, to a very capable young ornithologist, Mr Tom Bruce, jun., who has been gathering notes and specimens for quite a number of years. Mr Samuel Bruce at Lerwick also kindly gave us permission to examine his collection, in which are a number of specimens hitherto unrecorded.

I am greatly indebted to these gentlemen for permission to publish details of these records and also notes of interest on bird-life in the Shetlands generally.

ROOK (*Corvus f. frugilegus*).—According to Mr Samuel Bruce this bird is an occasional winter visitor as well as a bird of passage.

ROSE-COLOURED PASTOR (*Pastor roseus*).—One seen at Mid Yell on 13th June 1935 by Mr Charles J. Inkster. An adult male was seen in the gardens at Sumburgh House on 1st July 1936 by Mr George Stout.

GREENLAND REDPOLL (*Carduelis flammea rostrata*).—I examined a specimen of this race which was obtained on Whalsay by Mr Tom Bruce on 14th May 1936. Mr Norman B. Kinnear kindly confirmed the identification. (This is apparently the second record for Shetland.)

LESSER REDPOLL (*Carduelis flammea cabaret*).—A specimen was obtained near Lerwick on 6th October 1936 by Mr Samuel Bruce, who kindly sent it to me for examination.

SCARLET GROSBEAK (*Carpodacus e. erythrinus*).—Mr Samuel Bruce has records of four or five specimens from Lerwick. This autumn two were seen on 6th September,

two on 13th September and one on 4th October 1936. (This species has not been recorded from Shetland previously, although it occurs almost regularly on autumn passage on Fair Isle.)

TREE SPARROW (*Passer m. montanus*).—According to Mr Samuel Bruce, the colony which used to exist on Noss is now defunct. A specimen of this species was obtained on Whalsay on 20th May 1933 by Mr Tom Bruce, jun.

ORTOLAN BUNTING (*Emberiza hortulana*).—According to Mr Samuel Bruce, occurs at Lerwick almost regularly each year on double passage. On Whalsay, a fine ♂ was secured on 5th May 1936, and another on 28th August 1935 by Mr Tom Bruce, jun.

RUSTIC BUNTING (*Emberiza rustica*).—A ♂ specimen obtained at Ness of Sound on 11th October 1936 was kindly sent to me for examination by Mr Samuel Bruce.

REED BUNTING (*Emberiza s. schœniclus*).—According to Mr Samuel Bruce, is a regular passage migrant at Lerwick and Whalsay. (Hitherto regarded as "O.P.")

EASTERN SHORT-TOED LARK (*Calandrella brachydactyla longipennis*).—Mr Tom Bruce, jun., showed me a specimen of a Short-toed Lark which he had obtained some years ago on Whalsay, and as there was a doubt as to whether it was *brachydactyla* or *longipennis*, I sent it down to the British Museum, where it was kindly identified by Mr N. B. Kinnear as undoubtedly *longipennis*. I have obtained definite corroborative evidence that this bird was shot on Whalsay, but the date is wanting. (Hitherto unrecorded in Shetland.)

WOOD LARK (*Lullula a. arborea*).—Two specimens were obtained near Skaw, Whalsay, by Mr Samuel Bruce—one on 6th and the other on 27th October 1921—the sexes were undetermined. I examined a specimen in Mr Tom Bruce's collection which was obtained on Whalsay on 18th March 1936. (Hitherto unrecorded in Shetland.)

SHORE LARK (*Eremophila alpestris flava*).—A ♂ and a ♀ were obtained on Whalsay on 7th October 1933 by Mr Tom Bruce, jun. I examined both these birds in his collection. (Hitherto unrecorded in Shetland.)

RICHARD'S PIPIT (*Anthus r. richardi*).—A specimen of

this race was obtained on Whalsay on 7th September 1928 by Mr Tom Bruce, jun. I examined it carefully with Mr Samuel Bruce, there being no doubt as to its correct identification. (Hitherto unrecorded in Shetland.)

TREE PIPIT (*Anthus t. trivialis*). — According to Mr Samuel Bruce, is a regular passage migrant—more common in spring than in autumn. (Hitherto regarded as "O.")

BLUE-HEADED WAGTAIL (*Motacilla f. flava*).—A small flock of four were seen on Whalsay on 4th September 1936 by D. Q. Sandeman, Tom Bruce, and myself.

(Black-headed Wagtail (*Motacilla flava feldegg*).—Mr Tom Bruce, jun., obtained perfect views at close range of a small yellow Wagtail with yellow underparts and jet black head on Whalsay on 20th May 1936. He feels certain that it was this race, but unfortunately the bird was not examined in the hand.)

YELLOW WAGTAIL (*Motacilla flava rayi*).—One was seen on Whalsay on 14th May 1936 by Mr Tom Bruce, jun.

CONTINENTAL GREAT TIT (*Parus m. major*).—Mr Tom Bruce has a specimen in his collection which was obtained on 15th October 1932. Mr R. Stuart Bruce informs me that a pair spent the winter 1935-1936 around Symbister House, Whalsay.

LESSER GREY SHRIKE (*Lanius minor*).—I examined a specimen of this race in Mr Tom Bruce's collection which was taken on Whalsay on 14th September 1929. (Hitherto unrecorded in Shetland.)

SPOTTED FLYCATCHER (*Muscicapa s. striata*).—According to Mr Samuel Bruce, is almost regular on double passage around Lerwick. Is also recorded in Whalsay. (Hitherto regarded as "O.")

PIED FLYCATCHER (*Muscicapa h. hypoleuca*).—According to Mr Samuel Bruce, this bird is a regular double passage migrant. We saw numbers on Whalsay on 4th September, and at Sumburgh on 6th and 7th September 1936. (Hitherto regarded as "O.P.")

RED-BREASTED FLYCATCHER (*Muscicapa p. parva*).—According to Mr Samuel Bruce, this species is occasional in autumn, occurring at Lerwick and Whalsay. It has not been recorded on spring passage. (Hitherto regarded as "O.")

REED WARBLER (*Acrocephalus s. scirpaceus*).—I examined a specimen of this species, which had been obtained on Whalsay on 11th May 1936, in Mr Tom Bruce's collection. Mr Samuel Bruce also showed me a specimen taken at Mountfield, Lerwick, in September 1930.

ICTERINE WARBLER (*Hypolais icterina*).—I examined a specimen, which had been obtained on Whalsay on 20th August 1934, in Mr Tom Bruce's collection. This is the second recorded occurrence of this species in Shetland, the previous record being of one obtained on 15th May 1910. (*A.N.H.S.* 1911, 183.)

BARRED WARBLER (*Sylvia n. nisoria*).—According to Mr Samuel Bruce, this species is a regular passage migrant in autumn at Lerwick, but has only once been seen on spring passage. It has been noted on Whalsay in autumn. I examined a specimen which Mr Samuel Bruce kindly sent me which was obtained at Lerwick on 14th October 1936.

SIBERIAN LESSER WHITETHROAT (*Sylvia curruca affinis*).—Mr Samuel Bruce obtained a specimen of this race, a young male, at Lerwick on 3rd October 1936, which he kindly sent to me for confirmation. I am indebted to Mr N. B. Kinnear for kindly substantiating the identification. This is the first reported occurrence of this species in Shetland, although it has been noted frequently on Fair Isle.

ICELAND REDWING (*Turdus musicus coburni*). — Mr Samuel Bruce kindly sent me two specimens of this race for examination, a ♂ (wing, 126 mm.) obtained on 13th December 1936 and a ♀ (wing, 120 mm.) on 31st October 1936. (Hitherto unrecorded in Shetland.)

BLACKBIRD (*Turdus m. merula*).—Mr R. Stuart Bruce writes: "Two pairs of Blackbirds are building nests in the wall of our park—there were none here when I was a boy." Mr W. Laidlaw M'Dougall states that they are increasing as a breeding species at Sumburgh; and Mr Samuel Bruce reports an increase at Lerwick.

WHINCHAT (*Saxicola r. rubetra*).—This species is a regular spring passage migrant, but is rare in autumn. (Hitherto regarded as "O.P.")

STONECHAT (*Saxicola torquata hibernans*).—A number

of these birds were seen on Whalsay during the last week in March 1936. Mr Samuel Bruce regards this species as an occasional passage migrant at Lerwick. (Hitherto regarded as "O.")

BLACK REDSTART (*Phœnicurus ochrurus gibraltariensis*).—Occurs regularly in autumn on Whalsay, and occasionally in spring. (Hitherto regarded as "O.P.")

BLACK-BELLIED DIPPER (*Cinclus c. cinclus*).—Mr Tom Bruce obtained a fine male beside Vats Houle Loch, Whalsay, on 30th March 1936 which I examined in his collection. The previous single record of the occurrence of this race was in 1898 (Harvie-Brown's *Fauna*, 78) when a specimen was obtained at Spiggie on 27th November.

HOOPOE (*Upupa e. epops*).—There is a stuffed specimen in one of the crofts on Whalsay, which was obtained on the island—no date given.

ROLLER (*Coracias g. garrulus*).—I examined a fine specimen of this species which had been obtained at Brough, Whalsay, in the autumn of 1930. I obtained corroborative evidence that it had been got there. Harvie-Brown, in his *Fauna*, discredited Saxby's reported occurrences which appeared in the latter's *Birds of Shetland.*

KINGFISHER (*Alcedo atthis ispida*).—A Kingfisher was seen at Symbister, Whalsay, on 18th August 1936 by several reliable observers, including Mr D. J. Williamson, who reported the occurrence in the *Shetland News.* This is the first time a Kingfisher has been seen in Shetland.

GREEN WOODPECKER (*Picus viridis* subsp.?). — A specimen of this species was obtained on 20th September 1929; but it was most unfortunately destroyed by a cat and the remains were not found, despite an assiduous search. Mr Tom Bruce and Mr R. Stuart Bruce both examined it and are positive of their identification.

WRYNECK (*Jynx t. torquilla*).—Mr Tom Bruce reports two specimens from Whalsay—one on 2nd September 1934 and one on 8th May 1936.

CUCKOO (*Cuculus c. canorus*).—Mr Samuel Bruce informs me that to his knowledge this bird has never nested in

Shetland, but "he has seen young birds on the wing with down on their heads."

ROUGH-LEGGED BUZZARD (*Buteo l. lagopus*).—Mr Samuel Bruce was sent the remains of a specimen which had been picked up dead on the N.W. side of Whalsay on 25th October 1936.

BITTERN (*Botaurus s. stellaris*).—The fourth Bittern to be recorded in the Shetlands was picked up dead by Mr William Hunter, jun., at the Vaddle of Skellister, South Nesting, in February 1936. The specimen is now in the Anderson Institute, Lerwick.

SHELDUCK (*Tadorna tadorna*).—According to Mr W. Laidlaw M'Dougall, this species now nests regularly on the links at Sumburgh. During the summer of 1936 at least six pairs nested and there were plenty non-breeding birds.

TEMMINCK'S STINT (*Calidris temminckii*).—I examined a specimen of this species in Mr Tom Bruce's collection which had been obtained on Whalsay on 20th September 1921. (Hitherto unrecorded in Shetland.)

BLACK-TAILED GODWIT (*Limosa l. limosa*).—Mr Tom Bruce, together with Mr Samuel Bruce, saw one on Whalsay on 7th October 1934.

WHIMBREL (*Numenius p. phæopus*). — According to Mr Samuel Bruce, this species has now become very rare as a nesting species and he attributes the cause of this to the increase of the Bonzie.

GREAT SNIPE (*Capella media*).—Mr Tom Bruce has obtained single birds of this species on 6th September 1933 and 6th September 1935. He also saw one on Whalsay on 29th March 1936. (In *British Birds*, xxix. 174, Mr G. K. Yeates is reported as having shot one on 5th September 1935 at Sumburgh.)

BLACK-HEADED GULL (*Larus r. ridibundus*).—This species is increasing rapidly as a breeding bird in the Shetlands. In 1922 they arrived to breed for the first time on Whalsay. In 1935 there were 90 nests and in 1936, 150 nests. This colony is on a small island in the middle of the Loch of Huxter—the island measuring only 40 × 30 feet approximately.

GLAUCOUS GULL (*Larus hyperboreus*).—A single bird

remained throughout the summer of 1936 in Lerwick harbour and was frequently observed by Mr Samuel Bruce.

GREAT BUSTARD (*Otis t. tarda*).—Mr Samuel Bruce kindly showed me a ♀ specimen of this species which had been obtained at Hillswick on 19th May 1936. (This is the first record of this species for Shetland.)

SPOTTED CRAKE (*Porzana porzana*).—I was shown two specimens of this species which were obtained on Whalsay; no dates given.

RED GROUSE (*Lagopus s. scoticus*).—According to Mr R. Stuart Bruce, efforts have been made to introduce this species in the Shetlands but without success.

PARTRIDGE (*Perdix p. perdix*).—I am indebted to Mr R. Stuart Bruce for particulars regarding the introduction of partridges in Shetland. Mr Bruce has in his possession a letter from Brigadier William M'Intosh, dated April 1742, from Edinburgh Castle, saying that he "is sending four brace to Delting, where he hopes they will do well, and provide sport for the gentlemen of the County—who ought to have the same pleasures as gentlemen further south."

The Grasshopper (*Acrydium bipunctatum* L.) in Perthshire.—In the SCOTTISH NATURALIST for March-April 1935, I appealed to naturalists in Scotland to watch for the northern form *Acrydium bipunctatum* L., so far known from these islands only from two specimens from Abernethy in the Cambridge Museum and one without data in the British Museum.

Many entomologists have been good enough to respond, and I have received specimens of *Acrydium* from Inverness-shire, from Barra, and from Kintyre, but all of the common Central European form which we are obliged to call *A. vittatum* (Zett.), which is common throughout Great Britain.

Now at last I am glad to report that Mr A. Rodger Waterston has found it in Clackmannan Forest, in south Perthshire, where on 14th June 1936 he took eight males and five females. This is very gratifying, and I hope will encourage collectors to work out the distribution and relationship of these two closely allied species. The antennal segments in the true *A. bipunctatum* are so short and knotted that, once seen, they are recognised without fail. If there is any feeling of hesitation, one may be sure that the specimen examined is *A. vittatum*.—MALCOLM BURR, Dorney, Windsor.

Herring Gulls feeding on Starfish —For ten or more years the Herring Gull (*Larus argentatus* Pontopp.) has been known to feed on starfish, but nothing appears to have been published on the way in which it is done.

The starfish is a radiate animal. The upper surface is armed with spines which are directed obliquely towards the apex of each ray. When the finger is rubbed along the ray from base to apex the surface feels smooth, but if the ray is rubbed in the opposite direction the surface proves to be disagreeably rough. The problem presented to the Herring Gull is to swallow an animal of this description in such a way that no ray travels down the tender gullet with the apex leading. The ancestors of the Herring Gull have solved the problem, having evidently long since discovered that if the attempt is made to swallow a starfish whole, the result is disastrous, since it is impossible to deflect all the rays sufficiently to avoid the sharp spines.

The five-rayed star, *Asterias rubens* L., is seized by the base of a ray and shaken violently till the ray separates from the rest of the star. The detached ray is then swallowed base first. The gull now seizes the star at the place where the ray broke off and proceeds to engulf the starfish. Thus all the rays are swallowed base first. This is characteristic.

The sunstar, *Solaster papposus* L., has more numerous but shorter rays. They are armed in the same manner as those of *Asterias*. The gull takes hold of one or more rays and shakes the star violently until they break off. These rays are individually swallowed base first. The star is next seized by the part where the rays were broken away and is engulfed, all the rays passing into the gullet with their bases leading. If the sunstar is a very large one, the rays are shaken off one by one and swallowed base first, the disc being left uneaten.

The Herring Gull has also another method of dealing with the sunstar. The bird picks a hole in the disc and through the hole cleans out the interior of the disc and the rays. A mere shell remains, quite intact except for the entrance-hole.

The interesting feature of these observations is the perfection of the reactions to a difficult subject. There is no fumbling, no trial-and-error behaviour. Birds of the year, in November, are as competent as the adults and know exactly what to do. Yet, starfish cannot often come in the Herring Gull's way, as it is only after very severe storms that starfish in any quantity are cast up on the beach.—J. M. Dewar, M.D., Edinburgh.

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EDITORIAL

THE SCOTTISH ORNITHOLOGISTS' CLUB.

We are pleased to state that the response to the appeal for members for this newly-formed Club has exceeded all expectations. There was a large attendance at the inaugural meeting held in Edinburgh on 14th January, and the total membership now exceeds 140, a most encouraging start.

The modern trend towards co-operative work in ornithology has shown the need for some central meeting-place where Scottish ornithologists can forgather to discuss problems affecting the bird-life of their country, and we wish this new organisation the success it deserves.

English ornithologists are fortunate in having regular meetings of the British Ornithologists' Club. London, however, is too far away for the majority of people living in Scotland, and there would appear to be great scope for this new Club.

Miss L. J. Rintoul, in her lecture at the First Annual Meeting, drew attention to various problems which confronted ornithologists in Scotland, such as the decrease of Black Game and the Corn Bunting in certain districts, and the increase, on the other hand, of such species as the Lesser Redpoll and the Fulmar Petrel. The status of birds is constantly fluctuating, and she stressed the value of keeping regular notes, not only on rare birds but also on the common species, the status of which in many cases is very insufficiently worked out.

Now that observers in Scotland can be co-opted into investigating such questions, our future knowledge should be greatly increased.

We note with satisfaction that the Council have made plans to conduct an Investigation into the Distribution of the Magpie in Scotland. We feel sure that the results of this should prove of great interest, and we hope that all ornithologists will support the enquiry and send in their notes.

THE SCOTTISH NATURALIST has been adopted as the Official Organ of the Club, and notices of Club activities will be inserted in our columns from time to time.

We invite anyone interested to submit notes and articles on bird-life for publication. It is essential that no valuable records should be lost and we would like to stress the necessity of reporting these as soon as possible.

Full details regarding the Club will be found in the Official Section on page 59, and anyone wishing to join should apply to the Honorary Secretary, Mr George Waterston, 27 Inverleith Terrace, Edinburgh.

Psyllinæ (Hemiptera-Homoptera) in Dumfriesshire.—Having given some attention to the local Psyllinæ, and having Dr Harrison's remarks in mind (SCOT. NAT. 1936, p. 120), it may be worth while recording the species met with. *Aphalara calthæ* Linn., local at Nutberry Moss and not common, in June. *A. exilis* W. and M., sweeping under fir trees, scarce. *Psyllopsis fraxinicola* Först., local but plentiful where it occurs. *P. fraxini* Linn. is also local on ash and not rare. I have found it most abundant on young trees. *Psylla peregrina* Först., common in the Gretna district on hawthorn in spring. *P. alni* Linn. and *P. försteri* Flor. occur together on alder and generally in plenty. *P. betulæ* Linn., very local on birch and not plentiful. I have only met with it in two localities in the Gretna district. *P. melanoneura*, Först., here and there common on hawthorn in spring. *P. nigrita*, Zett., local, on firs in winter and spring. I have also obtained it from ulex. *P. spartii* Guer., not uncommon on broom in summer. *Arytæna genistæ* Latr., common on broom in spring and autumn. It varies greatly in colour. *Trioza remota* Först., Nutberry, on oak in October, scarce. *T. urticæ* Linn., abundant everywhere on nettles from June to August. *T. velutina* Först., local and rare. I have several times beaten it from nettles in June and August. *Livia juncorum* Latr., local on rushes in autumn. I have found it in flood refuse from the River Kirtle in February. *Rhinocola ericæ* Curt., locally common on heather in summer.—JAS. MURRAY, Gretna.

THE AVIFAUNA OF DUDDINGSTON LOCH, MIDLOTHIAN.

By William Serle, M.B., Ch.B., M.B.O.U.

In November 1926, the Committee reporting on the new Bird Sanctuary at Duddingston Loch, after describing the measures they were taking to increase the bird population of the Sanctuary, state: "It is foreseen that in the course of time the changes wrought through these efforts may alter considerably the local topography of the Sanctuary, especially in the region skirting the Loch; and that at the same time the bird population is also likely to alter as regards numbers, variety and relative proportions." This article deals with the present distribution of birds at Duddingston Loch Sanctuary, and reviews briefly the changes in distribution during the last ten years—January 1927 to December 1936—and attempts to analyse the factors controlling that distribution.

Duddingston Loch has an area of nineteen acres. The Loch is sheltered to the south and west by a reed-bed eleven and a half acres in extent. The remaining ten acres of the Sanctuary are made up of marsh and rough meadowland, and the latter supports, besides some old timber, a variety of trees and shrubs planted during the last ten years.

A feature of the bird-life of the Sanctuary is the number and the variety of the Ducks. Of the surface-feeders Mallard (*Anas p. platyrhyncha*) are the most numerous. There are now approximately twenty-five pairs of breeding Mallard on the Loch. The breeding population has more than doubled in ten years, and further, the number of broods of duckling hatched and the size of the broods are proportionately much greater than in former years. Natural enemies of the young ducks—notably the Lesser Black-backed and other Gulls and ground vermin flourish as in the past, but the pike have been greatly reduced by systematic netting on several occasions, and by Cormorants, but chiefly Goosanders, which during the last four years have become regular winter visitors at the Loch, where they fish industriously and successfully. The increase of breeding

birds is most likely due to the peace they enjoy at the breeding season now that the public are rigidly excluded from the Sanctuary.

Towards the end of July, the number of Mallard is augmented by non-resident Duck going into eclipse plumage seeking the absolute security of the Sanctuary, up to three hundred birds being observed at this time; and about fifty pairs of Mallard winter on the Loch, the number varying—frequently with weather changes—from day to day and from week to week. Twenty years ago, when relentless Duck-shooting was practised at the Loch, and people had free access at all seasons, the winter Mallard population was at times only two or three pairs. The astonishing increase in the number of Ducks of this and other species wintering on the Loch is due in my opinion to the exclusion of human beings from the lochside. Freshwater Ducks are timid and resent the proximity of man, and at Duddingston they have taken full advantage of the seclusion and protection afforded them by the Sanctuary. Conditions of food and shelter have not altered; but this remarkable change in the status of certain species of Duck at the Loch may, in some measure, be a reflection of changes of status of the same species of Duck, observed in the Forth Area of recent years.

The breeding Mallard are resident throughout the year, and from the early days of January onwards show an increasing attachment to their respective territories.

Wigeon (*Mareca penelope*) were occasional winter visitors from 1927 to 1934. In 1934 three or four birds were on the Loch during September and October: in 1935 six Wigeon appeared on 21st September and three or four birds remained on the Loch till the end of December when the Loch froze: in 1936 they again appeared in September, and at the end of December ten Wigeon were still daily at the Loch. Throughout the day, they feed industriously on the aquatic vegetation in certain well-defined areas of open water.

The Shoveller (*Spatula clypeata*) was noted regularly at the spring and autumn migrations in the years 1927-29. From 1930 to 1932 I have no personal records of Shoveller at

the Loch. From 1933 to 1936 this Duck was again present during the spring and autumn months and less frequently during the winter. Nine were noted on 10th July 1936. Like the Wigeon this bird is a diurnal feeder on the Loch.

Two pairs of Pintail (*Dafila a. acuta*) were noted in January 1928: a pair were present throughout January and February 1930; thereafter a solitary male appeared occasionally during the winter months till 1935. It was not observed in 1936. The Pintail is not an abundant bird in the Lothians.

The Teal (*Querquedula c. crecca*)—an infrequent visitor in pre-Sanctuary days—has become increasingly frequent in the last ten years, and is now constantly present from September to April though there are usually no more than a few pairs. They frequent the sheltered creeks and the open pools in the reed-bed. I have only one record of the Shelduck (*Tadorna tadorna*). On 29th September 1929 a flock of eleven passed overhead flying westwards.

The Pochard (*Nyroca ferina ferina*) is the commonest diving Duck on the Loch. First recorded as breeding in 1926, one or more pairs have reared young each year since, except in 1929 and 1931. In 1936 six broods of Pochard were observed. There is a small non-breeding flock of males resident throughout the summer. The immigrant birds begin to arrive in numbers in August and September and leave in a body about the second week of March. The numbers of Pochard on the Loch fluctuate from year to year, from week to week and from day to day. The fluctuations can sometimes be obviously correlated with changing meteorological conditions. Since the War years when Duck-shooting ceased on the Loch, Pochard have been present in hundreds during the winter months. In November 1927 and February 1931 over six hundred Pochard were counted on the Loch, and on 12th December 1936 they reached the unprecedented figure of one thousand five hundred and sixty. The vast majority of the birds rest on the Loch through the day and leave for the Firth of Forth—two miles distant—each evening about half an hour after sunset, returning before sunrise. Males outnumber females by about four to

one, and this ratio remains unaltered throughout the winter and spring months.

The Tufted Duck (*Nyroca fuligula*) frequents the Loch throughout the year. In the winter months on an average forty birds are present; from May to July perhaps only two or three pairs. First recorded as breeding in 1918, young have not been observed since 1926.

Appended is a Table relating to the Ducks on the Loch compiled in 1935 from my notes.

Table showing the Weekly Variations in the Numbers of each Species of Duck on Duddingston Loch from week commencing 23rd September 1934 to week commencing 31st March 1935.

(The figure for each species is the greatest number of that species present at any one count during the specified week. Comparatively mild weather prevailed throughout the period under review, the Loch remaining unfrozen throughout the winter.)

1934.	Mallard.	Shoveller.	Pintail.	Teal.	Wigeon.	Pochard.	Tufted Duck.	Scaup.	Goldeneye.	Goosander.
Sept. 23-30	150	1	0	2	1	40+	11	0	0	0
,, 30-Oct. 6	171	2	0	15+	1	105	18	0	0	0
Oct. 7-13	145	2	0	6	4	141	10	0	1	0
,, 14-20	50	3	0	0	3	120	16	0	1	0
,, 21-27	87	1	0	1	4	44	19	0	0	0
,, 28-Nov. 3	24	2	0	0	0	24	23	0	3	0
Nov. 4-10	150	2	0	0	0	116	7	3	0	0
,, 11-17	97	0	0	3	0	360	13	1	2	0
,, 18-24	50	0	0	9	0	370	13	3	0	0
,, 25-Dec. 1	135	0	0	2	0	375	20	0	1	0
Dec. 2-8	170	3	0	6	0	490	15	0	1	0
,, 9-15	130	2	0	11	0	425	25	2	1	1
,, 16-22	34	0	0	2	0	440	15	0	2	5
,, 23-29	60	0	0	2	0	450	19	0	0	6
,, 30-Jan. 5, 1935	110	0	0	8	1	550	17	0	1	10
Jan. 6-12	150	1	0	28	0	655	21	0	2	20
,, 13-19	100+	0	0	7	0	400	16	0	2	19
,, 20-26	176	0	0	5	0	60	31	0	1	9
,, 27-Feb. 2	120	5	0	3	0	260	48	0	2	16
Feb. 3-9	234	5	1	6	0	95	38	1	3	16
,, 10-16	115	2	0	0	0	80	40	0	3	17
,, 17-23	132	0	1	3	0	590	54	0	3	14
,, 24-Mar. 2	90	2	1	6	0	455	70	0	3	6
Mar. 3-9	50	0	0	7	0	450	54	1	3	6
,, 10-16	76	2	1	6	0	415	63	0	3	4
,, 17-23	74	2	1	6	0	400	45	1	4	4
,, 24-30	34	2	0	2	0	110	21	0	3	2
,, 31-Apr. 6	44	0	0	4	0	16	25	0	3	0

The Goldeneye (*Glaucionetta c. clangula*) is now a regular visitor at the Loch apart from the breeding season. From 1927 to 1931 it was rarely recorded. In season 1931-32 a female remained on the Loch throughout the winter, and one or more birds have returned each autumn since and remained till April. The greatest number recorded was six on 9th November 1935. The birds are territorial: they dive incessantly throughout the day. They frequent certain areas of the Loch always close inshore. In this connection we note the following in a Report on the Molluscan Fauna of the Sanctuary published in 1930. "The Loch itself (*i.e.*, a few yards away from the edge of the north side and immediately vegetation ceases elsewhere) was a disappointment. It appears to be bottomed by liquid mud incapable of supporting anything in the nature of molluscan life." The Goldeneye resents disturbance, but its establishment at Duddingston can only in part be attributed to the seclusion of the Sanctuary, since this Duck has of recent years become a winter visitor at an increasing number of freshwater Scottish lochs.

The Scaup (*Nyroca m. marila*) has been recorded during the winter months, not infrequently during the period under review. Seven birds were seen on 25th February 1934. Scaup were most constantly present in the winter 1934-35, though never in numbers

Prior to 1932 the Goosander (*Mergus m. merganser*) was an exceedingly rare visitor at the Loch. On 19th November 1932 a female appeared, and remained more or less constantly at the Loch till 4th April 1933. Latterly it was joined by two other birds. They reappeared in December 1933; as many as ten were at the Loch in April and four birds were noted on 16th May. In the winter of 1934-35 they appeared in greater numbers and twenty were counted on 12th January 1935. In 1935-36 there were fewer Goosanders, and in December 1936 four birds were noted on 5th December, but thereafter only a solitary male bird frequented the Loch. The Goosanders are enthusiastic and successful fishers, and the toll they take of the pike in the Loch may well be correlated with the increasing size of the broods of water-

birds at the Loch the last few seasons. It is instructive to contrast the confidence shown by the Goosanders at Duddingston with the timidity of birds on waters where they are persecuted.

A female Smew (*Mergellus albellus*) was at the Loch from 3rd February to 24th April 1929 and from the 17th to the 24th February 1930.

There has been a gratifying and remarkable increase of the smaller Passeres breeding round the Loch since the inception of the Sanctuary, and in the absence of a proportionate increase in the surrounding district it may be attributed to the breeding cover supplied by the trees and bushes planted, and the seclusion of the Sanctuary at the nesting time. The few acres of the Sanctuary suited to this Order have a varied natural flora; and, as Mr Grimshaw in his Entomological Report on the Sanctuary states, possess a rich and varied insect fauna. He collected over a hundred species of dipterous insects on two visits to the Sanctuary.

A supply of food for nestlings is thus assured, and later in the season at the seeding time, Finches are abundant; and in the autumn months Thrushes feed numerously on the berries. But in winter Passerine birds are few both in number and variety.

Ground vermin take an enormous toll of eggs and nestlings. Thus, of ten nests of Song Thrush with eggs in the last week of March 1935, young were reared from one only. In nearly every case a nestful of sucked egg-shells was found. In June 1934 I saw a weasel removing the last full-fledged Song Thrush from a nest in a hawthorn, five feet from the ground. On 5th July 1935 when ringing a brood of young Kestrels a mile away from the Sanctuary I found at the nest a Song Thrush ringed as a nestling in the Sanctuary a month previously. Yet in spite of their natural enemies, very many young are reared.

The Carrion Crow (*Corvus c. corone*) has, during the last few years, been an infrequent visitor at the Loch. The Rook (*Corvus f. frugilegus*) is abundant and breeds in the vicinity, as does the Jackdaw (*Corvus monedula spermologus*), though neither bird nests in the Sanctuary. The Magpie

(*Pica p. pica*) visited the Loch in February 1928, and from November 1931 till January 1932.

Several pairs of Starling (*Sturnus v. vulgaris*) nest. In the latter half of June 1935 a flock of over five hundred Starlings—all birds of the year—roosted in the Sanctuary.

The Greenfinch (*Chloris c. chloris*), Chaffinch (*Fringilla c. cœlebs*) and House Sparrow (*Passer d. domesticus*) all nest, and the Tree Sparrow (*Passer m. montanus*) which nests near at hand is sometimes noted. Two Goldfinches (*Carduelis carduelis britannica*) were seen on 26th December 1931 and a large flock of Brambling (*Fringilla montifringilla*) in January and February 1929. The Linnet (*Acanthis c. cannabina*) breeds freely, and in 1935 the Lesser Redpoll (*Acanthis flammea cabaret*) was found breeding for the first time in the history of the Loch. At least three pairs bred in 1936. All the nests found have been built in trees—willows, alders and elderberry—planted since 1926. The Finch is increasing as a breeding species in the Lothians.

Possibly twelve pairs of Reed Bunting (*Emberiza s. schœniclus*) nest in the Sanctuary; a few birds winter but most desert the Sanctuary in October and return about the second week of March. The Snow Bunting (*Plectrophenax n. nivalis*) occurs most winters; flocks comprising over a hundred birds have been noted. The Yellow Bunting (*Emberiza c. citrinella*) usually nests and is resident throughout the year. The Skylark (*Alauda a. arvensis*) breeds in the vicinity but not within the Sanctuary bounds.

The White Wagtail (*Motacilla a. alba*) has been noted infrequently on passage; the Grey Wagtail (*Motacilla c. cinerea*) is a frequent visitor except during the breeding season, and at least one pair of Pied Wagtail usually breed. A feature of the Sanctuary in the autumn months is the great number of Pied Wagtails (*Motacilla alba yarrellii*) that gather each evening to roost in the reed-bed. This evening roost was especially large in October 1933, 1934 and 1936, and in the latter year approximated to three hundred birds. Three pairs of Meadow Pipit (*Anthus pratensis*) as a rule nest each year, but the bird is scarce or absent during the winter. A nestling ringed a few yards outside the Sanctuary

bounds on 19th May 1935 was recovered at Andernos-les-Bains, France, on 2nd October 1935.

The Tree-creeper (*Certhia familiaris britannica*) is an occasional visitor. The Goldcrest (*Regulus regulus*) is frequently recorded at the spring and autumn migration. The Blue Tit (*Parus cæruleus obscurus*) and Great Tit (*Parus major newtoni*) nest in the Sanctuary, and the Cole Tit (*Parus ater britannicus*) is often seen, especially in winter.

The Spotted Flycatcher (*Muscicapa s. striata*) is a variable summer visitor; some years two or three pairs nest in the Sanctuary, in others, as in 1934, none nested. The Whitethroat (*Sylvia c. communis*) and the Willow Warbler (*Phylloscopus trochilus trochilus*) both nest freely and the Sedge Warbler (*Acrocephalus schœnobœnus*) is abundant; the marsh and reed-bed is full of their song in summer. A very late nest contained half-fledged young on 16th August 1934.

The Mistle Thrush (*Turdus v. viscivorus*) breeds in the Sanctuary. About twenty pairs of Song Thrush (*Turdus e. ericetorum*) nest, many of them using the young conifers recently planted. Most of these birds and the nesting Blackbirds (*Turdus m. merula*) find food for themselves and their young in a neighbouring golf-course. These three Thrushes and sometimes the Redwing (*Turdus m. musicus*) are attracted in autumn by the elder and other berries. The Redwing is principally a hard weather winter visitor. The Fieldfare (*Turdus pilaris*) has rarely been recorded during the last ten years.

The Redstart (*Phœnicurus p. phœnicurus*) has occurred occasionally on passage. The Robin (*Erithacus rubecula*) is resident. The Stonechat (*Saxicola torquata hibernans*) breeds in the vicinity, and in 1932 probably bred within the Sanctuary. They sometimes winter here. Three Whinchat (*Saxicola r. rubetra*) were noted on 23rd August 1932. The Wheatear (*Œnanthe o. œnanthe*) is a summer visitor most years, breeding just outside the Sanctuary.

The Hedge Sparrow (*Prunella modularis occidentalis*) and the Wren (*Troglodytes t. troglodytes*) occur throughout the year and breed. A single Dipper (*Cinclus c. gularis*) was observed on 18th October 1933—the only record for the last ten years.

The Swallow (*Hirundo r. rustica*), House Martin (*Delichon u. urbica*), and Sand Martin (*Riparia r. riparia*) are summer visitors but do not nest.

The Cuckoo (*Cuculus c. canorus*) frequents the Sanctuary some years, as in 1930 and 1933, but not others. Swifts (*Micropus a. apus*) are abundant summer visitors, attracted by the rich insect life of the Loch. Swifts linger at Duddingston when those in the surrounding country have emigrated. In 1934 they were seen daily until the 30th September.

The Kingfisher (*Alcedo atthis ispida*) was not seen at the Loch between 1927 and 1931; but in 1932 and 1933 it was a frequent visitor, and in 1934 and 1935 one or two birds were present throughout the year except in May and June. In the winter of 1936 it was not seen.

The Barn Owl (*Tyto alba alba*) has been recorded at frequent intervals since 1928, at times hunting over the marsh regularly morning and evening. On 3rd March 1935 one was picked up dead at the lochside. The same year the nest was found with young in the vicinity. The Long-eared Owl (*Asio o. otus*) is less often seen than formerly. It is often absent for long periods. Thus one roosted regularly at the Loch from August to October 1936, but none was seen previously for over a year. The Brown Owl (*Strix aluco sylvatica*) is common. No Owls nest in the Sanctuary.

The Sparrow-Hawk (*Accipiter n. nisus*) has only rarely been seen at the Loch during the last ten years. The Kestrel (*Falco tinnunculus tinnunculus*) is a daily visitor.

Four Whooper Swans (*Cygnus c. cygnus*) visited the Loch on 25th January 1934. From one to three pairs of Mute Swan (*Cygnus olor*) nest each season. One or more Cormorants (*Phalacrocorax c. carbo*) visited and fished on the Loch from February to May 1933 and from February to March 1935, and one bird was seen in March 1934.

One and occasionally two or three Herons (*Ardea c. cinerea*) frequent the Sanctuary irrespective of the season, but they sometimes leave for periods extending to several weeks. The list of Waders is small. Vegetation extends to the water's edge all round and there is no expanse of mud or bare shore to attract passing migrants. The Woodcock

(*Scolopax r. rusticola*) was seen once only from 1927 to 1936. The number of Common Snipe (*Capella g. gallinago*) fluctuates from year to year but they are usually abundant. In 1935 two birds were observed at the breeding season, and one of them was drumming over the Loch. The Jack Snipe (*Lymnocryptes minimus*), an uncommon visitor in this part, was noted on 22nd February 1933 and on 16th May 1935. A Little Stint (*Erolia minuta*) was seen at the Loch on 2nd May 1935—the first record in the history of the Loch. A party of ten Dunlin (*Erolia alpina schinzii*) flew up the Loch on 8th December 1934. The Redshank (*Tringa t. totanus*) is an occasional visitor chiefly in autumn. The Common Sandpiper (*Tringa hypoleucos*) occurs regularly at the spring and autumn migrations. A Green Sandpiper (*Tringa ochropus*) was recorded on 5th August 1933. The Curlew (*Numenius a. arquata*) and Whimbrel (*Numenius p. phæopus*) are occasionally seen or heard passing over at the migration season. The Golden Plover (*Pluvialis apricarius*) was seen on 24th September 1933 and a flock of forty on 27th October 1936. The Lapwing (*Vanellus vanellus*) is present throughout the year but does not breed. Two Oystercatchers (*Hæmatopus ostralegus occidentalis*) were observed at the lochside on 25th February 1935 and single birds on 23rd and 25th August 1935.

The Common Gull (*Larus c. canus*), Herring Gull (*Larus a. argentatus*), and Black-headed Gull (*Larus r. ridibundus*) are constantly at the Loch at all seasons, and can usually be counted in hundreds. There is a ceaseless coming and going between the Loch and the Firth of Forth. The Lesser Black-backed Gull (*Larus fuscus grællsii*) is a regular summer visitor, and the Greater Black-backed Gull (*Larus marinus*) an occasional winter visitor. No Gulls breed in the Sanctuary.

The Common Tern (*Sterna h. hirundo*) was an occasional summer visitor up till 1930, but since 1931 has been regularly seen throughout each summer. The Sandwich Tern (*Sterna s. sandvicensis*) visited the Loch during May and June 1931 and in the summer of 1936. The occurrence of Terns at the Loch each year is most likely dependent on their numbers and distribution in the Firth of Forth.

A Red-throated Diver (*Colymbus stellatus*) made a short stay at the Loch in March and in July 1928. A Great-crested Grebe (*Podiceps c. cristatus*) was present on the Loch from the 18th to the 26th October 1930. A Slavonian Grebe (*Podiceps auritus*) was seen in December 1927 and in February 1929. One and sometimes two pairs of Little Grebe (*Podiceps r. ruficollis*) nest each season and occasionally remain through the winter. On 21st October 1936 a party of six Little Grebes arrived at the Loch during a period of unsettled weather. They passed on within a few days. It is the only record I have of Little Grebes on passage at the Loch during the last ten years.

The Corncrake (*Crex crex*) was calling in the Sanctuary in May 1932 for some days. The Moorhen (*Gallinula chloropus chloropus*) nests abundantly. About fourteen pairs of Coot (*Fulica a. atra*) breed annually. These birds are resident throughout the year. The winter population is increased by immigrant Coot and usually over a hundred birds winter on the Loch.

The Wood Pigeon (*Columba palumbus palumbus*) and Stockdove (*Columba œnas*) are noted throughout the year and may occasionally nest. The Pheasant (*Phasianus colchicus*) and the Partridge (*Perdix p. perdix*) are regular visitors and have nested in the Sanctuary or its vicinity.

I have made frequent reference to my father's notes on the Loch in writing this article and many of the records quoted are his. I have further consulted the annual Reports on "Bird Sanctuaries in Royal Parks in Scotland."

NOTES

Little Auk in Dumfriesshire.—On Friday, 29th January 1937, a Little Auk was picked up at Porterston (Keir), Dumfries.—Hugh S. Gladstone, Dumfries.

Little Auk at Granton.—On 30th January 1937 a Little Auk was observed a short distance west of Granton Harbour.—M. K. Hamilton.

Two Rare American Birds in Scotland.—An American Black and White Warbler, *Mniotilta varia*, was picked up near Scalloway, Shetland, about the middle of October 1936, and was forwarded to the Royal Scottish Museum by Mr F. Inkster. The arrival of this bird followed a period of stormy weather. The carcase was in a very decomposed condition but was finally preserved and is now in the collection of the Royal Scottish Museum, after being identified by Mr N. B. Kinnear of the British Museum.

Although this bird is a small creature, in its native haunts in America it undertakes long migrations. The breeding range extends west and north-west from South Carolina and New Brunswick as far as the Great Bear Lake in north-western Canada. The winter is spent in Southern Florida, the West Indies, Central Mexico Central America and north-western South America.

This would appear to be the first record of this bird outside America.

For the particulars of the finding of an American Yellow-billed Cuckoo, *Coccyzus a. americanus*, in Orkney I am indebted to Provost J. G. Marwick of Stromness. The skin has been mounted and is in the Museum at Stromness.

Following a period of very severe and stormy weather the bird flew into the farmhouse of Doverhouse, Birsay Parish, about twelve miles from Stromness. The farmer, Mr Alex. Spence, secured the bird and sent it on to Stromness, where it died.

This bird is a very rare visitor to Scotland and appears to have been previously recorded only once, when a specimen was found in Colonsay in 1904. Less than a dozen specimens have been found in England. In America it is a migrant. In the summer it occurs in the south-eastern part of North America, and in winter is found in the northern parts of South America.—A. C. Stephen, Royal Scottish Museum.

Albino Grass Mouse (*Microtus agrestis*) in Dumfriesshire.—Colour varieties in *Microtus* appear to be scarce. It is therefore worthy of record that I received, through the kindness of Mr O. J. Pullen, an albino young male (head and body 86 mm.) that had been brought in by a cat at Hillside, near Lockerbie, on 13th October 1936. Millais, in his *Mammals of Great Britain and Ireland*, mentions four albinos; and Barrett-Hamilton, in his *History of British Mammals*, simply says "white varieties are not common."—Arthur B. Duncan, Closeburn, Dumfries.

NOTES ON SCOTTISH COLEOPTERA AND LEPIDOPTERA.

By W. R. Brough Hynd, St Salvator's Hall, St Andrews, Fife

The following records of the occurrence of certain of the rarer Scottish insects may be of interest either in that they may enlarge the accepted range for the species in question, or may provide a little more material for the study of insect migration.

Oxyporus rufus, L.—In September 1935, four specimens of this large and characteristic Staphylinid were taken out of fungi growing among haystacks on the outskirts of St Andrews, Fife. Many other specimens were noticed, both in the adult and in the larval stages. This beetle has been taken in the Solway Firth district by Douglas (Fowler, *British Coleoptera*, vol. vi., Supplement, p. 239). Since this appears to be the only other record for Scotland, the range is now extended considerably farther north.

Orectochilus villosus, Müller.—Large numbers of this beetle were found under a half-submerged log at Loch Pityoulish, near Aviemore, Inverness-shire, on 11th August 1936. The beetle is characteristic and easily identified, being the only British species among the Gyrinidæ which is pubescent. Other records for this insect which I have managed to obtain have all come from the Lowlands, south of the Forth and Clyde areas (Fowler, vol. i., p. 217). It is said to frequent the underside of stones, etc., during the day and to move only at night, their nocturnal habits being even more marked than in the related genus Gyrinus.

Vanessa io, L. (*The Peacock Butterfly*).—On 10th August 1936, one specimen of this beautiful butterfly was observed, settled on a thistle, in Aviemore village. The insect, which was in fine condition, unfortunately managed to elude the net. However, as I was within a yard or so of it when it had its wings outspread, there is no doubt as to the species. The Peacock has previously been observed at Forres, which is 35 miles farther north, but its occurrence anywhere in the Highlands of Scotland is a most exceptional event.

Macroglossum stellatarum, L. (*The Humming-Bird Hawk Moth*).—This fast-flying moth was watched for a few minutes in a garden in Dunfermline, Fife, on the 23rd September 1936. Unfortunately none of the flowers in the area seemed to attract it and it quickly left, but the species was readily identified by the greyish fore-wings, the yellow hind-wings, and characteristic flight. I believe that this is the first record of the occurrence of the species in Scotland this year. I might add that another specimen of this species was caught at St Andrews in September 1934, while it was flying round phloxes. This capture was never recorded but is referred to now, since details of the occurrence of this migratory moth are much to be desired.

Ringed Golden Plover in Skye.—About the 19th December 1936, while walking along the shore near Kyle, Skye, Mr D. J. Macpherson found the remains of a Golden Plover with a ring bearing the name of the National Museum at Reykjavik, Iceland. The ring was forwarded to the authorities in Iceland and they have given the following particulars of the ringing.

The bird was ringed on the farm of Sandur in the valley of the Adaldalur, Iceland, on the 24th June 1936. The bird belonged to the northern race, *Pluvialis apricarius altifrons*, and this would seem to be the first record of this race in Skye.—A. C. Stephen, Royal Scottish Museum.

Ringed Iceland Redwing in Harris.—Through the kindness of Mr J. S. Grant of the *Stornoway Gazette*, the particulars of the finding of a Redwing with a ring were forwarded to the Museum. The bird was killed by a cat at Quidinish, Leverburgh, Harris, in the first week of December 1936. The ring was a Danish one; and from Mr P. Skovgaard, who was responsible for the ringing, I have received the information that the bird was ringed when young at Myvatn, Iceland, on the 29th July 1936.—A. C. Stephen, Royal Scottish Museum.

Ruff and Little Auk in the Forth.—On the 23rd January 1937 I saw a male Ruff, *Philomachus pugnax*, at Aberlady Bay. It appeared to be quite healthy, and as this is such an unusual date to see it, I think it is worth recording.

A Little Auk, *Alle alle*, was also picked up dead on Kilspindie shore.—D. I. Molteno, Loretto.

HERRING GULLS FEEDING ON STARFISH.

By Chas. Oldham, Berkhamsted.

In his interesting note (Scot. Nat., 1937, p. 32) on the way that Herring Gulls, *Larus argentatus*, treat starfish before eating them, Dr J. M. Dewar suggests that the spines of the starfish unless disposed in one direction would injure the tender gullet of the Gull, and that to swallow a starfish whole would be disastrous. The lining of the gullet is perhaps not so tender as it seems to be, for Herring Gulls swallow enormous quantities of the fractured shells of mussels, *Mytilus*, and later eject the comminuted fragments in the form of loosely agglutinated pellets. However that may be, Herring Gulls do undoubtedly swallow starfish entire, gulping them down, with some difficulty perhaps, and after a good deal of shaking and pecking. Although at times—as in the cases observed by Dr Dewar—a ray may be detached, that may not be the purpose of the violent shaking, although what that purpose is may not be clear unless it be to rid the creature of superfluous sand. My experience of Herring Gulls eating starfish is limited and it may have been exceptional, but on the two occasions on which I have watched the performance the starfish were swallowed whole.

On 4th April 1926, on the shore at Colwyn Bay, Denbighshire, when the tide was nearly at its lowest a Herring Gull picked up and, after much shaking, swallowed two starfish—the common, five-fingered orange-coloured species, *Asterias rubens*, gulping them down whole, with a good deal of effort.

A later observation at Scolthead Island, Norfolk, in October 1934, confirmed the view that as a rule at any rate—I could see no exception to it—the starfish was swallowed whole; the following is a verbatim copy of the notes I made at the time. "On 5th October as the tide was falling (nearly low water) Herring Gulls, adult and immature, and Common Gulls, *Larus canus*, were feeding on starfish—the common, orange-coloured five-fingered species. Sometimes the Gulls picked up the starfish as they waded in the shallow

water, but now and then a Herring Gull would fly along the water's edge and suddenly pounce and submerge, entirely or in part, and seize its prey on the bottom, just as I have often seen Herring Gulls do when hunting for hermit-crabs at Tenby. Having secured a starfish the Gull shook it repeatedly, as a dog might shake a rat, and frequently dropped it in the water between abortive attempts to swallow it; but so far as I could see, this shaking and the associated pecking never resulted in the starfish being dismembered or even losing a finger. It seemed a difficult matter for the Gulls to swallow their prey, and as often as not, after many ineffectual attempts to do so, they abandoned it; when they did succeed it was only at the expense of much gulping and straining. Once a Common Gull, after repeated but unsuccessful efforts to get a starfish down, was frightened off by a Herring Gull which itself ate it. On three subsequent days I again watched the Gulls feeding on the starfish at low water."

Scarcity of Swallows and House-Martins.—During the past four or five summers we have had occasion to regret a notable decrease in the number of Swallows and House-Martins nesting in parts of Galloway. From boyhood until recently I have enjoyed their charming company: House-Martins rearing their broods under the eaves of our mansion, and Swallows doing so under the porch and in various outbuildings; but now both species have quite deserted us. This is not the result of an increase of Starlings or Sparrows either on Monreith House or on farm buildings in the neighbourhood. Over a large lake in the park I used to enjoy watching scores of Swallows and Martins skimming after flies on a summer evening; but last year I never saw one. I would be interested to know whether a like scarcity has been noted in such other parts of Scotland as retain, like Galloway, their rural and arable character.—HERBERT MAXWELL, Monreith.

Red-necked Grebe on Linlithgow Loch.—On February 1937, in company with Mr D. Hamilton, I saw a Red-necked Grebe, *Podiceps g. griseigena*, on Linlithgow Loch. It was very tame, and we particularly noticed its yellow bill and that its black cap reached below the eye.—D. I. MOLTENO, Loretto.

ISLE OF MAY BIRD OBSERVATORY.

Autumn Report, 1936.

By The Midlothian Ornithological Club.

The island was under observation from 2nd to 26th July, 11th to 14th August, and from 20th August to 8th October. We are greatly indebted to the following ornithologists who helped us to make the observations as complete as possible:—

Misses E. Hulse and V. Creswell-Ward; Messrs W. B. Alexander, D. C. Anderson, H. G. Callan, B. W. H. Coulson, H. F. I. Elliott, G. Carmichael Low, M.D., R. R. Nairn, M. G. Robinson, K. B. Rooke, T. M. Scadding, R. B. Sibson, and H. N. Southern.

General Migration and Weather Conditions.

2nd to 26th July.—Even at this early date a few migrants were observed on the island, viz.:—a Swift, Lapwing, Turnstones, Purple Sandpipers, Common Sandpipers, Redshanks, Whimbrels and Arctic Skuas.

11th to 31st August.—During this period the winds were light to moderate, mainly from the south and west.

In addition to the usual early migrants observed on the island in August, the following species were noted in small numbers, viz.:—Tree Pipits, Garden Warblers, Redstarts, Merlin, Kestrels, Teal, Red-breasted Merganser and Common Snipe. Three Lesser Whitethroats were trapped on the 13th and 14th and a Wood Warbler on the 14th. On the evening of the 25th and on the 26th the wind was south-easterly, and on the latter day Willow Warblers had increased from eight to sixty.

1st to 15th September.—Winds persisted from the east until the 5th, with frequent periods of fog and rain; there followed a spell of quiet weather with westerly winds, only interrupted by a south-easterly squall on the night of the 6th. After almost a dead calm on the 8th, the wind settled in the south-east at mid-day on the 9th, bringing fog and

rain with rising wind until the 12th. Subsequently the wind backed to the north-east with calmer conditions.

Migrants were absent or scarce until the 3rd when there was an arrival, including six Pied Flycatchers, and this species was present, in numbers from one to six, throughout most of the fortnight. On the 4th there was a Yellow-breasted Bunting and on the 5th an Ortolan Bunting and a Wood Warbler on the island. Birds, which had not been numerous, were even fewer on the 6th, but a Bar-tailed Godwit flew south-west over the island in the morning. There were some more arrivals on the 7th among them a Dotterel, which remained until the 9th. From the 9th to the 15th migrants were varied and increasing slightly in number. Noteworthy visitors during this period were a Barred Warbler on the 10th and 11th, and another on the 14th, an Ortolan Bunting on the 11th, a Dotterel on the 12th, a Bluethroat (subsp. ?) on the 13th, a Lesser Redpoll on the 14th, and two Siskins on the 15th.

16th to 30th September.—Weather on the whole was good with little rain, although visibility was only moderate for the early part of the fortnight. Winds were light from the east or north-east from the 16th to the 20th, light and variable from the 20th to the 24th and after this mainly light from north or west, except on the 25th and 27th when they blew strong from the north or north-east.

During the greater part of this fortnight birds were varied and interesting. Siskins were on the island from the 15th to the 26th, in numbers varying from two on the 15th, to thirty-five on the 21st. On the 17th, birds had increased and arrivals of particular interest were:—Lapland Bunting (*C. l. lapponicus*), Red-breasted Flycatcher (*M. p. parva*), Northern Willow Warbler, Siberian Lesser Whitethroat, Norwegian Bluethroat (*L. s. gætkei*), Jack Snipe and Water Rail. The Bluethroat was again seen on the 18th, in addition to two Barred Warblers and a Grey Wagtail. On the 19th a Yellow-browed Warbler (*P. i. inornatus*) and a Wryneck were on the island. Two birds of the former species were seen on the 20th and one on the 21st and 22nd. From the 21st to the 27th birds were decidedly fewer; but some

arrivals were noted, including a Grey Wagtail on the 21st, a White Wagtail on the 22nd, a Sparrow-Hawk and a Knot on the 23rd, a Greenshank on the 24th, a Jack Snipe on the 26th and another Sparrow-Hawk on the 27th. There was, however, a slight though only temporary increase in the number of birds on the 28th, when a Little Bunting (*E. pusilla*) and a second Red-breasted Flycatcher were observed. The last two days of the month produced little of note, except four Redpolls (subsp. ?).

1st to 8th October.—During this week, weather was fine with good visibility and light winds; these were north-easterly on the 1st, southerly on the 2nd and 3rd, easterly on the 4th and 5th, and northerly thereafter.

Apart from a slight increase on the 5th, birds were not very numerous, and by the 8th most summer migrants had passed on their way. The most interesting species observed were:—Jack Snipe (one on the 1st, 3rd and 5th), Corncrake (one on the 3rd), Red-breasted Flycatcher (two on the 4th and one on the 5th), Lesser Redpoll (one on the 4th), Continental Song-Thrush (*T. e. philomelus*) (one on the 5th and 7th), Short-eared Owl (one on the 6th). It is probable that there were more than two Continental Song-Thrushes on the island, but only two were examined in the hand. On the 7th a Hedge-Sparrow was trapped, which by its wing formation appeared to be of the Continental race, *P. m. modularis*.

Notes on Species.

Yellow-breasted Bunting (*Emberiza aureola*).—An immature bird of this species was trapped and examined in the hand on 4th September by Messrs M. K. Hamilton, W. M. Kerr, and A. D. Watson. It was conveyed to Edinburgh, where Messrs H. F. D. Elder and J. H. B. Munro released it on the 7th having confirmed the identification.

Very careful notes were taken of the plumage, the buffish-brown rump, white axillaries and broad diagonal white band across both webs of the outer tail-feathers being specially noted. The wing measured 75 mm. and the 3rd to 5th but not the 6th primaries were emarginated on the outer web.

The iris was dark brown, upper mandible bluish-horn, lower mandible and lower edge of upper mandible at base pale pinkish, legs and feet purplish-pink. Except for the iris, the colours of the soft parts disagree with those given in the *Practical Handbook.*

In the field it did not associate to any extent with other species, but was chivied frequently by Rock Pipits.

On the ground the bird was remarkable for its well-marked head, with broad pale superciliary stripe and pale line down the centre of the dark crown. Otherwise there was nothing striking about this small, rather light brown Bunting. Once, when perched in the sunlight on a wall, it exhibited the trace of a buffish breast-band across the prevailing pale yellow of the underparts.

At no time was there conspicuous white on the wing, but the broad white edgings to the tail were noticeable in flight and reminiscent of a Pipit.

It fed silently, but in flight uttered a single rather Robin-like note.

Siberian Lesser Whitethroat (*Sylvia curruca affinis*). —This bird remained on the island from 17th September to 5th October. It was examined in the hand by Messrs W. B. Alexander and H. F. D. Elder.

The measurements were:—Wing 66·5 mm., tail 59 mm., tarsus 19 mm., bill from skull 12·5 mm. Primaries: 3rd and 4th longest, 2nd 4·5 mm. shorter, 6th 3·5 mm. shorter, 7th 6 mm. shorter, the 2nd thus being between the 6th and 7th. The iris was buffish-grey. The crown was brownish-grey, mantle brownish, upper tail-coverts pale grey, and the edges of the wing-quills and coverts were distinctly rufous-brown. In the field this brownish crown, mantle and wings showed very clearly, and it therefore appears to have been an immature bird.

This is the first record of this subspecies for the Forth Area.

Northern Willow Warbler (*Phylloscopus trochilus acredula olim eversmanni*).—The bird trapped on 17th September was sent to Mr N. B. Kinnear of the British Museum, who identified it as being of the northern race.

Ringing.

During the autumn of 1936, 300 adult birds of 42 species were ringed. These include 1 Yellow-breasted Bunting, 1 Little Bunting, 7 Pied Flycatchers, 2 Red-breasted Flycatchers, 72 Willow Warblers, 2 Yellow-browed Warblers, 21 Garden Warblers, 1 Siberian Lesser Whitethroat and 2 Bluethroats.

Retrapping.

A considerable number of birds are, of course, trapped more than once during the same season, but on 30th September 1936 we retrapped a British Redbreast which had been ringed on the island on 28th September 1935. Redbreasts only visit the island on migration.

We would again like to thank the Commissioners of Northern Lighthouses for allowing us to continue our work on the Isle of May and the lighthouse-keepers and their families for their very many kindnesses to all of us.

BOOK NOTICE

Thirty Years of Nature Photography. By SETON GORDON. Cassell: Price 21s. In this book Mr Seton Gordon tells of the trials, tribulations and, sometimes, successes of the Nature photographer. Inspired by Richard Kearton, he began as a boy. His earlier attempts to photograph birds were made by stalking, but since then he has used a hide and has succeeded in photographing some of the wariest species. Mr Gordon has had an able and enthusiastic assistant in his wife, and some of her photographs are used to illustrate this book.

The majority of the 108 photographs are taken at the nest and the subjects are, for the most part, the larger birds which nest in the Highlands and Islands of Scotland. A short portion of the book is, however, devoted to Red Deer and Seals, and one or two mountain views are shown. Perhaps the most impressive illustration is the frontispiece, which shows the silhouette of a Golden Eagle sailing out from her eyrie. Photographs of Grey Phalarope, Purple Sandpiper and Turnstone, taken on Spitzbergen, are also included.

The narrative is short but contains some interesting observations, such as the timidity of the Red-throated Diver at its nest in Scotland as compared with boldness of the same species in Spitzbergen. The author also tells of his good fortune in hearing a Curlew give its full song, while on its nest, a few yards away from him.

This is a book containing a collection of admirable photographs and a number of brief but interesting chapters.

NOTES

Ballan Wrasse in the Firth of Forth.—In the November-December number of the SCOTTISH NATURALIST, p. 158, Dr Wood reported the capture of a number of immature specimens of the Ballan Wrasse, *Labrus bergylta*, Day, on the Banffshire coast. All of uniform size, 24 cm., he records the number as exceptional for the East Coast of Scotland.

In view of the fact that there are very few records of their capture on the East Coast, the following notes may be of interest.

During the winter months 1935-36 several Ballan Wrasse, *Labrus bergylta*, were caught in the boom net above Kincardine Bridge on the Forth.

On 27th May 1936 I was called to Port Seton to identify a strange fish caught in Aberlady Bay by Mr P. Jarron's fishing yawl, which proved to be a Ballan Wrasse 16 cm. in length. The catching of this Wrasse in Aberlady Bay was of great interest to me, and on 6th June 1936, during the first spring tides, I visited Longniddry shore. The tide was well out to the edge of the rocks, and in less than an hour my wife and myself had between us eight Ballan Wrasse and four Corkwings, *Labrus mixtus*. Several others got away and were lost.

On 7th July 1936 we returned to Longniddry shore, followed the tide back and found a large Ballan Wrasse 26 to 27 cm. in length. Later on, fishing round the rocks as far as the tide would allow, we secured eight Ballan Wrasse, five Corkwing Wrasse, *L. mixtus*, and a male Lump-Sucker, *Cyclopterus lumpus*; and, again, several escaped and were lost.

Some of the above are to be seen in one of the exhibition tanks in the Carnegie Aquarium, Zoological Park.—MATTHEW C. THOMSON, Aquarium, Zoological Park, Edinburgh 12.

Smew, Slavonian Grebe, and Black-necked Grebe at Duddingston Loch.—A female Smew, *Mergellus albellus*, appeared at Duddingston Loch, Midlothian, on 24th January 1937. One Slavonian Grebe, *Podiceps auritus*, and two Black-necked Grebes, *Podiceps n. nigricollis*, were first seen on 31st January.

The Grebes were not shy, and good comparative views of them were obtained. I have observed all three species almost daily since their arrival, and they are still—4th February—on the Loch.

The appearance of these uncommon visitors has coincided with a period of sustained strong east wind and stormy weather at sea.—WILLIAM SERLE, Junior.

A Fight to the Death.—On the evening of 9th May, while my wife and I were cycling along a quiet road between Doune and Bridge of Allan, suddenly on rounding a corner we came on a pair of cock pheasants fighting in the middle of the road.

Obviously one bird was having a bad time. After a few minutes they tumbled into the ditch at the side out of sight. We remained perfectly still but could see nothing, except occasionally a wing or tail in vigorous action.

Wondering what was happening I cycled along slowly: one bird made off through the hedge; it took me a few moments to discover the other one cowering under the bank. I picked it up and it made little resistance, appearing to be quite dazed. The back of its head was bare but the skin was not broken. Before letting it go I examined it thoroughly, but apart from the head there was nothing the matter; it ran off seemingly refreshed.

My wife now drew my attention to the other bird which had squatted down in the field some twenty yards away. She went over towards it, but it only kept its distance and appeared to be waiting till we moved off to come in and continue the fight.

We went to have another look at the injured bird and after a search found it cowering nearby in the ditch. It made no struggle when I lifted it but the eyes seemed to have lost the dazed expression. To all appearances it hadn't any fight left, so we decided to carry it along the road a bit where it would be safe from further attack.

We hadn't gone more than two hundred yards when it suddenly struggled and got one wing clear. I was about to secure the wing when the eyes closed and the head sagged—it was dead.—T. S. Halliday, F.R.S.A., Alloa.

Red-necked and other Grebes at Lochend Loch, Edinburgh.—This small Loch, which is situated in a populous district of the city, has received its quota of rare visitors during the recent gales and heavy weather at sea.

On 4th February, we observed here three Red-necked Grebes, *Podiceps g. griseigena*. Two of these birds were fishing ten yards from the lochside, and the diagnostic features of their plumage were seen to advantage. A Great-crested Grebe, *Podiceps c. cristatus*, on the Loch afforded comparison for size and build.

There was also at the Loch a single Slavonian Grebe, *Podiceps auritus*.—William Serle, Junior, and D. I. Molteno.

Probable Nutcracker in Lanarkshire.—On 3rd November 1936, in the Holytown district of Lanarkshire, I put up a bird, quite new to me, which I think must have been a Nutcracker; probably an "escape" from some aviary.

While walking along the grass margin of a very late field of oats (part of it still uncut) the bird in question rose from a sheaf of corn, almost at my feet, and flew into an old hawthorn tree about fifteen yards distant.

In size it was about similar to the Jackdaw; general ground colour that of a female Blackbird; entire body spotted all over with white.

Its flight was sluggish, reminding one of a tame Rook, but once into the hawthorn tree it showed an extraordinary adroitness in getting through the branches and into another hawthorn tree nearby; in fact, before I could get my Zeiss binoculars on it, it had disappeared. Of course I had a very good view of it in its short flight, but a perching view of it through binoculars would have been much more satisfactory.

This little glen is well wooded, almost entirely with old hawthorn trees, and would be a favourite nesting spot of both Carrion Crows and Magpies were they allowed. On the day in question, and on two subsequent occasions, I gave it a thorough search, but saw no trace of this stranger, neither did I see any other "crow-bird" near this spot.—WALTER STEWART, Holytown.

Bird Notes from the Forth.—On 31st January, when calmer weather returned after the easterly gales, we visited the coast between Aberdour golf-course and Burntisland and found the sea-birds unusually interesting. We found four dead Little Auks on the shore and saw another swimming and diving off the Hawk Craig at Aberdour. In Aberdour Harbour there was a dead Red-necked Grebe and two or three Black-necked Grebes were seen on the sea between there and Burntisland. Of Divers, apart from a small flock well off-shore from Aberdour and apparently composed largely of Black-throated, the most interesting were three Great Northern Divers swimming very close in. A rather unusual visitor for mid-winter was a fine adult Gannet fishing off the Hawk Craig at Aberdour: and when returning across the Forth to Granton, we came across a Lesser Black-backed Gull which was almost certainly of the British race.—M. K. HAMILTON and A. D. WATSON.

The Scottish Ornithologists' Club

(Official Section)

Presidents.

Leonora Jeffrey Rintoul and
Evelyn V. Baxter, H.M.B.O.U., F.L.S., F.Z.S.

Chairman.

Arthur B. Duncan, M.B.O.U.

Honorary Secretary and Treasurer.

George Waterston, 27 Inverleith Terrace, Edinburgh 4.

1st Annual General Meeting.

Miss E. V. Baxter presided at the 1st Annual General Meeting of the Club which was held in the Rooms of the Royal Scottish Geographical Society, Synod Hall, Edinburgh, on 14th January 1937. There was an attendance of sixty-five people. Tea was served at 5.30 P.M., the formal business meeting beginning at 6 P.M. with a talk on: "The Scottish Ornithologists' Club—Why it has been formed and what it intends to do," by Miss E. V. Baxter. She explained that the Club had been formed to enable ornithologists in Scotland to meet together to discuss observations and problems regarding Scottish Ornithology. She hoped that the Club would be the means of spreading a network of observers throughout Scotland which would result in our obtaining a much better knowledge of our bird-life.

This was followed by a Paper on: "Some Scottish Bird Problems," by Miss L. J. Rintoul. She discussed such subjects as bird protection, migration, distribution, and the subspecies question.

Mr Arthur B. Duncan also spoke on subspecies and stated that there was still a great amount of work to be done in investigating this matter. Several members expressed their views on some of the points raised by Miss Rintoul.

A film issued by the United States Biological Survey Department on "Bird Migration" was exhibited by Dr A. C. Stephen. This film depicted the methods

employed in the United States in bird-banding, trapping birds for banding, and in studying the migration routes of certain species.

The Meeting adjourned at 8 P.M.

The Status of the Magpie in Scotland.

Mr Arthur B. Duncan, M.B.O.U., is conducting an investigation into the past and present distribution of the Magpie in Scotland on behalf of the Club.

Schedules will shortly be issued to all members of the Club giving particulars of the information that is desired, and all observers in Scotland are asked to co-operate in this interesting enquiry, the results of which should prove of great value.

All correspondence on this subject should be addressed to Mr Arthur B. Duncan, Gilchristland, Closeburn, Dumfriesshire.

2nd General Meeting of the Club.

The next meeting of the Club will be held on 2nd April 1937, in the East Room of the McLellan Galleries, Sauchiehall Street, Glasgow, at 7.15 P.M. Mr Arthur B. Duncan will give a Paper on: "Some Remarks on the Bird-Life of the Outer Hebrides, with special reference to subspecific races."

This will be followed by a lecture on "St Kilda and Its Birds," by the Earl of Dumfries, M.B.O.U., and the Rev. J. M. McWilliam, illustrated by lantern slides.

Anyone wishing to attend this meeting and who is not already a member of the Club is asked to communicate with the Honorary Secretary, Mr George Waterston, 27 Inverleith Terrace, Edinburgh.

Application Forms for membership and copies of the Constitution of the Club can also be obtained.

It is hoped that there will be a large attendance.

GEORGE WATERSTON,
Hon. Secretary and Treasurer.

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EDITED BY

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

The following articles deal with the fauna of the islands of Raasay, Scalpay, Rona, Fladday, and Longay—all in the Inner Hebrides. The investigations described were carried out in the summers of 1934, 1935, and 1936 by parties from the University of St Andrews and the University of Durham.

The series is edited by Professor J. W. Heslop Harrison, D.Sc., F.R.S., Armstrong College (University of Durham), Newcastle-upon-Tyne, and Professor A. D. Peacock, D.Sc., University College (University of St Andrews), Dundee.

I. THE VERTEBRATES OTHER THAN BIRDS AND FISHES.

By J. W. Heslop Harrison, D.Sc., F.R.S.

The present list is put forward as a by-product of more sustained efforts in connection with other groups; nevertheless, it appears improbable that it can be greatly extended. Whilst it contains a few important observations, we were disappointed in our attempts to secure specimens of the Raasay Vole. However, it should be pointed out that the gamekeeper on Scalpay informed us that a "vole" occurred on that island. The capture and study of that form might yield very interesting results from the zoogeographical standpoint.

Amphibia.

Molge vulgaris Laur. Smooth Newt.

Fairly generally distributed on Raasay, Scalpay, and Rona, but apparently absent from all the larger lochs

except Loch Eadar da Bhaile. Permanent pools on the more lowlying moorlands form the preferred habitats.

M. palmata Schneid. Palmate Newt.

This seems to be a new record for the Inner Hebrides, although its presence might have been anticipated from recent captures in Caithness. A living female was brought home by Dr G. Heslop Harrison from the pools lying behind Suisnish Hill, S. Raasay.

Bufo vulgaris Laur. Common Toad.

Common enough on Raasay and Scalpay. The majority of the specimens examined on the latter island were remarkable for their vivid red and black coloration.

Rana temporaria L. Common Frog.

Common everywhere, even at points where there seemed to be no water suitable for breeding purposes.

Reptilia.

Lacerta vivipara Jacq. Lizard.

Common on all the moors on Raasay, but decidedly rarer on Scalpay. Those captured seem to be a little darker than ordinary North of England specimens.

Viperus berus L. Common Viper.

Very common on Scalpay, but very much rarer on Raasay.

Mammalia.

Sorex araneus L. Shrew.

Common and generally distributed on Raasay. An example taken in the gorge of the Storab Burn in 1935 was regarded by Hinton as approaching closely to the Islay Shrew, *Sorex granti*, Barrett-Hamilton and Hinton. The whole of this year's captures, both from the north, centre, and south of the island, were perfectly typical.

Pipistrellus pipistrellus Schreb. Common Bat.

Abundant in the woods along the Arish Burn.

Mustela nivalis L. Weasel.

Encountered casually in south-east Raasay.

Phoca vitulina L. Common Seal.

Not uncommon on the shores of Raasay, Rona, Longay, and Scalpay; most plentiful in the Sound of Raasay.

Halichœrus gryphus Fab. Grey Seal.

One or two individuals seen along the northern coast of Scalpay.

Phocæna phocæna L. Porpoise.

Quite plentiful, especially in the waters between Skye and the islands.

Epimys norvegicus Berk. Brown Rat.

Near Inverarish, Raasay.

Mus musculus L. House Mouse.

Also in Inverarish.

Oryctolagus cuniculus L. Rabbit.

On Raasay, Rona, Scalpay, Fladday, Longay, and Guillamon Island; perhaps least common on Rona and Fladday. So abundant is it on Longay that grasses, even the dominant moorland species, have become exceedingly rare. Thus, unattacked plants, like Golden Rod (*Solidago Virgaurea*), often form pure associations. On Guillamon, similarly, the original vegetation has been partially destroyed.

The colony on Longay comprises many curiously coloured individuals, melanic and piebald specimens occurring freely.

Lepidus timidus L. Mountain Hare.

The subspecies *L. timidus scoticus* Hilz. appears to be not uncommon on Raasay.

Cervus elaphus L. Red Deer.

Native, but now reduced to about a dozen individuals on Raasay, although twenty-five years ago they numbered about six hundred; apparently taken by poachers. On Scalpay, from the information we could collect, about eighty now exist; these have originated from native stocks, strengthened by introductions from England. In addition, some natural immigration from Skye has taken place.

II. THE LAND AND FRESHWATER MOLLUSCA.

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

THIS list represents the results of the labours of three summers, and may be regarded as presenting a reasonably complete picture of the Molluscan fauna of the islands in question. Of the species it contains, all except one were taken by myself, although the Rev. E. P. Blackburn reported ten of them amongst the captures of his daughters, and my father, Professor J. W. Heslop Harrison, D.Sc., F.R.S., supplied duplicate records of an even greater number.

I have already published a paper (SCOTTISH NATURALIST, May-June 1936) dealing with the Mollusca of the Hebrides and in it I included ten species, all new to V.C. 104, for Raasay.

I should like to give my best thanks to Professor A. E. Boycott, F.R.S., for confirming my naming of most of the species, and to Mr Oldham who was entirely responsible for the Pisidia.

Carychium minimum Müll.—A few among dead leaves and under stones in the beech wood near Inverarish, Raasay.

Limnæa truncatula Müll.—South Rona and Scalpay; rather common but local in streams and lochs, etc.

L. peregra Müll.—A very variable species and common in streams and lochs on Rona, Fladday, Raasay, and Scalpay. The var. *inflata* Kob. was not rare.

Ancylastrum fluviatile Müll.—Common on stones in the Arish Burn, Raasay, and in streams on Scalpay.

Planorbis albus Müll.—This species was very abundant in Loch a Mhuilinn near Inverarish, Raasay, in 1935, but in 1936 it was very scarce indeed, only two individuals being taken.

P. dilatatus Gould.—With the former in Loch a Mhuilinn; no further examples have been found since I collected the first specimens in 1935. The capture of this new Scottish species has already been recorded in the SCOTTISH NATURALIST, March-April 1936.

Succinea pfeifferi Rossm.—On grasses in damp places at Fearns and Brochel, Raasay, and in similar situations on South Rona.

Columella edentula Drap.—Raasay, Inverarish only; a few under stones on the sides of the upper road.

Lauria umbilicata Drap.—Quite common in walls on Raasay.

L. anglica Fer. (=*ringens* Jeff.).—With the former, Raasay only.

Vallonia excentrica Sterki.—A single specimen only, on the lower slopes of Dun Caan. A new county record.

Cæcilioides acicula Müll.—Two examples of this species were taken from grass roots under a large stone near Inverarish, Raasay.

Cochlicopa lubrica Müll.—Very common in dead leaves, grass, etc., Raasay, Rona, and Scalpay.

Goniodiscus rotundatus Müll.—Generally distributed on the islands.

Arion intermedius Norm. (=*minimus* Sim.).—Raasay and Scalpay; the grey var. *plumbea* Coll. was quite frequent in birch woods.

A. ater Linn.—Very common in its typical black form on every island. The vars. *plumbea* Roe., and *succinea* Müll., and a mottled black and white form were quite frequently observed.

Balea perversa Linn.—Rather common in old stone walls and well up birches and mountain ashes as at Brochel, Raasay and Scalpay.

Clausilia rugosa Drap.—Commonly on the conglomerates near the shore on North Scalpay, on the rocks near the cave, South Rona, and very abundant on the east coast of Raasay, between Fearns and Brochel.

Helicella itala Linn.—Raasay only; not abundant near Fearns.

H. virgata Da Costa.—A few examples collected at S.E. Fearns, Raasay.

H. caperata Mont.—Rare; with the preceding species at Fearns, Raasay.

Trichia hispida Linn.—Not common amongst vegetation on the sides of a deep gorge at Balachuirn, Raasay.

Hygromia subrufescens Miller (=*fusca* Mont.)—Under stones and amongst moss and decaying vegetation in the woods on Raasay and Scalpay; not uncommon.

Arianta arbustorum Linn.—Common and widely distributed in woods, on moors and on grassy places along the shores of Raasay, Rona, and Scalpay. Mr Blackburn reports the var. *flavescens* Fer. and var. *picea* Rossm.

Cepœa hortensis Müll.—Near Scalpay House, Scalpay, amongst trees; only the bandless form, var. *concolor* Pic., was found.

C. nemoralis Linn.—Rather common in the copse near Big Harbour, Rona, but generally distributed, though not really abundant, on Raasay.

Euconulus fulvus Müll.—Under stones in damp places; Raasay only.

Zonitoides excavatus Alder.—Under stones in the old graveyard near Raasay House, Raasay, and in old buildings near Dry Harbour, Rona.

Retinella radiatula Alder.—Rather common in moss and under stones on Raasay.

R. pura Alder.—Obtained by sifting moss, dead leaves, etc., in the birch woods on Raasay and Scalpay.

R. nitidula Drap.—In similar places on Raasay and Scalpay.

Oxychilus alliarius Müll.—Common and generally distributed on all the islands except Longay.

O. cellarius Müll.—Also common and well distributed on Scalpay, Raasay, and Rona.

Vitrea crystallina Müll.—Empty shells often sifted out of moss, etc., but no living examples detected; Raasay and Scalpay.

Vitrina pellucida Müll.—Common under stones, amongst grass roots, etc., Raasay and Scalpay. The whole of the shells were very thin and delicate, but rather larger than usual.

Limax marginatus Müll. (= *arborum* Bouchard-Chantereaux).—Rather variable and very common on Raasay. A

small black form which I presume to be the var. *nigra* Scharff. was occasionally met with in birch trees at higher altitudes in some of the ravines.

Pisidium lilljeborgi Clessin. — Common in Loch Mor, Fladday, and Loch Braig, Rona.

P. cinerum Alder.—In small lochs north of Inverarish, Raasay, and in peat-bog holes on Scalpay.

P. milium Held.—Raasay only.

P. hibernicum West.—With *P. lilljeborgi* in Loch Mor, Fladday.

P. obtusale C. Pfeiffer.—Not really common, but widely distributed in small pools on Raasay, and in the water-filled bog holes under Sithean Glac an Ime, Scalpay.

P. pulchellum Jen.—In the lochs east of Dun Caan, Raasay, and in the same series of lochans as *P. obtusale*, on Scalpay.

III. THYSANOPTERA FOUND ON RAASAY AND SCALPAY.

By G. D. Morison, Ph.D., North of Scotland College of Agriculture, Marischal College, Aberdeen.

Mr L. Comrie, B.Sc., collected on Raasay and Scalpay between 23/7/35 and 4/8/35 many specimens of Thysanoptera which were submitted to me for identification. The insects were excellently preserved in alcohol, and permanent mounts of each species were made by me and are stored in the museum of the Natural History Department, University College, Dundee. Considering the short time at his disposal for collecting insects, of which the Thysanoptera were but a small section, Mr Comrie is to be congratulated on the numbers of specimens and the twelve species of thrips caught. From my knowledge of the Thysanoptera of Scotland, I suspect that at least 40 species of Thysanoptera would be found on the two islands; but their capture would necessitate a sojourn on the islands from May to August inclusive, and a knowledge of the habits of many of the species. I have made observations on Thysanoptera in N.E. Scotland for the last twelve years, and the following notes on the biology of

the insects are based on these observations. In the following notes the figures I and II are used to denote the first and second instar nymphs or larvæ, as is commonly done in writings on Thysanoptera.

Order THYSANOPTERA.

Sub-Order TEREBRANTIA.

Family ÆOLOTHRIPIDÆ.

Æolothrips ericæ Bagnall, 3 ♀♀, 6 I, 6 II, *Erica cinerea* Scalpay, 1/8/35. The species occurred with adults and nymphs of *Amblythrips ericæ* (Hal.) on the nymphs of which both adults and nymphs of *Æolothrips* prey. In N.E. Scotland the insect breeds on *Erica cinerea* and *E. tetralix*, and less commonly on *Calluna vulgaris*, and the insects probably feed on these plants as well as on various small Arthropoda.

Family THRIPIDÆ.

Aptinothrips rufus (Gmelin), 5 ♀♀, 1 I, 1 II, *Holcus*; and *Anthoxanthum*, E. Raasay, 24/7/35; 2 II, *Vicia Cracca*, Raasay, 28/7/35; 20 ♀♀, 8 I, 29 II, *Galium palustre* (?), Brochel, Raasay, 28/7/35; 2 ♀♀, 1 II, *Trifolium minus*, Brochel, Raasay, 31/7/35; 1 ♀ *Teucrium Scorodonia*, Brochel, Raasay, 3/8/35. I am uncertain about the morphological characters separating the nymphs of *rufus* from those of *stylifera*, and I include under *rufus* all nymphs of *Aptinothrips* found. *A. rufus* and *stylifera* often occur together on grass; *rufus* is generally found more commonly than *stylifera* which has usually been regarded as a variety of *rufus*.

Aptinothrips stylifera Trybom, 1 ♀ pupa with *rufus* on *Holcus* and *Anthoxanthum*, E. Raasay, 24/7/35.

Odontothrips uzeli Bagnall, 1 ♀, 5 II, *Vicia Cracca*, Raasay, 28/7/35; 85 II, *Vicia Cracca*, Brochel, Raasay, 31/7/35. The host-plant of the nymphs is *Vicia Cracca*. The insect is widely distributed in Europe and this is the second record of it from Scotland. Both adults and nymphs resemble those of *loti* Haliday which breeds on *Lotus* spp., and which is apparently a much commoner species in Scotland.

Tæniothrips picipes (Zetterstedt), 36 ♀♀, 1 ♂, *Teucrium*

Scorodonia, Brochel, Raasay, 3/8/35. The adults occur and breed on many different species of annual plants belonging to various families of Dicotyledons, and on the Monocotyledon, *Triglochin maritimum*. In April both sexes appear after hibernation and they favour *Primula vulgaris* on which they breed. During July and early August the adult progeny of the hibernated insects frequent various species of plants of which *Teucrium Scorodonia* may be particularly favoured. I suspect that the insects found by Mr Comrie belong to this generation. *Teucrium Scorodonia* is one of the host-plants of the nymphs and it usually shelters more female than male, adults during the summer.

Tæniothrips (*Physothrips*) *vulgatissimus* (Haliday) 151 ♀ ♀, 16 ♂ ♂, *Angelica sylvestris*; E. Raasay,* 26/7/35; 22 ♀ ♀, 3 ♂ ♂, 1 II, bramble (*Rubus fruticosus*); 80 ♀ ♀, 49 ♂ ♂, 9 I, 57 II, *Vicia Cracca*; 33 ♀ ♀, 124 ♂ ♂, *Chrysanthemum*; 6 ♀ ♀, 17 ♂ ♂, *Hydrangea*; 1 ♀, 11 ♂ ♂, *Achillea millefolium*; 62 ♀ ♀, 63 ♂ ♂, *Convolvulus major*, Raasay, 28/7/35; 133 ♀ ♀, 40 ♂ ♂, *Angelica sylvestris*; 1 ♀ *Lotus corniculatus*; 64 ♀ ♀, 10 ♂ ♂, Lilac (*Syringa*) Raasay, 29/7/35; 1 I, 5 II, *Vicia Cracca*, Brochel, Raasay, 29/7/35; 7 ♀ ♀, 1 ♂, 1 II, Heliotrope in hot-house, Raasay, 29/7/35; 4 ♀ ♀, 36 ♂ ♂, 4 I, 23 II, large Dock (*Rumex crispus* (?)) Raasay, 3/8/35; 21 ♀ ♀, 17 ♂ ♂, *Inula helenium*, Brochel, Raasay, 3/8/35; 1 ♀, 13 ♂ ♂, *Chrysanthemum* (garden); 10 ♀ ♀, 6 ♂ ♂, *Senecio Jacobæa*, Raasay, 4/8/35.

This is the commonest species of Thysanopteron frequenting flowers in the northern counties of Scotland where *T. atratus* is almost as common. These species do not occur so abundantly in S. England, where their place on flowers is taken by the closely allied genus *Thrips*, of which the species *fuscipennis* Hal. and *tabaci* Lind. are especially common. *P. vulgatissimus* breeds on many different species of plants belonging to different families of which Cruciferæ and Rosaceæ are greatly favoured. Many specimens of Mr Comrie's had only just reached maturity. One female found on *Angelica* 26/7/35, had an immature mite attached to the base of the abdomen on the under side.

* Seventy ♀ ♀, 36 ♂ ♂, 7 I, 30 II, *Spiræa Ulmaria*, Raasay.

Tæniothrips (*Physothrips*) *atratus* (Haliday) 1 ♂, *Chrysanthemum*, Raasay, 4/8/35. I suspect that *atratus* is almost as abundant as *vulgatissimus* on Raasay, and as it usually frequents the same species of flowers as *vulgatissimus*, I suspect that the reason why Mr Comrie did not find a large number of specimens was that his visit was a few days too early to catch the first generation of adults which would have been bred on *Spergula arvensis* and other annual plants. There is usually a short period during July in N.E. Scotland when *atratus* is absent from flowers, though previously females were numerous and subsequently females and males became abundant on flowers.

Tæniothrips (*Amblythrips*) *ericæ* (Haliday) 44 ♀♀, 1 ♂, 35 I, 75 II, *Erica Tetralix*, Raasay, 27/7/35; 14 ♀♀, 1 I, *Erica cinerea*, Brochel, Raasay, 31/7/35; 10 ♀♀, 25 I, 68 II, *Erica cinerea*, Scalpay, 1/8/35. The insect breeds on *Calluna* and *Erica* and is probably found wherever these plants grow in the British Isles. The female is winged and it flies under the stimulus of hot sunlight. The male is wingless and is scarcer than the female. Winter is passed by nymphs on their host-plants. The nymphs are unique among the Thripidæ in that the sex can be distinguished easily by the darker colour of the male, sexual apparatus showing through the body wall. This sexual distinction is not found in the nymphs of the summer generation to which belong all those caught by Mr Comrie.

Thrips fuscipennis Haliday, 17 ♀♀, 8 ♂♂, Heliotrope in hot-house, and 6 ♀♀, Lilac, Raasay, 29/7/35. In S. England this species is abundant on wild and cultivated flowers and it also breeds in hot-houses. In N.E. Scotland I suspect it to be an introduced species which is unable to breed vigorously in the open. This idea is based on finding the insect only in hot-houses or breeding on fruit trees in gardens in N.E. Scotland.

Thrips tabaci Lindeman, 46 ♀♀, Heliotrope in hot-house, Raasay, 29/7/35. I suspect that this species would be found commonly, particularly later in the year, on wild Compositæ and other plants on Raasay and Scalpay.

Thrips flavus Schrank, 2 ♀♀, *Eupatorium cannabinum*, 1 ♀, *Chrysanthemum*, 28/7/35; 1 ♀, *Senecio Jacobæa*, 4/8/35, Raasay.

Thrips dilatatus Uzel, 1 ♀, macropterous, *Pedicularis*, 29/7/35, Raasay. The host-plants of the nymphs are *Euphrasia* species.

(*To be continued.*)

NOTES

Black-tailed Godwits at St Andrews.—Black-tailed Godwits seem to be becoming more regular in their visits to Scotland. A few years ago, Mr Douglas Hunter, Arbroath, said that he believed the bird to be almost a regular autumn visitor to the foreshore at Elliot, and we had of late observed them more commonly than was the case in the past. This autumn and winter they have been unusually numerous at St Andrews. On 14th October 1936, Miss Doris Wilson informed us that 6 or 7 had been frequenting the mouth of the Eden, and we saw a party of 12 there on 9th January 1937, and 4 on 25th January, while on 7th February 1 was with a flock of Bar-tails in Largo Bay. Winter records of this species in Scotland are not very common. Can these be an indication of an approaching stabilisation of this Godwit in our country?—Evelyn V. Baxter and Leonora Jeffrey Rintoul.

Red-necked Grebes in Scotland.—The early part of 1937 brought a good many Red-necked Grebes to Scotland. A beautiful specimen was picked up dead in Largo Bay by Mr Alfred Eggeling on 7th February. On 15th February I watched a Red-necked Grebe close inshore at Kentallen in North Argyll, a first record for this area. Mrs Gaskell saw one on Loch Lomond on 13th February. These birds have also been seen in other parts of Scotland, records of which will, I hope, appear in due course.—Evelyn V. Baxter.

Bittern in Aberdeenshire.—In the beginning of March 1937 a Bittern appeared at St Comb's, Aberdeenshire. It was a fine specimen and its appearance was probably due to the rough weather. Although there are previous records of the Bittern in Aberdeenshire, it is interesting to hear of this occurrence.—Leonora Jeffrey Rintoul.

Black-throated Diver and Waxwing at Duddingston Loch, Midlothian.—A Black-throated Diver (*Colymbus arcticus*) frequented the Loch at Duddingston from the 9th till the 27th of February 1937, and during that period was seen almost daily, and on many occasions at close quarters.

Identification rested mainly on the following points—distinctly larger than a Goosander when the two were seen together; neck thick and heavy; bill not uptilted; back not spotted with white, but white bars showing faintly in the scapular region.

I watched a Waxwing (*Bombycilla garrulus*) at the lochside on 11th April 1937—a rather late date.

I have no previous record of either of these species at Duddingston Loch.—William Serle (Junior).

Pentatomidæ in Dumfriesshire.—Very few of the British Pentatomid bugs extend into Scotland or even northern England, so it may be of interest to note the species I have met with in Dumfriesshire. *Piezodorus lituratus* Fab. is local and rare. I found five on a bramble bush near Gretna on 31.8.1934, but only one of these was mature. *Pentatoma rufipes* Lin.; I have so far only met with this reputedly common species once, and that was on Nutberry Moss on 3.9.1929. *Picromerus bidens* Lin. occurs plentifully on the peat mosses in August. *Zicrona coerulea* Lin.; one specimen of this beautiful bug was beaten from heather on Newton Moss, the date 7.8.1934. *Elasmostethus interstinctus* Lin. and *Elasmucha grisea* Lin.; I used to regard these two species as somewhat rare, but during the past few years I have found both in considerable numbers on birch in several widely separated localities. They are most plentiful from June until well into the autumn and I have found *E. interstinctus* hibernating in moss and under loose bark. *Rhacognathus punctatus* Lin.; I first found this bug in moss on Newton Moss on 16th March 1929. Since then I have beaten about a dozen specimens at odd times from heather on the same moss and at Nutberry Moss, all in August. I do not expect to add much, if anything, to this short list, but the study of Entomology is full of surprises.—Jas. Murray, Gretna.

Black-tailed Godwits in Shetland.—During the severe weather in January, I was storm-stayed at Grutness, Shetland, for over a fortnight. Waders were in thousands, mainly Dunlin, but I was interested to see that there were also a number of Black-tailed Godwits, those I have seen on Fair Isle have always been Bar-tails.—George Stout, Fair Isle.

BIRD NOTES FROM FAIR ISLE.

1936.

Compiled by GEORGE WATERSTON, Midlothian Ornithological Club.

SINCE the last paper was published in the SCOT. NAT., 1936, pp. 61 to 64, a number of interesting birds have occurred on Fair Isle.

In the beginning of May there was an enormous rush of birds mainly between 7th and 10th. Particulars of this rush have already been recorded in *British Birds*, xxx., p. 168.

The most interesting record this year is that of the Booted Warbler (*Hippolais caligata*)—obtained by George Stout—it being the first occurrence of this species in the British Isles. The Eastern Siberian form of the Ringed Plover (*Charadrius hiaticula tundræ*) has not been specifically recorded in Scotland.

Birds which have not previously been recorded on Fair Isle are the Nuthatch, Osprey, Bittern, and Great Shearwater.

George Stout is to be again congratulated on adding even another new bird to the British List; while I would also like to record my appreciation of the splendid manner in which Jamie Wilson—son of Jerome Wilson—is keeping daily observations, with full notes on local weather conditions, etc., forwarding these to me at the end of each month. These notes are already proving of considerable value when correlated with migratory movements noted at the Isle of May Bird Observatory and other stations.

L. S. V. Venables has also kindly placed a number of valuable notes at my disposal, on observations taken during a visit to the island when he stayed for two months during the autumn migration. Dennis Q. Sandeman and I paid the island a short visit in September.

TREE SPARROW (*Passer m. montanus*). — Formerly resident in small numbers. Decreased and apparently disappeared in 1924. Probably nested again in 1933. Not noted again until this year, when two or three pairs

again bred. Three adults and a few immature birds seen in autumn 1936.

LITTLE BUNTING (*Emberiza pusilla*).—Occasional this autumn and usually single birds between 14th September and 14th October.

PETCHORA PIPIT (*Anthus gustavi*).—G. S. who knows this species well obtained good views of one on 19th November 1936, which had assumed winter plumage "with the white stripes showing clear down the back."

NUTHATCH (*Sitta europœa* subsp. ?).—One was seen by G. S. on 29th and 30th May 1936. This is the first record for the island.

GREAT TIT (probably *Parus m. major*).—One on 22nd September.

COAL TIT (probably *Parus a. ater*).—This bird was observed by L. S. V. V. down one of the steep cliffs on 21st September. The Coal Tit has not been recorded on Fair Isle before.

WILLOW TIT (probably *Parus atricapillus borealis*).—G. S. observed a bird of this species on 3rd November 1935 which was accompanied by three Continental Blue Tits. The outstanding feature of this bird was the pure white on the sides of the neck and cheeks. Unfortunately the bird was not examined in the hand. The Northern race of this species has not yet been recorded in Scotland.

LESSER GREY SHRIKE (*Lanius minor*). — A female specimen was obtained by G. S. on 25th May. The previous record was of an adult male which occurred in 1927 on exactly the same date. (SCOT. NAT., 1928, 127.)

YELLOW-BROWED WARBLER (*Phylloscopus humei præmium*).—According to the islanders this species has been rather scarce on passage of late years. Two were seen on the west cliffs by G. W., D. Q. S., L. S. V. V., and G. S. on 13th September.

REED WARBLER (*Acrocephalus s. scirpaceus*). — One obtained and another seen by G. S. on 11th May. Another seen on 19th June by G. S.—a strange date to get this bird on Fair Isle.

BOOTED WARBLER (*Hippolais caligata*). — As already

recorded in *British Birds*, xxx., p. 226, a female specimen of this species new to Britain was obtained by G. S. on 3rd September 1936. The specimen is now in the collection at the Royal Scottish Museum.

BARRED WARBLER (*Sylvia n. nisoria*).—Small numbers from mid-August until 23rd September.

ICELAND REDWING (*Turdus m. coburni*).—Numbers of this dark, longer winged race of Redwing arrived on 23rd September and were abundant on 5th and 10th October.

ROCK THRUSH (*Monticola saxatilis*).—A fine male was seen on 16th October by L. S. V. V. It was driven from the west cliffs by the S.W. gale and worked across the island to the more sheltered east cliffs. The only previous record of this species on Fair Isle is that of one recorded by G. S. (SCOT. NAT., 1931, 38) on 8th November 1931.

CONTINENTAL REDBREAST (*Erithacus r. rubecula*).—Birds of this race were observed on the island as late as 20th June by G. S.

ROUGH-LEGGED BUZZARD (*Buteo l. lagopus*).—One observed by L. S. V. V. on 29th August.

OSPREY (*Pandion h. haliaetus*).—One was seen over the island on 4th November 1935 by G. S. First record for Fair Isle.

BITTERN (*Botaurus s. stellaris*).—One seen by G. S. on 16th and 17th May. First record for Fair Isle.

POCHARD (*Nyroca f. ferina*).—A duck was obtained on 23rd November 1935. This species is rare on Fair Isle.

SURF SCOTER (*Oidemia perspicillata*).—An adult drake was seen offshore by G. S. on 1st December 1936.

KING EIDER (*Somateria spectabilis*).—Apart from the bird recorded on 11th December 1935 (SCOT. NAT., 1936, 62), another male was observed on 31st March 1936 off the North Haven, by G. S.

GREAT SHEARWATER (*Puffinus gravis*).—Single birds of this species were seen off the island by L. S. V. V. on 14th and 21st September, and 8th October. This bird is new to the island list.

SLAVONIAN GREBE (*Podiceps auritus*).—Two or three

were observed throughout the winter last year by G. S. Hitherto regarded as a passage migrant only.

STOCKDOVE (*Columba œnas*).—Single birds recorded by L. S. V. V. on the following dates:—11th and 12th September, 9th, 11th, and 12th October.

NORTHERN RINGED PLOVER (*Charadrius hiaticula tundræ*).—Specimens of this small race of Ringed Plover, hitherto not specifically recorded in Scotland, were obtained on the following dates:—One ♀ (wing 126 mm.) on 1st September, a ♂ (wing 129 mm.) on 4th September, and two other specimens on 23rd September. While examining the Ringed Plovers in the collection at the Royal Scottish Museum I came across a specimen of this race which had been labelled "*C. h. hiaticula*," obtained on Fair Isle by Surgeon Rear-Admiral J. H. Stenhouse on 7th September 1923—a juvenile ♀ (wing 126 mm.). I am indebted to Mr N. B. Kinnear for kindly substantiating the identification of these birds.

TEMMINCK'S STINT (*Calidris temminckii*).—Several small parties of from one to four seen between 8th and 18th September by G. S., D. Q. S., L. S. V. V., and G. W.

DUSKY REDSHANK (*Tringa erythropus*).—Single birds were observed by G. S. and L. S. V. V. on 31st August, 3rd, 24th, and 25th September. The only previous record for the island is that of a male obtained by G. S. on 3rd September 1930. (SCOT. NAT., 1930, 153.)

CORNCRAKE (*Crex crex*).—A bird was flushed from its eggs on 31st August—a fairly late breeding date.

QUAIL (*Coturnix c. coturnix*).—A pair bred this year, the eggs being found when the corn was cut.

RECENT INVASION OF THE SQUID, *TODARODES SAGITTATUS* (LAM.), ON THE EAST COAST OF SCOTLAND.

By A. C. Stephen, D.Sc., Royal Scottish Museum.

The last week in February, 1937, was remarkable for an invasion of this squid in large numbers. The area along which these animals were stranded reached, so far as reports have been received, from Montrose to Dunbar. In the Firth of Forth the animals are reported to have been seen as far west as Bo'ness.

A few stragglers appeared in the latter half of the week ending 20th February, but the real rush seems to have begun on Sunday and Monday, the 21st and 22nd. In the Firth of Forth it lasted until the 24th.

Their first arrival in large numbers seems to have been on the 20th at Montrose, where Mr Mill, writing in the *Scotsman* of the 23rd February, records having seen twenty-six during a walk of about half-a-mile along the shore.

Professor Peacock, Dundee, informs me that on the morning of Sunday, 21st, about twenty were lying on the sands near St Andrews, and about thirty-three between Broughty Ferry and Monifieth. A day or so later some forty were reported as having been stranded at Buddon Ness. Quantities were also reported from the Tayport sands.

The strandings were perhaps more extensive in the Firth of Forth, where the animals were found in varying numbers from Dunbar to Bo'ness on the south side, and on the north side from between North Queensferry and Inverkeithing. On Sunday, 21st, one observer informed me that "there was about a cartload on Cramond beach." On Monday, 22nd, over seventy were reported as being stranded between Cramond and Granton. On the same day a correspondent, walking from Aberlady to North Berwick, reported the following numbers as having been seen on the way: Aberlady, 12; Dirleton, 2; West Bay, North Berwick, 4; East Bay, North Berwick, 10.

Large numbers came ashore at Joppa and Portobello, some being still alive. The specimens which had been dead for some time were very pale, while the living ones, or those recently dead, were red in colour. This gave rise to the idea that two species were involved, a red one and a white one.

Regarding the strandings at Portobello we were fortunate in having Mr Eric Lomax on the spot. He took a special interest in the matter, not only making estimates of the numbers stranded, but also measuring a series. The appended tables are the result of his observations.

Date. February.	Tide.	Length of Shore in Yards Searched.	Number Seen.	Average per 1000 Yards.	Number Measured.
18th	8.9 p.m.	860	1	1·2	1
19th	8.42 a.m.	860	3	3·5	...
20/21st	10.54 p.m. – 11.31 a.m.	4200	168	40	...
21/22nd	11.31 a.m – 12.15 a.m.	200	12	60	9
22nd	12.45 p.m.	200	28	140	24
23rd	1.18 a.m.	1350	249	185	154
23rd	1.45 p.m.	1350	none—unfavourable wind		
24th	2.10 a.m.	4200	659	157	38
24th	2.27 p m.	4200	9	2	5

Total specimens counted, 1129.

Table showing the measurements :—

Body-length in Inches.	Date of Stranding. February.			Body-length in Inches.	Date of Stranding. February.		
	22nd.	23rd.	24th.		22nd.	23rd.	24th.
6·1— 7·0	...	...	1	14·1—15·0	6	23	9
7·1— 8·0	...	...	1	15·1—16·0	2	17	2
8·1— 9·0	1	1	...	16·1—17·0	2	25	1
9·1—10·0	...	...	...	17·1—18·0	...	5	3
10·1—11·0	2	7	2	18·1—19·0	...	3	6
11·1—12·0	2	16	2	19·1—20·0	...	3	2
12·1—13·0	5	30	7	20·1—21·0	...	1	...
13·1—14·0	4	23	2				

It is interesting to note also that in March 1936, a similar, but much smaller invasion, took place. Some ten

were stranded at St Andrews and others at Portobello. For the particulars of the specimens stranded at Portobello, I am again indebted to Mr Eric Lomax. These particulars are shown in the appended table.

Date.	Tide.	Number Stranded.	Length of the Body in Inches.
12.3.36	a.m.	1	...
,,	p.m.	4	...
13.3.36	a.m.	11	...
,,	p.m.	2	...
14.3.36	a.m.		...
30.3.36	a.m.	1	10
4.4.36	a.m.	7	12·1, 9·7, 9·5, 9·3, 9·2, 8·6, 8·0
5.5.36	a.m.	2	13·5, 8·2
7.5.36	p.m.	1	8·6
26.5.36	p.m.	1	8·0

While the greatest numbers seem to have come ashore from Angus to Haddington, a few were stranded elsewhere. Mr Bruce, writing in the *Scotsman* of the 8th March, stated that numbers were stranded on the sands of Symbister early in February. While no specimens are available for examination, they probably belonged to this species.

One was caught at Scapa Pier, Orkney, on the 8th March, and kindly forwarded to the Royal Scottish Museum by Mr James G. Marwick, Stromness.

Todarodes sagittatus is found in the Mediterranean, on the coasts of France and Portugal, around Britain, north to Norway and the White Sea. A few individuals are washed up on our shores in most winters but mass strandings like the present are unusual. The question has been often asked as to why so many of these animals should have been washed up at one time when there was no storm to drive them in. The species is one which usually lives in the open sea and does not inhabit our inshore waters. On coming into the estuaries of the Forth and Tay the animals would meet water of lower salinity than occurs in the open North Sea or the waters to the north of Scotland, and it is possible that they may have been slowly poisoned. It has been suggested that these animals came inshore to spawn and were driven up by the tide, but this does not seem to be the case as a number of specimens, both male and female, examined in the

museum were found to be immature. Professor Peacock also informs me that such as he examined were also immature.

At times this species appears in large numbers in the waters to the north of Scotland, as for example in 1930 and 1931, when, according to the Annual Reports of the Fishery Board for Scotland for these years, it appeared in enormous numbers. They were first reported from the drift-net catches in Shetland in 1930, and by July 1931 had spread south and were infesting the upper water layers on all the principal drift-net herring fishing grounds as far south as Peterhead.

Ballan Wrasse (*Labrus bergylta*, Day) at North Berwick.—It may interest Mr Matthew C. Thomson that I have been securing specimens of the Ballan Wrasse at quite frequent intervals during the last four years.

It April 1933 I caught two of 6 cms. and $3\frac{1}{2}$ cms. in a shallow rock pool at Point Garry, and Dr Stephen kindly identified them for me. In June 1935 a large specimen of 29 cms. was captured in crab creels by the local fishermen off the island Craigleith. During the summer months of 1935 and 1936 fair numbers were caught by anglers at the various angling points, but the average length varied from 15 to 19 cms.

Up to the present, I have neither seen or heard any reports of the Corkwing Wrasse (*Labrus mixtus*) locally, and should be interested to have any further information regarding this fish.—K. H. Balmain, North Berwick.

Black-necked Grebe (*Podiceps n. nigricollis*) at North Berwick.—I read with much interest the reports of the Black-necked Grebe in the Lothians, which appeared in the March/April number of the Scottish Naturalist.

On the 7th February I found a dead female at the "Whiskey Bottle" (a local reservoir). Unfortunately, its neck was stripped of flesh and feathers, presumably by rats. However, its identification characters were predominant.

This bird, like many others, was driven inland by the fierce north-easterly gales which were raging at the time.—K. H. Balmain, North Berwick.

HERRING GULLS FEEDING ON STARFISH.

By J. M. Dewar, M.D.

Mr Oldham's interesting observations on Herring Gulls feeding on starfish (Scot. Nat., 1937, p. 49) show that the gullet is not so delicate as I supposed. Mr Oldham has also shown that Herring and Common Gulls can swallow starfish whole, although not without a great deal of gulping and straining. Often the bird failed in the act and had to abandon the starfish. This is in keeping with my experience. I found it impossible to fold up the rays of an *intact* star so that none of the spiny tubercles came into action. The resistance which these tubercles offer in one direction of motion is considerable, and may account for the difficulty the gulls, watched by Mr Oldham, had in swallowing the starfish. Mere bulk cannot account for the difficulty, as the removal of one ray makes very little difference in that respect. But, after a ray is removed, the starfish, taken in the proper way, slides down the throat evenly and without much trouble. And so far, I have not seen any failures. There may have been choice for size of course, as some stars are far too large to be ingested by any method short of a preliminary breaking-up into fragments.

Why the Herring Gull shakes the starfish is, I admit, not quite clear. Superfluous sand is not always the reason. Where Herring Gulls have been feeding on starfish, I have not found the remaining starfish visibly covered with sand. On one occasion I saw a starfish taken from the water before it sank. This star must have been clean, and yet it was dealt with in the way I have tried to describe. One would think that the Herring Gull with its powerful cutting beak would bite through the ray, and do it with ease. But, birds do not always do the obvious. A parallel case is the Herring Gull and the edible crab (*Cancer*). The gull does not snip the limbs off, but shakes them off. After it breaks into the body of the crab, the bird seemingly cannot cut away pieces of flesh, but must seize a portion of flesh, and

holding the flesh in the beak shake the crab vigorously until the piece is detached.

As a reason for gulls swallowing starfish whole, I suggest that where the gulls are numerous and there are not many starfish, competition may force the gulls to gobble up the stars as quickly as possible. Mr Oldham will be able to say if this explanation is applicable to the gulls under his observation.

Red-necked Grebe in East Renfrewshire.—On 21st March 1937, we observed a Red-necked Grebe (*Podiceps griseigena griseigena*) on Balgray Dam, East Renfrewshire. The bird was fairly tame and we had excellent views of it as it swam and dived about ten yards from the shore.

On consulting the literature, this would appear to be only the fourth record for the Clyde area.—PHILIP A. CLANCEY and NICOL HOPKINS.

Red-necked Grebes at Musselburgh.—In view of the recent influx of Red-necked Grebes, it may be of interest to mention that two have also visited Musselburgh—one on the 26th February and the other on the 14th of March. The second bird was in transitional plumage and showed a large amount of red on the neck.—D. I. MOLTENO, Loretto.

Golden Oriole in Peeblesshire.—As I entered the village of Carlops, Peeblesshire, on Sunday 11th April, my attention was suddenly arrested by the flight of a yellow bird slightly larger than a Blackbird.

Knowing it was something uncommon, I, along with two friends, watched it carefully. With the aid of my field-glasses I was able to obtain a splendid view of the bird as it sat on a dyke on the opposite side of the road, and was surprised at it allowing us to get within 30 or 40 feet of it. The head was of a pale yellow and the whole of the body with the exception of the wings, which appeared to be very dark, was of a brilliant yellow. On the sides of the wings appeared small patches of white, there were also white streaks on the tip of the tail.

A visit to the Royal Scottish Museum proved it undoubtedly to be the Golden Oriole. The bird observed in Carlops is larger than the one in the Museum, the stuffed specimen being a young adult male.—WILLIAM SHORT, Edinburgh.

SUPPLEMENTARY NOTES TO "A CONTRIBUTION TO THE ORNITHOLOGY OF WEST LANARKSHIRE AND EAST RENFREWSHIRE."

(Territory covered—The White Cart and its Tributaries.)

By Philip Alexander Clancey, Glasgow.

The following list of additions and corrections now brings my previous one in the Scottish Naturalist (1936, pp. 87-91, 123-4) up to date to the end of 1936.

My two lists, when taken in conjunction with that of Mr Nicol Hopkins (see Scot. Nat., 1936, p. 139), should form a reliable guide to the birds of this region.

Several species now given were purposely left out of my last paper, owing to insufficient knowledge of their distribution and status.

1A. The Hooded Crow, *Corvus cornix cornix* Linnæus.
Occurs on the moors.

8A. The Siskin, *Spinus spinus* (Linnæus).
An occasional winter visitor.

10A. The Twite, *Carduelis flavirostris bensonorum* (Meinertzhagen).
Breeds in very small numbers on the Eaglesham and Mearns moors.

12A. The Brambling, *Fringilla montifringilla* Linnæus.
A rather uncommon winter visitant.

23A. The White Wagtail, *Motacilla alba alba* Linnæus.
Occasional during passage.

30A. The Continental Golden-crested Wren, *Regulus regulus regulus* (Linnæus).
One record. (See *British Birds*, xxx., p. 226.)

31A. The Pied Flycatcher, *Ficedula hypoleuca hypoleuca* (Pallas).
A pair observed in East Renfrew on 9.v.1936. (See *British Birds*, xxx., p. 44.)

3A. The Wood Warbler, *Phylloscopus sibilatrix sibilatrix* (Bechstein).
Breeds in small numbers at Pollok and Darnley Glen, Renfrewshire. Rare elsewhere.

33B. The Grasshopper Warbler, *Locustella nævia nævia* (Boddaert).
A rather rare summer visitor. Bred in Pollok estate in 1935.

40A. The Continental Song-Thrush, *Turdus ericetorum philomelus* Brehm.

Two females obtained in East Renfrewshire on the 7.xii.1935 and the 12.xii.1936 respectively, have proved to be of this race.

43A. The Greenland Wheatear, *Œnanthe œnanthe leucorrhoa* (Gmelin).

One observed near Eaglesham on the 8.v.1936. A very shy bird.

45. The Hebridean Stonechat, *Saxicola torquata theresæ* Meinertzhagen.

This and not *Saxicola t. hibernans* is the breeding form in this region. (See *British Birds* xxx., p. 259.)

45A. The Redstart, *Phœnicurus phœnicurus phœnicurus* (Linnæus).

Occasional on passage.

47A. The Hebridean Hedge-Sparrow, *Prunella modularis hebridium* Meinertzhagen.

The predominating form in this region. (For further information concerning the status of this race, and *Prunella m. occidentalis*, see *British Birds*, xxx., p. 259.)

57A. The Short-eared Owl, *Asio flammeus flammeus* (Pontoppidan).

Very occasional during autumn and early spring.

59A. The Little Owl, *Athene noctua vidalii* Brehm.

A single example was observed near Eaglesham, Renfrewshire, on the 18.iv.1936.

60. The Merlin, *Falco columbarius æsalon* Tunstall.

Mr E. Richmond Paton kindly informs me that it does breed in East Renfrewshire.

64. The Heron, *Ardea cinerea cinerea* Linnæus.

A pair bred in East Renfrewshire in 1936.

65A. The Whooper Swan, *Cygnus cygnus cygnus* (Linnæus).

A pair observed flying north-west over Cathcart, Renfrewshire, on the 5.v.1936.

65B. The White-fronted Goose, *Anser albifrons* (Scopoli).

A party of nearly thirty observed near East Kilbride, Lanarkshire, on the 1.i.1934.

76A. The British Oyster-catcher, *Hæmatopus ostralegus occidentalis* Neumann.

One on Balgray Dam, Renfrewshire, on the 16.viii.1936.

77. The Ringed Plover, *Charadrius hiaticula hiaticula* Linnæus.

From recent observation appears to be fairly frequent at the larger sheets of water in the autumn.

92. The British Lesser Black-backed Gull, *Larus fuscus grœllsii* Brehm.

A flock of between twenty and thirty adults, and juveniles remained on Waulkmill Glen Dam throughout the summer of 1936.

96. The British Black Grouse, *Lyrurus tetrix britannicus* Witherby and Lönnberg.

Mr E. Richmond Paton informs me that it is nearly extinct in this region.

NOTES

Smew at Fair Isle.—On or about 20th January a pair of Smews were on the small loch near the North Lighthouse on Fair Isle. While these have been seen occasionally along the shore, I do not think they have been seen on land before.—George Stout, Fair Isle.

Smews in Forth.—On 30th December 1936 we saw a Smew on Linlithgow Loch. It was close to the island and rather shy, but we got a good view of it.

This bird was subsequently seen by other observers on the 18th and 28th February. On the 21st March two were seen.

Mr John Rintoul and Mrs Gaskell saw a full plumaged drake Smew close inshore in Largo Bay on 14th February 1937.—Leonora Jeffrey Rintoul and Evelyn V. Baxter.

Smew in Perthshire.—On 22nd April 1937, I observed a fine old drake Smew (*Mergus albellus*) on Loch Dochart near Crianlarich; it was in company with some Golden-eye and appeared to be on very good terms with them. This is, I think, an unusual bird to see so far inland and on such a date.—D. I. Molteno, Loretto.

Green Woodpecker in Fife.—In spring 1933, a Green Woodpecker was identified at Brankstone, Bogside, Fife. It appeared to be a single bird.—Janet Hamilton Meigle, Brankstone.

Cormorants in East Renfrewshire.—As Cormorants (*Phalacrocorax carbo carbo*) in any number are of very rare occurrence in East Renfrewshire, it would seem desirable to record that we saw six on Balgray Dam on 21st March 1937.—Philip A. Clancey and Nicol Hopkins.

BOOK NOTICES

Palæontology, Invertebrate: 7th Edition. By HENRY WOODS, M.A., F.R.S., Cambridge University Press, 1937. Price 10s. 6d. net. As in previous editions, this is an essential aid to the early Student of invertebrate palæontology. The author gives a concise but clear summary of the anatomy of recent forms, relating this wherever possible to fossil types, thus giving a living and functional aspect to palæontology. In this edition, under the class heading, any further range of a particular genus discovered during the past twelve years is given and the number of deviating genera amplified. The necessary revision of nomenclature has also been made. A comprehensive and well-illustrated text-book.

The Beauty of Butterflies, with Introduction by JULIAN HUXLEY. London, 1937: B. T. Batsford, Ltd., 11″×8″. 12 coloured plates and 4 pages of Introductory Text by Professor Adolf Portmann. Price 5s. 6d. net. This is one of a series of publications issued under the general heading, "Art and Nature in Colour." The book is printed, both text and plates, in Switzerland, and this may account for the fact that a few typographical errors in the text have been overlooked. The plates are superb, portraying over forty species of tropical Butterflies more faithfully than in any other work of our acquaintance. No fewer than eleven colour prints are combined to produce the delicate shades so often seen in these attractive insects, and the result is well-nigh perfect. The book does not claim to possess much scientific value, appealing mainly to the æsthetic sense; nevertheless, the few pages of text furnish a readable sketch of the uses of colour in affording protection through resemblance to environment, mimicry and so on. The price of the book is exceedingly moderate.

A Modern Biology. By E. J. HOLMES and R. D. GIBBS. Cambridge University Press, pp. xv+272, with 163 figs. and index, 1937. Price 3s. 6d. This book is written for children of the senior school who already possess an acquaintance of living things through Nature Study. The text is beautifully lucid but stresses function rather than structure. The authors have covered a large field and are to be complimented on their judicious selection of subjects. Protoplasm, Skeleton, Movement, Food, Energy, Water, Temperature, Co-ordination and Behaviour, Reproduction, Growth and Hygiene, are only a few of the subjects discussed. The book should appeal not only to school children, for whom it is primarily written, but also to those naturalists who wish to enquire into the fundamental properties of animals and plants.

A Moth-Hunter's Gossip. By P. B. M. ALLAN. London: Philip Allan and Co., Ltd., pp. 310, 4 plates, and index, 1937. Price 7s. 6d. net. This is essentially a popular book for the lepidopterist. The author tells us in his preface "this book is not a serious, still less a scientific treatise on entomology, but merely tittle-tattle about certain moths which happen to interest me." Mr Allan is well acquainted with the early works on insect life and has brought together many interesting facts about our larger moths. His light style and an occasional humorous anecdote make the book pleasant reading.

CONTRIBUTIONS TOWARDS A KNOWLEDGE OF THE SCOTTISH *ONYCHIURIDÆ* (COLLEMBOLA), II.

By Richard S. Bagnall, D.Sc., F.R.S.E.

This is continued from Scot. Nat., 1935, pp. 111-117. In Part I. eleven species (one doubtful) of Scottish *Onychiurinæ* were recorded and in the present part I deal with a further eighteen species, of which *Onychiurus magnicornis* sp.n., *O. subæqualis* sp.n., *O. celticus* sp.n., *O. waterstoni* sp.n., *O. thalassophilus* sp.n., *O. imminutus* sp.n., *O. pygmæus* sp.n., *O. subambulans* Den., *O. rectospinatus* Stach, *O. bearei* sp.n. and *O. laminatipes* sp.n. are brought forward as British for the first time, whilst *O. stachi* Bagn. has only recently been described from a single Edinburgh example. I further add records of eleven species of *Tullbergiinæ*—the descriptions of all but two of which have appeared in "The British *Tullbergiinæ*," Parts I. and II. Of the exceptions, *Mesaphorura thalassophila* sp.n. is an interesting addition to the growing list of halophiles found on the Dalmeny coast, and with *O. iowensis* Mills will be more closely described in "The British *Tullbergiinæ*," Part III. I have pleasure in dedicating two species described herein to Prof. Sir Thomas Hudson Beare (who encouraged me considerably in my early entomological days) and to A. R. Waterston respectively.

Onychiurinæ (*continued*).

Kalaphorura burmeisteri Lubb.

Rare in the North of England and becoming common towards the South, the following is the first Scottish record.

Edinburgh, in a garden, vi.31.

armatus Group.

Onychiurus armatus (Tullb.).

A common and somewhat variable species of which I am accumulating considerable material for the purpose of study. I have taken a few examples of the vars. *inermis* Axel. (1905) and *denticulata* Handsch. (1924) in the neighbourhood of Edinburgh.

Onychiurus magnicornis sp.n.

Near *flavescens* Bagn. but smaller and white in colour. The pso. are large and ringed though not so large as in *flavescens* and disposed much as in that species. The PAO is composed of 36-40 tubercles which touch each other laterally. The foot is not so long as in *flavescens*, the claw armed with a tooth and the empodial appendage much as in that species. The AH are noticeably larger than in *flavescens* and are *c.* 3·0 times as long as laterally broad before base, and 0·6-0·7 the length of the hind claw. The longest bristles of Abd. VI are 2·0-2·5 times the length of the AH. The following table will serve to distinguish the species:—

Size larger, 2·5-3·0 mm., colour primrose to daffodil yellow with legs and antennæ white. PAO with 28-32 tubercles. Feet longer and the AH shorter, 0·35-0·4 the length of hind foot. Longest bristle of Abd. VI 3·0 to 3·5 times the length of AH . . . *O. flavescens* Bagn.

Size smaller, 1·6-1·8 mm. Colour, white. PAO with 36-42 tubercles. Feet shorter and AH larger, *c.* 0.6 to 0.7 the length of hind foot. Longest bristles of Abd. VI 2·0 to 2·5 times as long as AH . *O magnicornis* sp.n.

YORKS: Ravenscar, ix.34 (type and paratypes). SCOTLAND, Gleneagles, viii.34, several, and Pentlands, xii.34, several.

The following key will serve to separate two minute species *in which the pso. of the hind margin of the head as well as the dorsal pso. of Abd. V number* 2 + 2. The foot in both species is small, the claw simple, and the empodial appendage shorter than the claw.

One pair of dorsal body bristles considerably longer than the others, the second pair on Abd. V in the type example being twice as long as the outer long seta and 3·0 times as long as the AH . . . *O. stachi* Bagn.

Longer dorsal bristles of the abdomen subequal, those of Abd. V about twice the length of the AH.
O. subæqualis sp.n.

Onychiurus subæqualis sp.n.

Length 0·8 mm. Very close to *O. stachi*, both species of which agree in having a short PAO with only 18-22 tubercles and in that the outmost of the 3 pso. at base of antenna is noticeably remote from the other two. The arrangement of pso. is as in *stachi*; the foot is short and *c.* 1·2 to 1·25 times the length of the AH which are stouter than in *stachi* and slightly curved. The species

is immediately distinguished by the nature of its chætotaxy. In *stachi* the second pair of the dorsal major-bristles of each body segment IV and V are longer than the others, those on Abd. V being *c.* 2·0 times as long as the outer major setæ and 3·0 times as long as the AH. In *subæqualis* these major setæ are subequal in length and *c.* 2·0 times the length of the AH.

EDINBURGH district: Arthur's Seat, i.35; Corstorphine, iv.35 (type and paratypes); Cramond, iv.35.

PERTHSHIRE, Gleneagles, viii.34. AYRSHIRE, Skelmorlie Hydro. garden, vi.35 (A. C. Stephen), and ROXBURGHSHIRE, Hawick, 26.i.37.

DURHAM, Ryhope Dene, vi.34; YORKS, Speeton, 30.ix.34; and ESSEX, Epping Forest near Loughton, xi.34.

Onychiurus stachi Bagn.

1935, *Vasculum*, vol. xxi., p. 102.

A minute species described from a single example found in an Edinburgh field, iv.35, and since found in other localities.

Onychiurus celticus sp.n.

Except for the strongly characteristic AH this species closely resembles *O. scoticus*, and may be distinguished by the characters given in the following table:—

AH short, obconical and about 3·0 times as long as laterally broad before base. Hind foot more than 2·0 times as long as AH . . *O. scoticus* Bagn.

AH long, slender, and usually abruptly bent near apex, 4·0 to 5·0 times as long as broad before base. Hind foot 1·5 to 1·6 times as long as AH . *O. celticus* sp.n.

A third species falls in this group (in which the hind margin of the head is furnished with 2 + 2 pso., obliquely placed, but the dorsal series of Abd. V number 3 + 3), namely *O. pseudarmatus* Fols., a large Alaskan species in which the PAO is composed of some 40 crowded tubercles.

Dalmeny Estate, several examples found under stones below high-water mark, ii.35 (type and paratypes) and Skelmorlie shore, high-water mark, 11.vi.35 (A. C. Stephen), 1 only.

Onychiurus halophilus nom. nov.

for *Onychiurus littoralis* Bagnall 1935 SCOT. NAT. (July-Aug.) 1935, p. 114, *nec* Dürkop 1935 *Schr. naturwiss. Ver. Schleswig-Holstein*, xxi., p. 133, figs.

On or before the first week in June 1935 Herr Heinrich

Dürkop published a brief comparative description of an halophilus species of *Onychiurus* under the name of *littoralis* thus invalidating my use of that name a few months later.

The species described by Dürkop is undoubtedly *O. debilis* (Mon.) Den., so that *littoralis* Dürkop becomes yet another synonym of that interesting little halophile.

It should be noted that this species may be regarded as belonging to the *debilis* group by the structure of its PAO and the laminate empodial appendage. It is a very strongly characterised species. I have remounted my original material and find that the pso. at hind margin of head number 4 + 4 which are quadrangularly placed, and not 3 + 3 triangularly placed as originally described.

Onychiurus daviesi Bagn.

ARGYLLSHIRE and DUMBARTONSHIRE. Not uncommon on the shores of Loch Long, vii.35.

Outer Hebrides, BARRA, 1 example (Waterston) with *O. waterstoni* sp.n..

(*To be continued.*)

Bird Notes from the Forth Area.—During February 1937, many birds were cast ashore along the south side of the Firth of Forth. All were victims of oil. A note of these, and the other species seen, may be of interest.

1. *Seafield.*

GREAT CRESTED GREBE.—Two were killed on the sands on 10th February. On 11th February we caught a live one which we cleaned of oil. Another was washed up dead on 18th February. All these birds were oiled. Two others were seen alive on 24th February.

LITTLE GREBE.—One found dead, 10th February.

RED-NECKED GREBE.—One seen on 12th February, and again on 21st February in company with a drake Goosander.

RED-THROATED DIVER.—One, oiled, found dead, 17th February.

LONG-TAILED DUCK.—One was found dead, also a victim of oil, about 10th February.

SCAUP.—A number of live ones were seen and three dead birds, oiled, were seen between 10th and 17th February.

KNOT.—Twenty live ones were seen on 12th February.

PURPLE SANDPIPER.—Three were seen resting on the sewer on 12th February.

WHOOPER SWAN.—One immature was seen on 12th February and four adults on 14th February.

2. *Portobello*, 13th February.

EIDER DUCK.—One dead bird, oiled.

GREAT CRESTED GREBE.—Three seen at Joppa end.

3. *Aberlady Bay*, 20th February.

SCAUP.—One bird found dead, oiled. Three others seen oiled, mostly a patch at the tail.

VELVET SCOTER.—Four oiled birds were found.

RED-THROATED DIVER.—One oiled dead bird found at Gullane point.

SHELDUCK.—This was an unusual victim, but it was also oiled.

GUILLEMOTS.—Three dead birds, oiled, were found.—TOM SPENCE and GORDON SHEARER, Edinburgh.

Note on Scottish Hemiptera-Heteroptera—*Cimex columbarius* Jen.—In June 1936 a species of *Cimex* was found to be infesting rat cages at the Institute of Animal Genetics, University of Edinburgh.

Specimens submitted to Mr W. E. China of the British Museum (Natural History) were considered to be more typical of *Cimex columbarius* Jen. than of *C. lectularius* L., and he suggested the possibility that *C. columbarius* is a physiological subspecies of *C. lectularius* dependent on environment. On this hypothesis *C. columbarius* from an avian host tends to become more like *C. lectularius* when transferred to a mammal.

The ratio of the fourth antennal joint to the third is 0·67 : 1 in *C. lectularius* and 0·75 : 1 in *C. columbarius*. Of thirty-two males of this material, eight gave a ratio of 0·73 : 1, seven of 0·67 : 1, and five of 0·69 : 1. The remainder showed variations ranging between 0·63 : 1 and 0·76 : 1, not more than three specimens having the same ratio.

Ploiariola culiciformis DeG.—A specimen of this Reduviid was taken at the Institute of Animal Genetics on 6th April 1937. Saunders (1892) and Jones (1930) record it from the thatch of houses and faggots.—H. D. SLACK, Institute of Animal Genetics, University of Edinburgh.

The Scottish Ornithologists' Club

(Official Section)

Second General Meeting, Session I.

Miss L. J. Rintoul presided at the Second General Meeting of the Club, which was held in the McLellan Galleries, Glasgow, on 2nd April, at 7.15 P.M. There was an attendance of about seventy persons.

Paper by Mr Arthur B. Duncan on *Some Remarks on the Birds of the Outer Hebrides*, with special reference to subspecies.

The lecturer opened with some general remarks on subspecies, stating that they could be divided into two types: (*a*) Environmental —those exhibiting certain characteristics such as differences in pigmentation, etc., probably caused by climate and soil conditions; (*b*) Mutational—those showing definite characteristics of a heritable nature. It was the opinion of the lecturer that if a subspecies of an environmental type such as the Hebridean Stonechat was removed to the South of England, and bred there in isolation, it would change in a few generations to the race inhabiting that area. In the Mutational type of subspecies, the characteristics were clearly heritable—the Golden Plover was cited as an instance. It is of such material that species are made, in fact these subspecies are on an entirely different plane from the many environmental races. Mr Duncan would go further and suggest that these mutational races are in reality worthy of elevation to some such class as "Geographical Species." All Hebridean races are environmental, and he suggested that the views held by Col. Meinertzhagen (*Ibis*, 1934) may meantime be taken as giving the most probable explanation—high water content of the air and lack of bright sunshine, giving a low amount of violet ray radiation in the year. The lecturer then gave details of some of the Hebridean races and stated that he considered that the Dipper was probably represented by an environmental race in the Isles, but this had not been properly investigated yet.

A short discussion ensued.

Lantern Lecture by the Rev. J. M. McWilliam on *St Kilda and its Birds*.

Mr McWilliam began by expressing his regret that Lord Dumfries, who was to have given the lecture jointly with him, was unable to be present.

After giving a brief description of the islands composing the St Kilda group and what birds were to be seen there during the breeding season, the lecturer then exhibited a range of some fine slides of views of the islands.

October was suggested as a suitable date for the next meeting, to be held in Edinburgh.

The meeting closed at 9.20 P.M.

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PUBLISHERS' NOTE.

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THE IMMIGRATION OF WAXWINGS IN SPRING 1937.

By Evelyn V. Baxter and Leonora Jeffrey Rintoul.

Introduction.

The spring of 1937 was, in Scotland, rendered memorable to ornithologists by a large immigration of Waxwings which took place in the end of February and lasted throughout March. This is unusually late for arrivals of Waxwings in this country, the usual time when they visit us being November, December, and January. A feature of this arrival was its almost explosive suddenness, and the rapidity with which the birds spread over the country in the last days of February and first days of March. This rapid spread may have been due to the unusual lateness of the visit. By the end of February hips and haws and holly berries are getting scarce and the birds would find more difficulty in obtaining food than in autumn, and so would tend to spread more rapidly in search of sustenance. The heavy snowfalls, too, in Scotland, would add to their troubles in finding food. Before, and during the early part of the immigration, the weather in the Waxwings' usual haunts had been very severe, and in Scandinavia the snow was lying thick right down to high-water mark. There was also a succession of low-pressure systems over Scotland and off its east coast, which caused complete cyclonic circulation of air round them, and made the prevailing direction of the wind easterly from 24th to 28th February and thereafter north and north-east. In these conditions the Waxwings, making their leisurely way northwards towards their breeding haunts, found themselves faced by scarcity of food, and, diverted by the

atmospheric conditions, took a westward course and arrived on the coast of Britain.

The immigration was obviously very large; the actual numbers sent us total 1104 and, in addition, there are a good many reports of "flocks," "some," "several," "numerous," which would certainly add considerably to the figure given above. It is possible that a larger proportion than usual of the immigrants was seen. They fed, much more commonly than usual, on cotoneaster berries, which grow either in gardens or close to a house, and so the birds were more concentrated near human habitations than when scattered over the country-side feeding on hips and haws.

A good many casualties are recorded; there are all too many reports of Waxwings being picked up dead, or so exhausted that they died, this being no doubt due to the severity of the weather. One recorder suggests that want of water, owing to the pools being frozen, may account for some of the deaths. Their tameness resulted in many being caught by cats; some were killed by boys and some caught and kept in captivity.

The records sent show no obvious line of departure; the birds gradually diminished in numbers and after mid-April we have no further records.

We have here dealt exclusively with the immigration in Scotland; it was, however, not confined to this country, England also participating, though in a minor degree. Mr Witherby has kindly informed us that "except in Northumberland and Durham there seem to have been very few in England."

We most warmly thank all those who have sent us information about this movement. We have had a wonderful response to our appeal, and we are very grateful to everyone who has given us data of occurrences, habits, or anything else referring to this interesting visitation of these beautiful birds.

Occurrence under Dates.

The first note of Waxwings, in this immigration, comes from Penicuik (Midlothian) where one was seen about

7th February, while on or about 20th February one appeared on Fair Isle. In the early part of the immigration a Waxwing was reported near Haroldswick, Shetland; unfortunately we have not been able to obtain the exact date.

Under date of 3rd March a correspondent in Aberdeen says: "They have been here in twos and threes for nearly a month"; and one was seen near Largo, Fife, on 25th February.

An unexpected feature was that many of the early records came from the west; Ritchie (*Scot. Nat.* 1923) noted this in the 1921 immigration. Thus on 26th February records of single birds come from Minard and Crarae, in Argyll, Lochinver (West Sutherland), and Alva, Stirlingshire. The next day (27th) we have the first note of a number, a flock of forty being recorded from Linlithgow. Smaller numbers were noted on the same day at Largo and Leslie (Fife), Arbroath (Angus), Ballater, Aboyne, Newburgh and Lumphanan (Aberdeenshire), Gatehouse-of-Fleet (Kirkcudbright), Kilmarnock (Ayrshire), Helensburgh (Dumbartonshire), and Fort William (Inverness-shire). The main arrival was on 28th February; on that day there are records from several of the places already mentioned and, in addition, from Haugh-head, Earlston, Berwickshire (7 or 8), Balerno, Midlothian (3); Cowdenbeath (2), Crail, Kirkcaldy, Den of Lindores (4), Ceres, Milton of Balgonie (2), Brankstone and Broomhall (6 or 7), all in Fife; Carnoustie, Angus; and Strathtummel and Luncarty, Perthshire. The west, too, has interesting records: one is recorded from Canonbie and two at Whitehill, Lockerbie, Dumfriesshire; six appeared at Prestwick, Ayrshire, and about the same number at Stornoway. About thirty arrived at Cathcart, Renfrewshire, but did not stay, and none was seen there again till 12th March, when a dozen were noted. At the very end of February one was seen at Kilmichael-Glassary, Argyll, and one at Poolewe, West Ross.

The 1st of March brings two records from very high localities, namely five Waxwings on the bare moorland between Kinnaird and Coupar-Angus and four on the Gairnshiel road which runs from Dee to Donside, the country there being covered with three feet of snow. Places

which had not hitherto recorded Waxwings are, in the east, Jedburgh, Dirleton, Longniddry, Broughty Ferry, Fochabers and Invergordon; in the west, Woodlea, Moniaive, Duror-of-Appin, where they increased in numbers up to the 6th, and Spean Bridge from 1st to 6th, and they were also recorded from localities as far from the coast as Callander. From the 1st to the 4th March two were observed at Creetown and four at Carsluith Bridge, Kirkcudbright. On 2nd March larger numbers are recorded: flocks of ten were seen at Campbeltown and Arduaine, Argyll, and Blanefield, Stirlingshire; nineteen or twenty were noted near Langholm and nine at Aboyne. "Dozens and dozens" appeared at the Den of Lindores, Fife. "They only stayed one day in these numbers, but lingered in the neighbourhood." A large flock was seen at Dollar, and twenty at Kirkton near Dumfries on this or the following day; two were seen at Golspie, Sutherland, which stayed till 4th. Interesting isolated records from the west are of birds picked up dead on Soay, off Skye, and at Ardtornish, Morvern, Argyll.

Waxwings continue to be recorded steadily till the end of March, but as would be expected the numbers dwindle. On the 3rd new localities recording Waxwings are Kingsbarns, Fife (nine), Edzell (and on to 14th) and Balgay (both Angus), Pitlochry, Banff ("a flock for the last few days"), Inverness, Irongray, Dumfries, and Darvel, Ayrshire. On the 4th Waxwings were noted at Elie, Montrose, and Foulis Castle (East Ross) on the east and Ballantrae on the west. Next day they were seen at Kelso; three on the banks of the Tay near Perth and one at St Fillans; seven near Lennoxtown, West Stirling; and one was found dead near Ardrishaig. An interesting little group of records comes on the 6th of March: a Waxwing was found dead on Upper Rule Water, Roxburghshire; one was seen at Duns, Berwickshire; four at Falkirk (where nine were observed next day); two at Cults, Aberdeenshire; and one at Kirkwall, Orkney. From this date to the 14th six were at Daviot, Inverness-shire; two in Dura Den, Fife; and from 6th to 13th one to three near Braemar.

The week of 7th to 13th March found a flock of twenty

to thirty Waxwings in Glen Fruin, Dumbartonshire; while on the former date single birds are recorded from Helensburgh and Glen Clova (Angus), and five were seen at Crieff. From 8th to 12th March a flock of at least a score frequented Edenpark, Cupar, Fife; on the 8th twelve to fifteen are recorded near Coupar-Angus; six at Borlick, Aberfeldy; and two at Kilmarnock. On the 9th a flock of from twenty to thirty were seen at Greenfaulds, Cumbernauld parish, Dumbartonshire; the flock was there till the 17th when it appeared to be breaking up. Some, however, were still there on the 19th and two on the 23rd. On the 10th a Waxwing was noted at Girvan, Ayrshire; on the 11th two were at Portree, Skye; and thirty to forty at Kirkton, Dumfriesshire. "A few days before" this date Waxwings were seen at Inverkip, Renfrewshire; and on the 12th there were flocks near Cardenden, Fife, Melrose, and Glasgow; and about this time they were in Pittenweem.

From this time onwards the birds were obviously moving about in the country, no doubt actuated by food supply, as various new localities report their visits. These include Scone, three or four on 13th; Strathtay, two, and Arbirlot, Angus, six or seven on 14th; Kilmacolm, one, Waterloo, Perthshire, about a dozen, and several about Closeburn, Dumfries, about the 15th. From this date till the end of March, twenty to thirty were about Alvie, Kincraig, Inverness-shire, and on the 16th flocks were seen in various parts of Dumfriesshire. There seems also to have been a departure about this time, last records coming from several stations which had regularly been recording Waxwings; these include Aberdeen and Ballater on the 12th, Ballantrae on the 13th, Dundee on the 14th, Kirkcaldy on the 15th, and Aboyne and Lennoxtown on the 16th; and on the 17th March they were last seen at Galston, Ayrshire. On the 19th one was seen at Bonnyrigg, Midlothian; while next day there were two between Balmalcolm and Kettlebridge, Fife, and one at Brechin. About the same date a flock of eight or ten was seen near Dumfries and others in the same neighbourhood. On the 22nd two were captured at Fannyside, about 2½ miles from Cumbernauld.

During March, Waxwings were also reported from Peeblesshire, Ayrshire, Fort Augustus, Elgin, Croy, and Ardgay, while birds of this species were found dead in several places in South-West Scotland. In the same month a flock of fifty was seen near Hamilton. Waxwings were in the Botanic Gardens, Glasgow, and a flock of fifty is recorded from Ardnamurchan; while during the last week of the month they were seen in Cadzow Forest. Notes are by this time becoming very few, as the birds are obviously either leaving the country or dead. They are recorded from Cowdenbeath on the 25th and next day all, except three, had left St Andrews. On 27th and 28th March Waxwings were seen in Edinburgh; they were last noted at Cumbernauld on 30th March, Duror-of-Appin on 1st, and Creich, Fife, on 4th April. On the 6th a number were in the Dean Park, Kilmarnock, where they had been seen before by the park-keeper; and on 7th the last is recorded from St Andrews. In a note in the *Scotsman* S. G. reports two Waxwings in Mull and two sent to him dead, from Skye; while a bird, which from its description was a Waxwing, was seen in a garden in Portree in mid-April. The last is that recorded by Mr Serle from Duddingston on 11th April.

Food and Drink.

Our correspondents have sent us many interesting notes on the food eaten by the Waxwings. Owing no doubt to the season of the year these differ considerably from those sent to Professor Ritchie in the great immigration in 1921. That immigration began on 10th November and ceased in the early days of December. In 1921 the hips of roses were the favourite food; this year by far the most favoured food was cotoneaster berries. Of the seventy-nine records sent thirty-three give cotoneaster berries as the food eaten by the birds. Different species of cotoneaster were eaten and the birds appear to have dealt with the berries in different ways. From Cowdenbeath we have the note: "The visitors selected their berry, held it for a second in their bill and then, with a slight toss of the head, swallowed it whole"; from Edzell: "The berries are sometimes picked with an ordinary stooping motion. At other times the bird

clings to the underside of a twig and eats the berries from below; the berries seem to be gulped down whole." At Ballater, we are told, they seemed to take the seed and pulp of the cotoneaster berries and discard the skins; while our note runs: "Watched them wolfing cotoneaster berries whole; they were very wasteful and seemed to drop as many as they ate." The second favourite was haws, of which fifteen records have been sent; the hawthorn berries were swallowed whole, and at Coupar-Angus Waxwings were observed picking up fallen haws below the trees. Hips run the haws pretty close, thirteen records being sent; both hips of dog-rose and sweet briar are mentioned; and from Arbroath we have the note: "The hips were swallowed whole. They did not seem to want to crush the berry and eat the seeds inside as our own birds do." There are five records of *Berberis* being eaten and three of holly; of this last berry our correspondent at Edenpark, Cupar, Fife, says: "If a berry dropped to the ground they dropped too and recovered it." There are three records of their feeding on *Pernettya mucronata*, all from the west, and two of *Pyracanthus*. At Crieff they gorged themselves on guelder-rose berries; at St Andrews a Waxwing ate yellow crocus "in large gulps"; near Braemar, at 1100 feet above sea-level, when the whole ground was covered with snow, they were hunting for food in Scots fir and juniper. In the same neighbourhood, namely on the high ground between Dee and Don, they were flitting about the juniper bushes hunting for food, the country being covered with three feet of snow. On a high bare moor between Kinnaird and Coupar-Angus "they were busy feeding among whin and bourtree bushes." At Dundee they "seemed to be finding insects under the eaves"; and Miss Wilson, St Andrews, told us that she watched them doing little flights up into the air "evidently catching insects."

A good many correspondents noticed their enormous appetites when they first arrived; these, however, moderated after they had been some time in the locality. Some recorders tell of feeding the Waxwings, sometimes on their normal food, such as hawthorn berries, at others on currants which they much enjoyed. One ate, in one day, a banana, a

handful of currants and hawthorn berries; this was in captivity. Another, which was very much exhausted, was fed with berries and a few currants from a cake. It recovered completely and was released next day. Others throve on ants' eggs and puppy food. At St Andrews "they were attracted by the *Berberis* berries in front of the house. They were very greedy and ate them all up quickly, so we have been feeding them on currants, of which they seem very fond. When they first arrived they were very tired, but since then they have become much bolder, even chasing away Thrushes and Blackbirds." A good many correspondents refer to the amount of water they drank and mention that, after a good feed of berries, they always went and had a drink. For example, at Fort William, they drank from a small stream; at Coupar-Angus they drank out of the burn; at Glasgow they drank out of the Kelvin. At Cumbernauld water was found to be very essential: "After a gorge of haws they flew to the drinking places—some springs—and took as many as six sips—then to branches, adopting a sleepy attitude, feathers fluffed out, wings drooping, easily approached when first observed." At the Den of Lindores they "liked a dip in the burn"; at St Andrews "they were very thirsty and often came and drank from a bowl put out for them"; while at Arbroath they frequented the birds' bath. At this last place, Carnoustie, Kirkcaldy, and Kincraig, Inverness-shire, they were observed to be drinking copiously from the rones of the buildings.

Habits.

Many references are made to their amazing tameness. From Borlick, Aberfeldy, we hear: "On Tuesday the 8th of March I was surprised to see some strange birds eating berries off some small trees, and got as close to them as I dared go, in case they would fly away; but the more I stood the tamer they got, and finally I managed just up close on them. On Thursday I was at the same tree, repairing a lambing shed. I was hammering in a nail when I heard a chirp, and looking up saw seven Waxwings and studied them again. Still I had my work to complete and just

kept going, and hitting sheet iron with a hammer makes some noise. Well the Waxwings did not mind, though they were only about twelve feet away from me and some of them less. So I finished my job and left the birds to finish the picking of the berries, and I went home."

The weather during their stay was very cold and windy. At Cumbernauld Waxwings were "swaying on the branches in a fifty mile per hour gale as they fed, wings and tail spread for balancing aids, acrobatic but somewhat clumsy." At Aberfeldy, in a heavy snow-storm, our recorder noticed that "they sit with their side to the storm instead of facing it, as most birds do."

Various roosting places are recorded: in a hedge at Golspie; in a small plantation near Cupar, Fife; in an old plane tree at Foulis Castle; and on the crow-steps of the gables of Tullich Lodge, about two miles from Ballater, or on nearby trees.

Waxwings are usually described as very silent birds, and this fact makes doubly interesting the notes which we append. From Linlithgow, "they twittered as they alighted"; from Fort William, "the call, or cry, is a feeble trill uttered by the bird when on the wing and not uttered when they are disturbed, but seemingly as a call-note"; from Arbroath, "they sang a soft melodious twitter such as you hear from small birds, amongst trees, on a spring day"; from St Andrews, we have "a high rippling note, very like a Redpoll's, and another note they utter constantly, especially in late afternoon, is a soft whistle 'soo,' not unlike the equivalent 'seep' of the Robin"; from Cumbernauld, "a shrill shree-e or trill-like note, and single birds 'zieh' like a Redwing."

Superstitions have been sent us from several places: Minard, they are a portent of war; Stornoway, a bird of ill-omen and said to presage war, plague, or sudden death; Montrose, when they appear it is a sign of hard weather; Colinsburgh, they are unlucky; elsewhere they are said to foretell pestilence. In Europe, as is pointed out by a correspondent in Kintyre, their occasional visits are said to presage famine and war and they are regarded as the "devil's own bird!"

NOTES

Bottle-nosed Whales (*Hyperoodon rostratus*) in the River Tay.—On the afternoon of Saturday, 10th April 1937, a school of about fifty whales visited the River Tay. They were observed by many people in Broughty Ferry and Tayport, including several men who in their younger days had been to the Arctic with Dundee whalers, to be drifting rather than swimming with the flood tide. The school came up river on the Fife side as far as the lighthouses at West Lights, and this coincided with the turn of the tide. The animals next drifted almost diagonally back across the river to the Castle at Broughty Ferry, which course is the set of the ebb-tide in this part of the estuary.

At one point near the West Lights the animals were within 150 yards of the shore, and an excellent view of them was obtained by Mr Charles Finlay, head lighthouse-keeper and former whaler. Information given to me by Mr Finlay within an hour after they had been seen made it clear that the school was of "bottle-noses." This was substantiated by accounts given independently by Mr Maxwell, a Tayport fisherman, who had gone out in a small boat and was within a few feet of the animals; and by Mr Smith, the skipper of the Broughty-Tayport ferry boat. Mr Maxwell told me that he had been so close that he was rather anxious for the safety of his boat when one raised its head right out of the water and revealed a "swollen head with a beak and two grooves on the throat." This latter piece of information clinched the matter of identification.

The average length of the animals was estimated by several independent observers to be between 20 and 30 feet.

On Saturday evening I picked up squid remains in a fresh condition on the beach at West Lights, and there may be some connection between the presence of these and the whales in the river.—Frank Greenshields, B.Sc., Ph.D., University College, Dundee.

A Rare Slug, *Limax cinereoniger*, Wolf, in Midlothian.—It is many years since 1898 when W. Evans collected this rare slug in Roslin Woods, near Edinburgh (Taylor, J. W., *Monograph of the Land and Freshwater Mollusca of the British Isles*, vol. ii., 1907, p. 61). Quite recently this year I found two specimens, in Bilston Glen near Roslin on 14th May, and by the Fullarton Water near Temple on 30th May. The specimens have been deposited in the Royal Scottish Museum.—D. K. Kevan, Edinburgh.

COMMON DOLPHINS IN THE NORTH SEA.

By F. C. Fraser, D.Sc., Department of Zoology, British Museum (Natural History).

Between 7th and 17th February 1937 a series of Common Dolphin strandings was reported on a stretch of the east coast of England and Scotland, extending from Tain in the County of Ross to Cleethorpes in Lincolnshire. The strandings are summarised in Table I.

Table I.

Reference Number.	Date.	Locality.	Number.	Evidence of Determination.
S.W. 1937/3A	7.2.37	Bo'ness, Valleyfield, and Culross, Firth of Forth	A number seen. 1 stranded at Bo'ness, 5 at Valleyfield and Culross	Lower jaw (Royal Scottish Museum).
1937/4	8.2.37	Invergordon and Tain, Ross-shire	5(Invergordon) 1 (Tain)	Entire animal. British Museum (Nat. Hist.).
1937/5	8.2.37	Cleethorpes, Lincolnshire	1	Entire animal. British Museum (Nat. Hist.).
1937/6	17.2.37	Monifieth, Angus	1	Lower jaw (Royal Scottish Museum).
1937/7	19.2.37	St Andrew's, Fife	1	Entire animal. (Prof. Peacock, Dundee).

Because of the prevailing cold weather, the two Dolphins sent to the British Museum arrived in perfect condition, and the more delicate details of body coloration were much better preserved than in the majority of stranded specimens usually received. The general body colour was alike in both, but there were some differences in detail, most noticeable in the region of the flanks and tail. Between the dorsal fin and flukes on the flanks the Invergordon specimen was much less heavily pigmented than the Cleethorpes one. A pair of thin but conspicuous lines of pigment in the Cleethorpes animal, originating just above the anus and extending forward to end on each side about halfway along the body, was present but indistinct in the Invergordon specimen. In the blackness of the back and whiteness of belly, in the alternating streaks of colour on the sides, both specimens conformed to existing descriptions of the external appearance of the Common Dolphin.

The external measurements are given in Table II.

TABLE II.

	S.W. 1937/4	S.W. 1937/5	S.W. 1937/6	S.W. 1937/7
Total length	7′ 1½″	7′ 6″	6′ 9″	6′ 10″
Length of snout	6″	5″	5″	5½″
Tip of snout—blowhole	1′ 2½″	1′ 1¾″	1′ 0″	1′ 2″
,, ,, —eye	1′ 2″	1′ 1⅛″	...	...
,, ,, —angle of gape	11¾″	10¾″	...	...
,, ,, —tip of flipper	2′ 8″	2′ 9⅛″	...	...
Eye to ear (centres)	2″	...	...	...
Length of flipper	11″	11¼″	10″	10″
Greatest width of flipper	4½″	4½″	...	...
Notch of flukes to anus	1′ 11¼″	1′ 11½″	...	...
Centre of anus—centre of reproductive aperture	7″	8″	5½″	...
Width of flukes tip to tip	1′ 8¾″	1′ 10¾″	...	...
,, ,, at insertion	5¾″	6⅛″	...	...
Height of dorsal fin	10″	9¼″	9¼″	8″
Length of base of dorsal fin	11″	1′ 1″	...	...
Notch of flukes to centre of dorsal fin	3′ 4″	3′ 6″	3′ 5″	3′ 2″
Greatest circumference	4′ 0″	3′ 9″	...	...
Weight	250 lbs.	244 lbs.	...	...
Teeth number	48 / 45	46 / 44	43 / 48	40 / 40

S.W. 1937/4 and 5 were males, and the anus-reproductive aperture measurement of S.W. 1937/6 suggests that it too belonged to the same sex. Both S.W. 1937/4 and 5 were sexually mature: the dimensions of the testis of the latter specimen were 27 × 5 × 3·5 cm. It is interesting to compare these dimensions with those of a male Common Dolphin 7′ 11″ in length stranded at Putney, 1st August 1935 (S.W. 1935/10), in which the testis measured 41·5 × 9·5 × 9·5 cm., enormous dimensions considering the size of the animal. Meek (1918) states that in the Common Porpoise the testes enlarge very greatly in the summer, and the present observations indicate that seasonal variation also takes place in the testes of the Common Dolphin.

Both the specimens sent to the British Museum had series of parallel scratches on the back and sides. In a paper published in the *Transactions of the Norfolk and Norwich Naturalists Society*, Sir Sidney Harmer (1901) put forward the explanation that these scratches are produced

FIG. 1.—Sucker marks of the Cuttlefish, *Todarodes*, on the skin of a Common Dolphin.

by the teeth of other Dolphins of the same species, and certainly in the present instance the marks suggest such an origin.

In addition, however, to the elongated scratches there were, in the neighbourhood of the jaws of the two British Museum specimens and in one or two of the heads sent to the Royal Scottish Museum, circular marks of the form shown in Fig. 1. Mr G. I. Crawford, to whom I showed specimens of the marks, suggested that they had possibly been caused by Cuttlefish of the genus, *Todarodes*, and about the same time I had information from Dr A. C. Stephen about the marks on the jaws of the Dolphins sent to the Royal Scottish Museum. Dr Stephen also informed me that the Cuttlefish, *Todarodes sagittatus* (Lam.), had been coming ashore between North Berwick and Carnoustie, in some places in very large numbers.

Mr M. A. C. Hinton informs me that circular sucker marks of similar appearance were quite common on the heads of the False Killer Whales stranded in the Dornoch Firth in 1927.

The British Museum records of stranded Cetacea—1913 to 1932—indicate that the Common Dolphin does not often frequent the North Sea. Nearly all the strandings are concentrated on the south and south-west coasts of England and Ireland. A few stragglers were found on the east coast of Scotland, prior to the present series, and there were no records whatsoever between the Firth of Forth and the Straits of Dover.

It seems highly probable that in the present instance the Dolphins had followed the Cuttlefish which had invaded the North Sea, and it is likely too that the stranding of one Sperm Whale at Bridlington and two on the Dutch coast in the early part of the year can be associated with the abundance of Cephalopods in the North Sea at that time.

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THE LANCELET, *BRANCHIOSTOMA LANCEOLATUM* (PALLAS), AT MONTROSE.

By A. C. STEPHEN, D.Sc., Royal Scottish Museum.

THE Lancelet, or Amphioxus as it is often termed, although the species inhabiting British seas is now referred to the genus *Branchiostoma*, ranges from the Mediterranean and the north coast of Africa to Norway. On the west coast of Scotland it is recorded from the Clyde area, near Little Cumbrae, and between Cumbrae and Hunterston (*British Association Handbook*, 1901). In the North Sea it has been taken on several occasions on the Dogger Bank (Davis, 1923). It occurs also in the shallower parts of the southern North Sea, at the entrance to the Baltic on the coast of Norway and on the eastern coasts of Britain (Franz, 1927).

Along the eastern shores of Britain it is not at all common and has been reported on only two occasions, once from the coast of Norfolk and once from the Moray Firth. This last record is given by Stieda (1873), but he does not give any reference for the statement. Another Scottish specimen has now come to light. In a collection of material, kindly presented to the Royal Scottish Museum by Mr Duncan, Montrose, was a Lancelet measuring 5·5 cm. It was picked up on the beach at Montrose. The date when it was found is not known but Mr Duncan, writing on 21st May 1937, states that it was found some years ago.

The Lancelet lives in shallow water buried in sandy gravel or shell gravel, with only the fringed mouth projecting. Ground of this texture occurs in the Montrose area and it would be interesting to know if it is established there, or if this had been a casual.

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

(*Continued from p.* 71.)

IV. SPIDERS AND ALLIED GROUPS.

By the Rev. J. E. Hull, M.A., D.Sc., and J. W. Heslop Harrison, D.Sc., F.R.S.

The spiders and other forms discussed in this paper were captured during the years 1933-36 by Dr George Heslop Harrison and one of us (J. W. Heslop Harrison), although only the former worker has collected Arachnida in the islands other than during the months of July and August. He, fortunately, was compelled to visit Raasay in April and June 1936 in order to carry out certain investigations in connection with entomological problems, and utilised the opportunity of adding to our knowledge of the spider fauna.

It will be obvious that no one has worked the island group during that period of the year most productive of adults from the standpoint of the largest spider families. In spite of that, no fewer than 98 species of spiders are now reported, 8 of harvest spiders, and one pseudoscorpion. This list, therefore, compares very favourably indeed with that presented in Bristow's "Spider Fauna of the Western Islands of Scotland" (*Scot. Nat.*, May-June 1927, page 88). That author lists 140 spiders, 11 harvestmen, and 3 pseudoscorpions for the whole of the Hebrides, Inner and Outer.

Of the species captured by us, 28 are additions to Bristow's list, so that there are now known from the Hebrides 168 spiders, 11 harvestmen, and 3 pseudoscorpions.

The most striking feature revealed by our researches is the presence in Raasay and its neighbours of a substantial element composed of species such as *Zelotes latreillii*, *Z. apricorum*, *Drassus pubescens*, *Xysticus pini*, etc., showing southern predilections. Amongst these will be noted two species, *Drassus pubescens* and *Xysticus pini*, included by Bristow on the basis of odd specimens from Arran and Ailsa

Craig. That author was so surprised at their presence, even in such a sheltered island as Arran, that he casts doubt on the correctness of their identification. Both species, however, are widely distributed in the islands now being investigated, and far from rare. In any case their occurrence simply confirms the indications of the Flora, and of insect groups, like the Lepidoptera, Coleoptera, Hemiptera-Heteroptera, etc., all of which possess noteworthy southern representatives in these islands.

It should be observed, too, that of the spider species here recorded, 24 are restricted to Raasay, 16 to Scalpay, and 3 to South Rona. As stated in discussing other groups, not all of these discrepancies are significant, but, nevertheless, some are, and therefore further researches are needed to reveal their exact meaning.

Araneæ.

Harpactus hombergii Scop.—On Rona only.

Segestria senoculata L.—Generally distributed over the three islands, Raasay, S. Rona, and Scalpay.

Oonops pulcher Templ.—Amongst débris in the ravines on Scalpay and Raasay.

Drassodes signifer K. (*troglodytes* K.).—On Raasay only; in the Inverarish area.

D. lapidosus Walck.—Thinly spread in all the larger islands.

D. pubescens Thorell.—Usually regarded as a southern species, but much commoner than its congeners on Raasay, Scalpay, and Longay.

Zelotes latreillii C.L.K.—In rock débris amongst the birches, Balachuirn, Raasay.

Z. apricorum L.K.—Also on Raasay, but near Inverarish; a considerable northward extension of these two southern and western spiders.

Clubiona diversa Cb.—On Raasay, Scalpay, and Longay.

C. subtilis L.K.—On Raasay and Scalpay on shrubs.

C. reclusa Cb.—Amongst grass, etc., Raasay, S. Rona, Scalpay, and Longay; not uncommon.

C. comta C.L.K.—Sparingly in S.W. Raasay and Rona.

C. holosericea De G.—On the marsh edges at Fearns, and Loch Eadar da Bhaile, Raasay

Chiracanthium carnifex Fab.—On the heather just above the old church, Raasay.

Anyphæna accentuata Walck—Beaten from alders and birches along the Arish Burn, Raasay, and Allt Camas na Geadaig, Scalpay.

Xysticus cristatus Clk.—Common everywhere on Scalpay, Raasay, Rona, and Longay.

X. erraticus Bl.—On Rona only.

X. pini Hahn.—A southern form, but, nevertheless, occurring over large areas in Raasay and Scalpay.

Philodromus elegans Bl.—Not uncommon on herbage in the south of Scalpay; also a southern species.

P. aureolus Clk.—Fairly common near Balachuirn, Raasay, and in Central Rona.

Oxyptila trux Bl.—Amongst rubbish, etc.; Raasay, Scalpay, and Rona.

Neon reticulatus Bl.—Found on Raasay in April 1937, and on Scalpay on the lower slopes of Beinn Loch a Mhuilinn in August; not uncommon.

Euarcha flammata Clk. (*falcata* Clk.)—Restricted to the south of Scalpay.

Cryphœca silvicola C.L.K.—Amongst the trees fringing the Allt Camas na Geadaig, Scalpay.

Tegenaria derhami Scop.—Locally common; White Cottage, Scalpay, Rona, and at various points on Raasay.

Textrix denticulata Oliv.—Generally common, Raasay, S. Rona, Scalpay, and Longay.

Hahnia montana Bl.—Quite rare; along the Arish Burn, Raasay.

H. candida Sim.—Rare, on the limestone outcrops east of Raasay House.

Pisaura mirabilis C.L.K.—Not common on heather, etc.; Dry Harbour, Rona.

Pirata hygrophilus Thorell.—Rare, Loch Eadar da Bhaile, Raasay.

P. piraticus Clk.—Thinly spread on Scalpay, Raasay, and Rona.

Trochosa terricola Thorell.—Common under stones on Raasay, Rona, and Scalpay.

T. ruricola De G.—Near Oskaig, Raasay.

Lycosa pulverulenta Clk.—On the moors of Raasay, Rona, Scalpay, and Longay.

Pardosa nigriceps Thorell.—Amongst heather on Raasay and Rona.

P. amentata Clk.—Common everywhere.

P. pullata Clk.—As with the last species.

P. palustris L.—Not uncommon and general.

Dictyna arundinacea L.—Quite common on heather on all the islands.

Ciniflo fenestralis Stroem.—Abundant in all suitable places; all the islands.

C. similis Bl.—Common in outhouses, stables, etc., on all the islands.

Ero furcata Vill.—Widespread on the moors of Central and Southern Raasay.

Theridion pallens Bl.—Common on birches everywhere.

T. sisyphium Clk.—Abounds on birches, etc., on all the islands.

Phyllonethis ovata Clk. (*lineata* Clk).—Scarce; Raasay only.

Robertus lividus Bl.—Common under stones on the various islands.

Ceratinella brevis Wid.—In herbage on the hills behind the upper road, Raasay.

Monocephalus fuscipes Bl.—Common; Raasay, Rona, and Scalpay.

Scleroschema hiemale Bl.—Amongst moss in the woods on Scalpay.

Troxochrus exilis Bl.—In Raasay House Woods.

Dicymbium tibiale Bl.—Also in the woods near Inverarish, Raasay.

Lophomma punctatum Bl.—In swampy places in the south of Scalpay.

Evansia merens Cb.—A well-known myrmecophile, but

found well distributed in Raasay amongst grass, as well as in nests of the ant *Formica fusca.*

Walckenaëra acuminata Bl. — Near Loch an Leoid, Scalpay; uncommon.

W. nodosa Cb.—Near the lochans in the centre of Scalpay.

Micryphantes graminicola Sund.—Quite rare on Scalpay.

Gonatium rubellum Bl.—On the Storab Burn, Raasay.

G. rubens Bl.—Sparingly distributed on Rona.

Dismodicus bifrons Bl.—Near Loch Braig in the north of Rona.

Œdothorax fusca Bl.—Just south of Holoman, Raasay, and Big Harbour, Rona.

Trachygnatha dentata Wid.—Near Dry Harbour, Rona.

Erigone dentipalpis Wid. — Fairly common in North Scalpay.

E. atra Bl.—Widespread on the Scalpay moorlands; also on Rona.

Oreonetides abnormis Bl.—Rare along the Inverarish Burn, Raasay, and Rona.

Centromerus bicolor Bl.—Sparingly on Raasay.

C. concinnus Thorell.—Only found on Scalpay, but not rare.

Porrhomma montanum Jacks.—At the head of the Allt Liath, Scalpay.

Microneta viaria Bl.—Scattered in the north of Scalpay on the Conglomerate.

Bathyphantes concolor Wid.—Not plentiful on Raasay.

B. parvulus Westr.—Quite a rare spider, and only seen in North Scalpay.

Pœciloneta globosa Wid.—On Rona and Scalpay, but not common.

Leptyphantes zimmermannii Bertk.—Under stones on the moors of Raasay.

L. tenebricola Wid.—Beinn Loch a Mhuilinn, Scalpay; rare.

L. ericæus Bl.—Not rare; Brochel, Holoman, Oskaig, Raasay.

L. tenuis Bl.—Rare on Rona.

L. orbatus Hull.—A male on Raasay. This is the species treated by most authors as Blackwall's *L. flavipes* which is, in reality, *Bathyphantes pullatus* Cb.

Labulla thoracica Wid.—In the woods along the Allt Brae, Raasay.

Linyphia peltata Wid.—Common on various trees on all the islands, including Longay.

L. pusilla Sund.—On low herbage on South Rona.

L. triangularis Clk.—Found on birches on all the islands.

Drapetisca socialis Bl.—In the woods of Raasay and S. Scalpay.

Bolyphantes luteolus Bl.—Not so common as one would expect; Raasay and Scalpay.

B. expunctus Cb.—Quite common on lichen-clad conifers on both Raasay and Scalpay.

Tapinopa longidens Wid.—Amongst stones around Camas na Geadaig, Scalpay.

Pachygnatha degeerii Sund.—Plentiful on all the islands, including Longay.

Tetragnatha extensa L.—Not uncommon; Raasay, Rona, and Scalpay.

T. pinicola L.—In the woods between the ironstone mine and the church, Raasay; also on Scalpay.

Nesticus cellulanus Clk.—Amongst the rocks in the gorge of the Allt Camas na Geadaig, Scalpay.

Meta segmentata Clk.—Abundant everywhere, quite rubescent in certain specimens.

M. merianæ Scop.—Common in most suitable places on the islands; and showing melanochroic tendencies.

Zilla atrica C.L.K.—Amongst conifers on Raasay; also on Rona.

Z. x-notata Clk.—On various trees on Scalpay and Raasay

Epeira cucurbitina Clk.—Common on birches and alders along the Arish, Raasay, and on Scalpay.

*E. diadema*ta Clk.—Abundant on all the islands.

E. quadrata Clk.—Widely spread on the islands, including Longay, but not plentiful; generally on bracken.

E. cornuta Clk.—On the moors, Raasay and Scalpay, spinning its web amongst rushes, etc.

E. ocellata Clk. (*patagiata* Clk.).—Common and generally distributed.

E. umbratica Clk.—Under the bark of trees in Raasay House Woods, and in the big wood in S. Scalpay.

PHALANGIDEA.

Mitopus morio Fab.—Common on all the islands.

Phalangium opilio K.—On the roadside as it runs through Raasay House Woods.

Megabunus insignis Meade.—Scattered on Raasay and Scalpay.

Oligolophus tridens C.K.L. — Rather rare on Raasay, Rona, and Scalpay.

O. agrestis Meade.—With the preceding.

Odiellus palpinalis Herbst.—Only found on the moors of Raasay.

Nemastoma lugubre Müll.—Abundant on every island, including Longay.

Liobunum rotundum Latr.—Rare on Raasay in April.

CHERNETIDEA.

Obisium muscorum Leach.—Everywhere plentiful in dead leaves, moss, etc.

(*To be continued*)

NOTES

Note on the Sand-Martin.—On 11th July 1936 Mr D. Hamilton and I visited Linlithgow Loch and were struck by the extraordinary number of Sand-Martins flying about the Loch. Large numbers would occasionally perch on the wire fence of the hen run, on the north side of the Loch, and others on the reeds growing at the edge of the Loch, while many were landing on the footpath. We noticed that several were picking up dried stems of grass lying on the path, and running about with them as if at play, and sometimes two or three would take hold of the same stem. They ran about with great activity, a feature one would not expect to find in this species. They could rise on the wing from any spot, either flat or hollow, in the path, without any preliminary run. Rising on the wing from a stationary position was noted by Mr Norman M. Johnstone in his note on the

Sand-Martin in the *Scot. Nat.*, 1936, p. 163. It was also noticed by Mr D. Hamilton in his notes on the habits of the Swift.—W. A. McLeod Watson, Edinburgh.

Note on Greenland Wheatear and Waxwing.—On 31st October 1936 I was at Largo early in the afternoon, and started on a tramp along the shore towards Elie. A hundred yards or so east of the last house in Largo I observed a bird obviously of the Chat family; but it was not until the Misses Rintoul and Baxter observed it on the Monday following (2nd November) and identified it for me that I realised that I had seen a Greenland Wheatear—at a rather late date for the species. The bird had certain throat markings which puzzled me, but Miss Rintoul informed me that these were caused by probable contact with a wire—the bird was a young one of the year.

On 18th April 1937 I was at Aberfoyle, and observed a flock of Waxwings (eight in number) perched on the high branches of a larch quite close to the village. (There were probably other Waxwings in the vicinity.) The eight birds were feeding on the tiny red florets and perhaps also on the small green leaf-shoots of the larch.—P. W. G. Gunn, Edinburgh.

Rare Weevil, *Otiorrhynchus porcatus* Hbst., in Scotland.—This beetle, recently added to the British fauna has, so far, been recorded only from Oxford, Durham, Co. Dublin, and Co. Meath. On 4th May 1937 I found several under old pieces of wood lying on a grassy bank in a timber yard in Leith. A specimen has been deposited in the Royal Scottish Museum.—D. K. Kevan, Edinburgh.

Smew on Linlithgow Loch.—On 17th February I obtained splendid views of a duck Smew, *Mergellus albellus*, feeding close in at the south-east corner of the Loch. This is apparently the first record of the occurrence of this species on this particular stretch of water. Altogether eight different species of duck were seen to-day.—George Waterston, Edinburgh.

Goat Moth, *Trypanus cossus* L., in Caithness.—I am indebted to Captain D. Dannreuther for forwarding a female captured on willow in a garden at John o' Groats, on 15th May, by Mr S. Baigrie of the Lighthouse, Duncansbay Head, Wick. The date is an early one for this species. The Goat Moth is local in Scotland and has been previously noticed in several counties from Kirkcudbright to East Ross.—A. R. Waterston, B.Sc., Royal Scottish Museum.

ALGÆ STUDIES FROM BOGHALL GLEN (MIDLOTHIAN), II.

By E. Wyllie Fenton, M.A., D.Sc., Edinburgh and East of Scotland College of Agriculture.

Introduction.

The three chief algæ localities in Boghall Glen are Allermuir at the west, or top of the Glen, with water of *p*H 6·8—7+, Caerketton location (middle part) with acid water, and Leips Valley (near the entrance) with water of *p*H 7+. Boghall Burn drains the streams from all these locations. In the Caerketton location the rocks and soil are mainly acid, but in the other two locations the rocks are basic and the soil, though acid, has basic material present, while the water is also slightly alkaline. This affects not merely the ground vegetation, but the algæ in the streams and ditches as described in a previous article (Fenton, 1936).

In the present article further details are given with particular aspects of the algæ flora and distribution. The results recorded are of interest, as they will differ very markedly from those obtained in lake (Pearsall, 1922) and lowland conditions (Griffiths, 1922-1923), while the general conditions in Boghall Glen (Fenton, 1933) will be very similar to those in most parts of the Southern Uplands.

Habitat of Algæ.

Vaucheria terrestris occurred only at springs where the *p*H was about 6·8—7+. Hence except at Farm Reservoir this alga was confined to Leips Valley and the Allermuir localities; it never occurred in the Caerketton area. *Spirogyra* sp. is very similar to *Vaucheria* and also occurred in streams and ditches which drained away the spring water. This was also the habitat for *Œdogonium* and *Zygnema*, except that *Œdogonium* was comparatively rare in the Leips Valley. Both these algæ were frequently found with *Spirogyra*.

Tribonema occurred chiefly near Farm Reservoir and the drainage channels flowing therefrom. It was also plentiful in the lower parts of the Leips Valley. It was once found in the Allermuir location.

Draparnaldia occurred chiefly in the Caerketton location and in the lower parts of the Leips Valley, though not so plentiful in the latter habitat.

Rhizoclonium and *Stigeoclonium* occurred only in the Caerketton location.

Microspora, beyond a few traces in Allermuir, occurred only in the Caerketton location.

Ulothrix sp. had a general distribution.

Cladophora had a very restricted distribution. It occurred in one stretch of Boghall Burn and at one location in the Leips Valley. Traces of it were occasionally found in the upper part of Leips Valley.

Batrachospermum occurred at only one point, at an elevation of just over 1000 feet at the top of Leips Valley.

Spirogyra majuscula occurred at one point near a spring at the top of Leips Valley at an elevation of approximately 1200 feet. A few filaments were found at times at a lower elevation, but the alga never established itself in the lower part of Leips Valley.

Mougeotia was found chiefly in the Allermuir location, and a little in the Leips Valley.

Phenological Factors.

It was impossible to obtain temperatures and other data for Boghall Glen. Records are available for Boghall Farm, but details of temperature, sunshine, and moisture are not quite the same for both locations, for snow lies so much longer in the Glen. Meteorological observations have been given in the *Farm Guide* since 1934, but careful records have been kept for several years previous to that date.

Spirogyra spp. showed a vigorous response to continued periods of bright sunshine. This occurred even when the temperature was low in the early months of the year. This was noticeable after several clear sunny days, even when there was ground frost at night. *Vaucheria terrestris* reacted

more to temperature than sunshine. The spread and growth of *Vaucheria* was always noticeable after a warm spell, even though the hours of sunshine were few and the daylight of short duration. In 1932-1933-1934 with their long hours of sunshine, both *Spirogyra* and *Vaucheria* were remarkably plentiful and vigorous in growth. *Œdogonium*, like *Spirogyra*, was chiefly stimulated by light intensity.

Algæ kept in the laboratory over winter showed activity in spring and early summer. The order in which this appeared was very similar to that under natural conditions in Boghall Glen. There was one point of difference; the algæ in the laboratory did not become active so early in the year as did those under natural conditions, in spite of a much higher and steadier temperature. This difference is attributed largely to the light intensity being very much greater in the clear air of Boghall Glen, while the north aspect of the laboratory in the centre of a city means very much reduced light activity. The algæ concerned were *Vaucheria*, *Spirogyra*, *Draparnaldia*, *Cladophora*, *Tribonema*, and *Ulothrix*.

The general effect of a wet year, when there are repeated heavy rainfalls, is to scour out frequently and severely the beds of many streams and ditches. This means an immediate and serious reduction of algæ not only for the year in question and probably for the next year, but its effects may continue for a longer period. Certain species may completely disappear. But, if the rainfall is well distributed and the streams and ditches kept at a high level, then algal growth is favoured and a vigorous growth may be the result. In a dry season the beds of many small streams and ditches may be completely dried up. This is, however, offset to some extent when mosses and grasses as well as other plants invade the damp channel. The growth of these gives a certain amount of shade and some of the algæ may survive till there is sufficient water to enable algal growth to proceed in a normal way. Thus in the following year there may not be the reduction of algæ either in quantity or species that might be expected.

A rather similar result is caused by the choking of the

streams and ditches by the stems of Mat Grass (*Nardus stricta*) and similar material, as already mentioned. Until this material is washed out, algal growth is virtually impossible. Hence in any year when this material chokes the channels, for some time there is a marked reduction both in the quantity and nature of the algæ. This may be evident after a period of two years. This choking of ditches with Mat Grass stems occurs after the grass is burned.

The recent dry years have completely altered—for the time at least—the algal flora, both as regards quantity and number of species. It is impossible to say what the final result may be, but it is safe to assume that it will take a long time before many of the algæ formerly found regain lost ground. Some may not appear for years.

Seasonal Variations.

In 1929 *Rhizoclonium* was plentiful in the Caerketton area till drought restricted the water supply.

In 1930 *Draparnaldia* (both spp.) was frequent but *Rhizoclonium*, *Stigeoclonium* and *Microspora* were comparatively rare.

In 1931 all algæ recorded were fairly plentiful, except *Ulothrix* and *Stigeoclonium*.

In 1932 *Rhizoclonium*, *Stigeoclonium* and *Draparnaldia* were not so plentiful as usual, while *Microspora* was found in much less acid water than previously recorded.

In 1933-1934-1935 the exceptionally dry conditions during most of the season dried up most of the ditches and greatly reduced the flow of water. Several springs temporarily ceased to flow. The result was that *Draparnaldia* spp. was hard to find. Apart from one or two locations, *Vaucheria* and *Spirogyra* were not nearly so plentiful, while *Tribonema* was also much less plentiful.

Œdogonium and *Zygnema* were difficult to find even in their usual location. *Microspora* and *Stigeoclonium* were remarkably scarce and disappeared with the drying up of the ditches.

Batrachospermum was much reduced in quantity and found only for a very short time, while *Cladophora* was also

much reduced in quantity owing to the shrinkage of the water supply. An alteration in the Leips stream has, at least for a time, caused *Cladophora* to disappear from that particular location. *Ulothrix* was also far from common.

In 1936 the effects of the drought were intensified in the spring though there was an increased supply of moisture during the summer. Even yet, many of the old ditches are dry except after heavy rain, and it will require at least two years of average rainfall before the normal quantity and activities of the algal flora improve.

Seasonal Succession.

In most years the first appearance of the various algæ follows much the same order. *Vaucheria* was found throughout the year in several locations, though much reduced in extent and showing a short dense growth. *Spirogyra* and *Mougeotia* appeared about the end of March or the beginning of April, depending on seasonal conditions. About a week later *Zygnema* appeared, then *Ulothrix* (chiefly *zonata*), followed closely by *Stigeoclonium tenue*, *Microspora* and *Œdogonium* and *Batrachospermum moniliforme*, in the order mentioned. About the middle of May *Draparnaldia plumosa* and *glomerata* appeared, and a little later *Rhizoclonium hieroglyphicum*. *Cladophora glomerata* was seldom found in quantity before June.

The order of appearance, however, was much influenced by phenological conditions in the previous year. A year of drought or a year of heavy rainfall may cause considerable change in the order, as well as hasten or delay the date of appearance. Much also depends on the exact type of weather during the period of optimum growth of the algæ mentioned. Any conditions delaying the growth of a species at its critical period of expansion seriously handicap that species where it has to compete with another species. This certainly affects the quantity and often the date of appearance of certain algæ in any particular year. It is an interesting point to note in passing that the spring and autumn "flushes" of growth of many of these algæ correspond with the marked activity of micro-organisms

in the soil about the same time, the activity of soil micro-organisms just preceding the algal expansion. As drainage water from the soil flows into these streams and ditches it must be one of the chief causes of the algal expansion.

This "flush" of growth of algæ each spring, and a smaller "flush" towards autumn, were first noted by the writer while in Devonshire. There they also either coincided with the first flush of growth in the water meadows, or followed immediately afterwards. The water—originally spring water from a higher altitude—was added to by field and surface drainage from the surrounding land. Hence it was at these two periods, comparatively rich in certain plant foods, that algal flushes occurred. In a hill-grazing the water would not be nearly so "nutritious," but comparatively richer than during the rest of the year. This undoubtedly explains much of the sudden growth expansion of algæ in the ditches and streams of Boghall Glen in spring and autumn. It should be clearly understood, however, that this sudden growth peak is quite different to, and independent of, the order in which different algæ appear each year.

Types of Cladophora.

Cladophora proved a difficult alga to determine as two distinct forms were found. The first form found seemed to be *Cladophora fracta*, but afterwards was determined as *Cladophora glomerata* with a *fracta*-like form. Typical *Cladophora glomerata* also occurred in Boghall Burn. *Cladophora* in the Leips area is found in the *fracta* form of *C. glomerata*. *Cladophora glomerata* when first found early in the year in Boghall Burn showed a *fracta*-like form. With the increase in temperature as the summer advanced, the lowering of the water-level, and in consequence a reduction in the speed of flow, *Cladophora* soon assumed the typical *glomerata* form. Except for a small quantity of *Cladophora* collected recently, only the *fracta* form of *Cladophora glomerata* had been found in the Leips Burn at the two locations where it occurred. This suggested that the *fracta* found is the basal part which survives and from which the typical *glomerata* growth ultimately comes. It may also be the form assumed

under conditions which are not too favourable for normal growth.

In the laboratory *Cladophora glomerata* (form *fracta*) retained its typical appearance while kept in test-tubes. Recently, however, when some was removed in spring to larger vessels with more water, strands of the *Cladophora glomerata* form began to show. In some material recently collected the *fracta* form grew, and it was noted that the basal part remained nearly the same, but there grew out from it the longer, finer, and branched strands, typical of *Cladophora glomerata*. Now in Leips the water-level often fell rapidly and remained low at times for long spells. Thus it seems that the amount of water available may be one of the factors at work in determining the form and appearance of *Cladophora glomerata*. It also seems to respond to a favourable temperature. This is in keeping with the field observations.

Abnormal Forms.

In conclusion, the problem of abnormal forms of algæ must be mentioned. Several algæ show unusual forms under adverse conditions. Under the varying conditions of Boghall Glen this was at times very evident and made identification far from easy. *Draparnaldia* (*plumosa* and *glomerata*) assumed forms very unusual and, at first, difficult to identify. This generally occurred during periods of drought. *Spirogyra* and *Mougeotia* also produced abnormal forms—at times so unusual that they almost resembled other algæ. Only experience enables one to overcome this difficulty, as there is only a scattered literature dealing with this aspect of algal growth (Uspenskeja, 1930). On one occasion *Mougeotia* was found so abnormal, with a twisted chloroplast, that it had a strong resemblance to a *Spirogyra*. *Spirogyra* sometimes assumed very puzzling forms, generally previous to breakdown and disintegration of the alga. The spiral form of chloroplast was lost, and a very indefinite green mass almost filled the cell. Only after tracing the different stages was it possible to associate the very abnormal form with *Spirogyra* (Matruchot et Mollard, 1902).

It is, of course, a well-known fact that saline solutions

have very marked effects on algal cells not normally subjected to such a medium. This has been referred to by Comère (1903, 1905), Richter (1892), and Fritsch and Haines (1922, 1923). When the cells of certain fresh-water algæ are submitted to saline solutions of high concentration, malformation of the cells occurs. With the shrinkage of water, especially in small pools in the stream beds, the concentration of certain chemical salts must increase, and this doubtless is one of the chief causes of the abnormal forms. It is invariably during late summer or early autumn that abnormal forms are found, never in spring, and very seldom in late autumn or winter (Butcher, 1933).

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NOTES

The Study of Bird-Migration.—The British Trust for Ornithology has accepted responsibility for the future conduct of the principal scheme in this country for the study of migration and other aspects of bird-life by the ringing method.

Important facilities for the work have been granted by the Trustees of the British Museum (Natural History), who are providing accommodation for the headquarters of the scheme in the Bird Room at South Kensington and permitting the Museum's address to be used. Rings will in future be inscribed "British Museum Nat. Hist. London," instead of "Witherby High Holborn, London," with an individual identification number.

The scheme will now be directed by a special Bird-Ringing Committee, constituted as follows:—Dr A. Landsborough Thomson (*Chairman*), Mr A. W. Boyd, Mr A. B. Duncan, Mr P. A. D. Hollom, the Earl of Ilchester, the Earl of Mansfield, Mr H. F. Witherby, and Miss E. P. Leach (*Hon. Secretary*). *British Birds* will continue to be the medium for publishing results.

Jackdaw Breeding in Open Nest.—On 8th May 1937, when going through a small fir wood on the lower Pentland slopes near Harperrigg Reservoir, in company with Messrs W. Watson and D. Molteno, an instance of the Jackdaw breeding in an open nest came under our notice.

When we first observed the nest we thought it was a Magpie's, that bird having nested in the wood the previous year, so were surprised to see a Jackdaw fly out.

On climbing to the nest, which was in a Scots fir and about thirty feet from the ground, I found the Jackdaw had a clutch of eggs.

There seemed no doubt that the Jackdaw had built the nest, and not taken possession of a Magpie's, as it showed its degenerate habit of using many pieces of paper and other litter in building the main structure. An attempt at roofing the nest had been made, but was nothing like the perfect dome made by its near relative.—David Hamilton, Edinburgh.

BOOK NOTICES

Bureau of Animal Population: University of Oxford. Annual Report, 1935-36. Although Darwin realised the many problems involved in a study of the animal populations of the world, it is only in recent years that research on them has been undertaken in earnest. Such investigations include the variations in the numbers and the movements of commercially useful animals such as fishes, whales and fur-bearers; the conservation of wild life; the control of pests, and last, but not least, the control of disease.

The Bureau of Animal Population is housed at Oxford, and after financial uncertainty for several years we are glad to see that difficulty has in part, at least, been met.

Interesting work has already been done. The fluctuations in the vole population have been closely studied. The variations in the numbers of certain game animals, such as the grouse, partridge, hare and rabbit, have been watched.

Abroad the status of the Snowshoe Rabbit of North America has been investigated. The numbers of animals show great variation from year to year and the underlying causes are undoubtedly climatic, the controlling factor probably varying for different species. In some cases temperature may determine the rise and fall of the population, in others sunshine or rainfall may be the important factor. Dr Goldie has recently shown that in Scotland there are violent fluctuations and that they show a three- or four-year cycle.

The report also contains a list of recent important papers.

Altogether this is a very interesting report and one which all naturalists should read. The Bureau is to be congratulated on the work which it has done and we look forward with interest to further reports of its activities.

St Kilda Papers, 1931. Oxford University Press. The island of St Kilda has for long attracted the attention of naturalists on account of the interesting native fauna. A small volume has recently been issued under the above title containing foreword, list of relevant literature, large-scale map and eleven reprints from various journals. The principal papers deal with the mice, breeding birds, St Kilda Wren, early autumn migration in 1931, and the flora of the island. These are the result of an expedition to the island in 1931, the year after the last of the islanders had gone over to the mainland. The edition is limited to fifty copies, of which number twenty-five have been deposited in different libraries. Scottish naturalists who may be interested in the matter may consult the copy presented to the Royal Scottish Museum.

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PUBLISHERS' NOTE.

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The Scottish Naturalist

A Magazine devoted to Zoology

With which is incorporated

"The Annals of Scottish Natural History"

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No. 227] **1937** [SEPTEMBER-OCTOBER

ISLE OF MAY BIRD OBSERVATORY.

SPRING REPORT, 1937.

By The Midlothian Ornithological Club.

THE island was under observation from 27th to 28th March, 1st to 23rd April, and 26th April to 29th May.

In addition to certain Edinburgh observers, we are indebted to the following ornithologists who have helped us to make the observations as complete as possible:—

Messrs W. B. Alexander, E. Cohen, B. W. H. Coulson, H. F. I. Elliott, M. F. M. Meiklejohn, D. I. Molteno, and G. H. Turner.

General Migration and Weather Conditions.

27th to 28th March.—During these two days winds were light or moderate from the east or north-east. Some movement of the early spring migrants was evident, and the most noteworthy visitors were a Woodlark and two Black Redstarts.

1st to 15th April.—From the 1st April until the night of 7th/8th April winds were generally moderate and varied between north-east and south-east; the wind then veered to the west and varied between that quarter and the south-east until 11th April, when a short period of calm was followed by the wind settling in the east again; thereafter there were light winds from the north and north-east until the close of the fortnight.

Apart from a period of good visibility and rather bright weather from 8th to 12th April the fortnight was characterised by overcast skies and much fog.

A very considerable migration was in progress from 1st to 7th April; on the night of the 7th/8th most of the

migrants left, and during the period, 7th to 15th, birds were on the island in much smaller numbers than previously.

The species taking part in these movements were varied but included few of outstanding interest, and the number rather than the rarity of the birds was remarkable. Starlings, Skylarks, Meadow Pipits, Blackbirds and Robins were represented in greatest numbers; as many as 80 Robins were on the island on 3rd April, nearly 200 Skylarks on the 6th and 250 Blackbirds on the 7th. Other migrants to alight on the island in some numbers during the first week of April included Chaffinches, Continental Goldcrests, Song-Thrushes, Fieldfares, Redwings, Black Redstarts, Hedge-Sparrows, Lapwings, and Woodcock. A few examples of many other species were recorded and among them two Siskins on the 3rd and a Jack Snipe on the 6th. Ring-Ouzels were seen on the 6th and 7th and a Tree Pipit was seen on the 7th, both species appearing earlier than ever recorded before. Wheatears, which had been arriving in ones and twos since 1st April, increased to a total of 40 on the 7th. A single Coot was observed on the 4th and by the 15th there were 4 on the island. The first Willow Warbler, soon followed by one or two others, was seen on the 10th, and further arrivals during the second week included a male Pintail and a female Pochard on the 14th, and a Sparrow-Hawk on the 15th. This last was a new spring record for the island. There was a noticeable increase in the number of Fieldfares on the 13th and of Bramblings on the 14th and 15th.

16th to 23rd and 26th to 30th April.—Weather on the whole was fair with good visibility and little rain, except on the 16th when rain fell throughout the day. Winds were light easterly on the 16th and 18th, and moderate westerly on the 17th and from the 19th to 23rd. From the 26th to 30th winds were light and variable though mainly from the south-east.

The general tendency throughout the fortnight was for migrants to decrease, only a few newcomers being observed. Diurnal migration was in evidence to a considerable extent on the 19th, when examples of the following species were seen to pass over or leave the island in a northerly direction:

Hooded Crow, Carrion Crow, Rook, Jackdaw, Meadow Pipit, Rock Pipit, Pied Wagtail, White Wagtail, Curlew and Common Gull. There were 5 Coots on the island on the 19th and 20th. A Stone Curlew (a new record for the Forth Area) was observed by Mr W. B. Alexander on the 23rd after four days of moderate westerly winds. Other birds of interest noted were a Moorhen on the 17th, a Siskin from the 17th to 19th and another Sparrow-Hawk on the 27th.

1st to 15th May.—Once again the weather was fairly good although there was some fog on the 2nd, 3rd and 4th. Winds were moderate south-easterly from the 1st to 3rd, light north-westerly on the 4th and 5th, light easterly from the 6th to 11th and light north-easterly from the 12th to 15th.

Passerine migrants were almost completely absent until the evening of the 3rd when 2 Lesser Redpolls and 2 Whinchats appeared. On the 4th there was a slight increase in the number of birds and by the 5th there were as many as 30 Willow Warblers on the island. Further arrivals were few until the 8th when another slight increase was noted, and birds seen on that day included a Yellow Wagtail and a Jack Snipe. Little further of interest was observed until the 12th; but from that date until the 15th a number of newcomers were noted, Pied Flycatchers reaching a total of 10 on the 13th and Common Redstarts 20 on the 14th. Other birds worthy of note were one or two Lesser Whitethroats from the 10th until the 15th, a Red-spotted Bluethroat (*L. s. svecica*) on the 12th, two on the 13th and another on the 14th and 15th; a Goldfinch (subsp.?) was seen on the 15th.

16th to 29th May.—From the 16th to 20th May the wind was generally east or south-east and throughout the 19th blew strongly from the south-east; on the night of the 20th/21st it backed to the north-east and was blowing strongly from this direction on the morning of the 21st. Subsequently, until the close of the fortnight, winds were light and varied between the south-west and south-east.

Prior to the 21st there were frequent and sustained periods of fog; and on the 21st there was prolonged and heavy rain. From the evening of the 21st visibility was good or very good apart from fog and drizzle on the 26th.

There were still a number of migrants on the island on

the 16th May, but there were fewer on the 17th and scarcely any on the 18th, 19th and 20th. Among those noted on the 16th were a Red-spotted Bluethroat, a male Stonechat and as many as 15 Common Whitethroats, while a Chiffchaff (of either British or Scandinavian race) was found dead. On the 17th a male Red-backed Shrike and a Shore-Lark were observed. A Mealy Redpoll was trapped on the 20th and remained for three days. Of regular migrants, Sedge-Warblers and Common Whitethroats were most consistently present, in small numbers, during the latter part of May. By the morning of the 21st nearly all the migrants had passed on; but from noon until nearly four o'clock a new arrival of birds took place; they ceased to appear as soon as the weather changed in the evening and some clearly left the island immediately. Included in the movement were Blackcaps and Garden Warblers in very small numbers, 2 Lesser Whitethroats, a Wood Warbler, another Shore-Lark, an Ortolan Bunting which remained until the 24th, 2 male Bramblings, a Nightjar and a number of Swallows and House-Martins.

Many of the migrants stayed until the 22nd, but most had gone by the 23rd when a late Black Redstart was a newcomer. There were very few birds about on the 24th, but a Tree Sparrow, a Reed Warbler, a female Red-backed Shrike, a Dunlin and the only Cuckoo of the spring had arrived. The final few days of the season were unproductive of the more interesting migrants, but late examples of the Willow Warbler, Common Whitethroat and Spotted Flycatcher were still present when observers visited the island on 6th June.

Ringing.

During the spring of 1937, 449 adult and 13 young birds were ringed. These included 1 Mealy Redpoll, 2 Red-backed Shrikes, 69 Willow Warblers, 1 Reed Warbler, 138 Blackbirds, 1 Black Redstart, 2 Red-spotted Bluethroats and 60 Redbreasts.

Once again we would like to thank the Commissioners of Northern Lighthouses and the lighthouse-keepers on the Isle of May for the help that they have given us.

GREBES AND OTHER BIRDS AT LINLITHGOW LOCH.

By David Hamilton, Edinburgh.

The past winter will long be remembered by ornithologists in the Lothians as a Grebe season, many of the lochs within the area having been visited by one or more species of the Grebe family, which are normally seldom met with on these waters.

Linlithgow Loch received its share of this remarkable influx of grebes, as well as other species not previously recorded there.

Mr William Watson and I periodically visit this loch, and during December 1936 and January 1937 we were delighted to see a Black-necked Grebe, and on both occasions found this bird rather shy. The rotund form and slender upturned bill, and also the white on the secondaries when it took flight, were all observed.

Visiting the loch again on 31st January 1937, we were pleased to see a Red-necked Grebe fishing quite close to the water's edge. The characteristic yellow gape of this grebe makes it easy to identify. During the time we watched this bird, it caught a great number of fish, and often had difficulty in disposing of them, owing to their size. Several times it allowed a fish to get away and then recaptured it, seemingly in a better position for swallowing. We also noted this at other lochs, and came to the conclusion that they were obtaining fish more easily and larger than they were accustomed to. This bird has already been recorded by Mr D. I. Molteno, who accompanied us that day.

Twice during February 1937 we found a Slavonian Grebe on the loch, and in contrast to the Black-necked Grebe, it was exceedingly confiding, fishing close inshore though several people were passing by or feeding the swans. Mr P. Gunn, who accompanied us on one occasion, photographed this grebe, when only a few feet distant from the shore. The Slavonian Grebe seems to carry its neck much more erect than the Black-necked Grebe.

As the Great Crested Grebe and the Little Grebe are continually about Linlithgow Loch, this completes the British list of grebes for this water.

In the *Scottish Naturalist*, 1931, p. 7, I gave a list of birds seen at Linlithgow Loch, and included all types observed while walking round the loch, which numbered fifty species.

Fifteen years before this, an interesting paper on Linlithgow Loch by the Rev. J. M. M'William appeared in the *Zoologist*, March 1916, and in both accounts the duck population was practically the same. In Mr M'William's paper only loch types were recorded, and the Great Crested Grebe and Tufted Duck did not breed there then, but do so now.

Since the 1931 list a few other species have been observed at this loch. On 21st October 1934 four Scaup were seen, three females and one male. During December 1936 a Whooper Swan was about and was quite tame, coming with Mute Swans to be fed. Twice during February 1937 a Black-throated Diver was observed at the loch and in the same month a female Smew was seen. This latter bird was previously seen by Mr George Waterston and the same observer noted two later in the season. It is rather disappointing that only females or immature Smews visit this part of the country, and most observers are longing to see an adult male bird.

It is interesting to note that the Black-necked Grebe, the Slavonian Grebe, the Smew and the Black-throated Diver also visited Duddingston Loch during the same season.

Other species not previously recorded for Linlithgow Loch are the Linnet, a few seen among the grass on the north side, and a pair of Partridges at the same place.

A Tree-Creeper was seen on a tree growing in one of the reed-beds at the north-east corner.

Although the Goosander used to visit this loch in large numbers a few years ago it is seldom seen now, and the same may be said of the Cormorant.

NOTES ON SCOTTISH CEPHALOPODS.

By A. C. Stephen, D.Sc., Royal Scottish Museum.

Two specimens belonging to this group have recently come to my notice and it may interest readers of the *Scottish Naturalist* to have particulars of them.

Giant Squid, *Architeuthis harveyi*, Verrill.

On the 7th January 1937 this animal was secured by a trawler fishing off the Bell Rock near Arbroath. It was alive when taken on board, and from the account received seems to have put up such a fight that it was got back into the sea as soon as possible. Before this, however, most of the two long arms and one of the short ones had been secured. These came into the possession of Professor A. D. Peacock, Dundee, and to him I am indebted for the opportunity of examining the fragments.

The body was said to have been about 7 ft. in length. The portions of the long arms measured 17 ft. 6 in. and 15 ft. 2 in. in length, and the short arm measured 3 ft. 9 in. when taken. As is usual in these animals the arms have shrunk considerably since being preserved. Unfortunately the horny rings of the suckers were missing from the short arm; but the long arms were in perfect condition, except that the small teeth on the sucker rings were somewhat shrunk, presumably through having been dried a little before they were secured and preserved. The various types of suckers and their arrangement on the long arms correspond exactly with the description of those given for *Architeuthis harveyi* by Verrill (1882).

A very full account of the occurrence of Giant Squids in the North Atlantic has recently been given by Robson (1933). From this there would seem to be only three previous records for Scotland, namely, from North Uist, Caithness, and Dunbar (Ritchie, 1918, 1922).

The short arm and one of the long arms have been

presented to the Royal Scottish Museum by Professor Peacock.

Octopus vulgaris, Lam.

This species has a wide distribution in the Atlantic and Pacific. In the North Sea it has been recorded from the coasts of Holland, Belgium, Germany, Denmark, and Sweden (Grimpe, 1925). It has also been reported from the Firth of Forth; but recent writers have cast doubts on the accuracy of this (Grimpe, 1925; Robson, 1929), and in many cases there is no doubt that it has been confused with the common *Eledone cirrosa* (Lam.). It may therefore be of some interest to record an authentic Scottish specimen, at present exhibited in Montrose Museum. It was picked up on the beach at Montrose in 1893 by Mr Duncan, a former curator of that museum. The specimen is a small one and is much contracted, the mantle (body) length being only 1·5 cm. (7/12 inch) in length. In this species the skin is covered with large irregular warts, but in the specimen in question only a few isolated papillæ have as yet been developed. There seems no doubt, however, as to the identity of the specimen, and its presence in the Montrose area in 1893 can only be explained by an unusual set in the North Sea currents in that year.

I am indebted to Mr N. Johnston and Mr Stewart, Montrose, for the opportunity of examining the specimen.

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RECOVERIES OF GANNETS FROM THE BASS ROCK.

By H. W. Robinson, Lancaster.

As we have marked 349 young Gannets here over five years, perhaps a list of the recoveries may be of interest, together with the percentage of recoveries to the number marked.

1926 = (6 per cent.)

31st Oct. 1926 at Argenton (Finistere), France.
11th Nov. 1926 at Fècampe (Seine Inferieure), France.
27th Nov. 1927 at Hourel (Bai de Somme), France.
Dec. 1927 at Aljesur (Argave), Portugal.
5th June 1928 at Waag, Faroe Islands.
29th Aug. 1929 near Scarborough, Yorkshire.

1927 = (4 per cent.)

Oct. 1927 at Udny, Aberdeenshire.
19th Oct. 1927 at Dalmeny, West Lothian.
4th Nov. 1927 at Struton Light (Oslo Fjord), Norway.
29th Dec. 1928 at Finistere, France.

1934 = (13·8 per cent.) to date.

March 1935 Cape Blanco: Rio de Oro, West Africa.
4th Oct. 1935 Bay of Biscay, France.
Dec. 1935 off Heligoland.
Dec. 1935 off Heligoland.

1935 = (7·5 per cent.) to date

6th Sept. 1935 Kincardine-on-Forth.
9th Oct. 1935 Larado: 30 miles west of Bilbao, Spain.
30th Aug. 1936 Finistere, France.

1936 = (3·75 per cent.) to date.

20th Sept. 1936 North Berwick.
20th Dec. 1936 Casablanca, Morocco.
Winter 1937 at sea, lat. 59 N. long. 4.20 W. Ring replaced and released.

Two young birds marked by the Midlothian Ornithological Club in July 1936 have been recovered.

24th Sept. 1936 Durham Coast.
Winter 1937 Amrun: North Frisian Islands, North Germany (long dead).

All these birds were marked with *British Birds* rings.

NOTES

Breeding of Great Crested Grebes at Duddingston Loch.—Duddingston Loch has always appeared to be a suitable locality for the Great Crested Grebe, yet records for this species, even during the non-breeding season, are very few.

In my notes I have a record of one bird seen on 13th October 1900. Another bird was seen 3rd December 1915 by W. T. and G. G Blackwood. On 3rd March 1909 one was seen by Rev. William Serle. Another bird was about the Loch for several days during October 1930 and was recorded by J. Kirke Nash.

It is therefore of special interest to record the breeding of two pairs during the present year. Early in May a single bird was seen and by the middle of the month four birds were present, and they showed unmistakable signs that they intended nesting. About the middle of June both birds were seen sitting, both nests being about fifty yards apart. I purposely never went near the nests so that they would not be disturbed. On 10th July both male birds were observed to feed the females in the nest. The chicks were seen in the water on 14th July.—David Hamilton, Edinburgh.

Black-tailed Godwits on the Pentlands.—On Saturday, 1st May, I saw a Black-tailed Godwit in a grass field at the junction of the reservoirs, Threipmuir and Harlaw. It sat till I was about twenty yards from it, then flew, showing off its white tail with the black basal band. Its feet hung well below the tail in flight, distinguishing it from the Bar-tailed Godwit. Firstly, it flew off and then returned and mobbed me, flying round at about fifty yards and calling "kut kut" continually; it then flew away.

Farther up, on Threipmuir, I disturbed another one or the same one.

Three Whoopers were still on the reservoir at that date.—Tom Spence, Edinburgh.

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

(*Continued from p.* 113.)

V. THE ERIOPHYIDÆ, OR GALLMITES.

By J. W. Heslop Harrison, D.Sc., F.R.S.

This group of Arthropods, for reasons akin to those advanced in discussing the Cecidomyidæ, has, as far as the actual number of species is concerned, but few representatives in these islands. However, this deficiency receives compensation in the excessive number of individuals, and their galls, encountered in the case of species like *Eriophyes lævis* on *Alnus glutinosa*, and *E. thomasi* on *Thymus Serpyllum*. Such species as these abound wherever the host plants flourish, and cause a considerable amount of damage.

As quite a large amount of energy was devoted to the search for Eriophyidæ, it seems very unlikely that the list now presented will be capable of much expansion.

Eriophyes tenuis Nal.—Although the mites themselves were not examined, there seems little room for doubt about the producers of the deformities seen in the inflorescences of *Aira flexuosa*, *Poa* (*Glyceria*) *maritima*, and other grasses; they must have appertained to the present species. Generally distributed on Raasay, S. Rona, and Scalpay.

E. diversipunctatus Nal.—This mite attacks the glands at the bases of the leaves, and the leaves themselves, of the aspen, *Populus tremula*. The galls produced recall miniature distorted cockscombs and occur abundantly on inland cliffs in the north of Rona and of Raasay. Although the plant is common in S. Raasay, Scalpay, and Longay, the mite seems absent.

E. varius Nal.—The gall appears as a reddish erineum on the leaves of aspens; common enough on all the islands.

E. triradiatus Nal.—Occurs in rosette-like galls on *Salix aurita*; well distributed, but not plentiful.

E. salicis Nal.

E. tetanothrix Nal.—These were taken in "currant" galls on *Salix aurita* in sheltered places on the moorlands of Central Raasay; quite rare.

E. effusus Can.(?)—An "erineum"-producing form, discovered on *S. Caprea* at Balachuirn and somewhat sparingly on *S. aurita.* Canestrini reported this form from *S. daphnoides*, so that the identification needs checking.

E. avellanæ Nal.—Produces "big" bud on hazel; quite rare, Arish Burn, Raasay, streamside, Central Rona, and N. Scalpay.

E. rudis Can.—This mite is responsible for "big" bud on birch; widely spread but astonishingly rare in this guise. On the other hand the erineum-producing form occurs abundantly, even on Longay.

E. lævis Nal.—Responsible for reddish excrescences on the upper sides of the leaves of *Alnus glutinosa*; excessively common.

E. nalepæ Fockeu.—Forms a projection, visible on the upper surface of alder leaves, between the midrib and secondary veins; occurs commonly everywhere.

E. brevitarsus Fockeu.—The erineum-producer of alder leaves; common on all the islands.

E. drabæ Nal.—Scarce and local, on *Cardamine hirsuta* growing on the shingle near Eyre Point; aborts the flowers and causes hypertrophy of the leaves of the host plant.

E. rhodiolæ Can.—This species causes the development of reddish, tubercular excrescences on the leaves of *Sedum rhodiola.* Although the plant occurs commonly on many cliffs on Rona, Raasay, and Scalpay, the mite appears to be restricted to examples growing at an elevation of 1450 feet on Dun Caan, Raasay.

E. piri Pagenst.—Abundant on all the islands including Longay; it forms thick, whitish pustules on the leaves of mountain ash (*Sorbus Aucuparia*).

E. gibbosus Nal.—Forms a grey silkiness on various *Rubi*; not common, on Raasay only.

E. silvicola Can.—Very rare on *Rubus saxatilis* on N. Scalpay.

E. padi Nal.—Occurs in shortish nail galls on bird cherry (*Prunus Padus*); only detected on the Allt Liath on Scalpay.

E. euaspis Nal.—Thickens and distorts the leaves of *Lotus corniculatus*; may be found sparingly with the food plant everywhere.

E. callunæ Swant.—Produces "hoariness" on heather foliage; not rare.

E. minor Nal.—Recognisable from its terminal gall consisting of abnormally deformed leaves and buds; sparingly on every island, wherever thyme grows.

E. thomasi Nal.—Forms a more or less dense, regular, mass of distorted flowers and leaves, covered freely with a white pilosity; in enormous quantities on *Thymus* spp. everywhere.

E. anceps Nal.—Rare on the leaves of the Germander Speedwell (*Veronica Chamædrys*); Raasay only.

E. euphrasiæ Nal.—Also unexpectedly rare, on Eyebright; Raasay and Scalpay.

E. galii Nal.—Causes the inrolling of the leaves of *Galium aparine* and *G. saxatile*; in great quantities on the former plant on the shingle and slopes of S.E. Raasay, but to be found on all the islands.

E. galiobius Can.—On flowers of *G. saxatile*; somewhat rare on Raasay, and near Loch a Mhuilinn on Scalpay.

Phyllocoptes populi Nal.—On leaves of aspen; widely spread on all three islands.

P. rigidus Nal.—Rare on Raasay, forming a "frosting" on *Taraxacum* leaves.

Epitrimerus trinotus Nal.

E. longitarsus Nal.—Both of the Epitrimeri are to be found in company with the usual *Eriophyes* spp. on alder; on every island.

VI. HYMENOPTERA SYMPHYTA ON THE ISLAND OF RAASAY.

By FRANK GREENSHIELDS, B.Sc., Ph.D., Department of Natural History, University College (University of St Andrews), Dundee.

INTRODUCTION.

A COLLECTION of Hymenoptera Symphyta was made by Mr A. T. Baxter of this Department in the second fortnight of July 1934, and by myself in the first fortnight of August 1935. The following is an account of the specimens taken, together with a few notes of biological interest.

In all 36 species were taken, 10 of which had also been found on the adjacent island of South Rona in 1933 (Sanderson and Greenshields, 1935); several new vice-county records, and at least one new Scottish record, were established.

In addition to being regarded as complementary to the list for South Rona quoted above, the present records may be read in conjunction with the report published by the Department of Botany, Armstrong College, in the *Proceedings of the University of Durham Philosophical Society* (vol. x., part 5), in which Professor J. W. H. Harrison records *Sirex gigas* and three species of *Pontania* in his list of Hymenoptera.

PARTHENOGENESIS.

Some of the material collected was utilised in connection with researches on virgin birth at present being pursued in this Department, detailed results of which investigations are to appear in another journal. However, it will be convenient to make some mention of the form of parthenogenesis obtaining in each species where this is known and also to give the chromosome numbers where these have been determined.

BIOLOGICAL NOTE.

It is interesting to note that some of the material brought to Dundee enabled me to rear, by adopting very special measures with regard to atmospheric factors, adults from eggs laid parthenogenetically by a female of *Arge ustulata*, a form which has hitherto baffled all attempts, including those of von Siebold and Peter Cameron. The individuals

raised in this way were males and had a complement of 8 chromosomes.

Lists.

In view of the fact that many of the specimens were collected as larvæ which did not reach the adult state, and since it is no easy matter to identify species from larvæ, it has been thought that in some cases a short description of the larvæ should be given in order to make authoritative correction possible.

The nomenclature followed is that of Enslin (1918) for the *Tenthredinidæ* and Waterston, J., in Chrystal, R. N. (1928) for the *Siricidæ*. Reference is made to the Watsonian Vice-counties (Watson, H. C., 1883), of which that embracing Raasay and South Rona is numbered 104.

Family *Tenthredinidæ*.

1. *Arge ustulata* L. Larvæ feeding on *Betula alba*. 21 specimens. Body colour bright green. Body form bow-shaped in transverse section, dorsum highly arched; lateral lappets present; segments bear, on each side, about 4 rows of black thorns on slight papillæ, and on each side of the dorsal line a green line extends the length of the body; the median part of each segment consists of 3 or so transverse elevations. Head noticeably narrower than thorax, high-domed, broader at mouth line than at vertex; colour pale yellow, with a dark brown median line extending from "neck" region over vertex to "face," where it receives a transverse brown line from the region of the eye.

Species is univoltine. Cameron (1884) describes it as *Hylotoma ustulata* and says that it is common in Scotland. This is a new vice-county record.

Adult females reared (16 chromosomes as diploid number). Arrhenotokously parthenogenetic. Males have 8 chromosomes.

2. *Cimbex femorata* L. (*C. sylvarum* of Cameron). Larvæ feeding on *Betula alba* and *B. pubescens*. 18 specimens taken.

3. *Cimbex lutea* L. Larvæ feeding on *Salix aurita*. 34 specimens taken. Adult females reared. Not common in Scotland; Cameron records it from "Perthshire and from South of England." First county record.

4. *Trichiosoma sorbi* Htg. (*T. scalesii* of Cameron). Larvæ feeding on Mountain Ash (*Sorbus aucuparia*). Extremely plentiful on two trees on Raasay. First county record.

5. *Trichiosoma lucorum* L. Larvæ feeding on *Betula alba* and *B. pubescens*. 37 specimens. Adult females reared; arrhenotokous; females 16 and males 8 chromosomes. Common in Scotland. First county record.

6. *Abia loniceræ* L. Larvæ feeding on Honeysuckle (*Lonicera Periclymenum*). 20 specimens taken. Head black; trophi and borders of mouth white. Body: dorsum bluish-grey; ventrum white. *A. fasciata* of Cameron. Previously recorded only from Clober. First county record.

7. *Dineura viridiдorsata* Retz. Larvæ eating epidermis of *Betula alba* and *B. pubescens*. 9 specimens. Also on S. Rona. Very common in Scottish Birch Woods.

8. *Dineura testaceipes* Kl. Larvæ eating epidermis of *Sorbus aucuparia*. 5 specimens. Common in Scotland.

9. *Platycampus luridiventris* Fall. Larvæ eating holes in leaves of *Alnus rotundifolia* Mill. 4 taken. *Camponiscus luridiventris* of Cameron. Common in Scotland.

10. *Cladius pectinicornis* Geoffr. Larvæ feeding on Dog Roses (*Rosa canina*). 9 taken. Also on S. Rona.

11. *Cladius difformis* Panz. Larvæ on *Rosa canina*. 14 taken. Adults of both sexes reared.

Cameron (1884) and Malloch (1914) state that *C. difformis* is synonymous with *C. pectinicornis*. According to Cameron the antennæ of the male of this form (*C. pectinicornis*) bear 4 long processes. Enslin, on the other hand, distinguishes between two species; *C. pectinicornis* Geoffr. with 4 antennal processes and *C. difformis* Panz. with but three. Both of these were taken on Raasay as larvæ and adults were reared; so that this is the first Scottish record of the form with three antennal processes.

12. *Priophorus padi* L. Larvæ eating holes on underside of leaves of *Sorbus aucuparia* and *Cratægus monogyna* Jacq. 11 specimens. Also on S. Rona. Male reared. First county records.

13. *Priophorus tener* Zadd. 16 larvæ taken from *Sorbus*

aucuparia. Male reared. Identified by Mr Benson. First county record. This form is regarded by Enslin as the same as the *P. tristis* Zadd. which has been recorded in Scotland from Clyde and Dumfries areas.

14. *Pontania pedunculis* Htg. Galls on *Salix aurita.* Very common. Also on S. Rona. First county records.

15. *Pontania viminalis* L. Galls on Creeping Willow (*Salix repens*). 39 specimens. Also on S. Rona. This form is the *Nematus salicis-cinereæ* of Cameron. Harrison (1937) suggests that the gall of the form on *Salix repens* differs significantly from that of the ordinary *P. viminalis* and that there is a difference in the number of broods.

16. *Pontania capreæ* L. Galls on *Salix aurita.* 17 specimens. Not common in Scotland. Has been found in the neighbouring county of Sutherland, according to Cameron; First vice-county record.

17. *Pontania puella* L. Larvæ taken from leaves of *Salix aurita.* 27 taken. Common on Caprea willows throughout Scotland. First county record.

18. *Crœsus septentrionalis* L. Larvæ feeding on *Alnus rotundifolia.* 40 specimens taken. Univoltine in Scotland. Arrhenotokous; female 16 chromosomes, male 8. Very common, widespread distribution in Scotland. First county record.

19. *Crœsus latipes* Vill. Larvæ feeding along the edges of leaves of *Betula alba* and *B. pubescens.* 47 taken. Head fuscous, darker towards vertex, with a dark line in front and extending over the vertex. Body: dorsum shining dark bronze; first segment bears white on anterior edge. last segment bears a single "supra-anal plate"; ventrum shining, fuscous. Not common in Scotland. First county record.

20. *Nematus erichsoni* Htg. Larvæ feeding on Larch (*Larix europea* D.C.). 19 taken. Not common in Scotland. First county record.

21. *Nematinus bilineatus* Kl. Larvæ eating holes in leaves of *Alnus rotundifolia* from the underside. Females reared. Univoltine in Scotland. Widespread and common. Thelytokous; females 16 chromosomes. First county record.

22. *Pteronidea melanocephala* L. Larvæ feeding on *Salix aurita* and *S. cinerea*; also on *Betula alba.* 44 taken. Also found on S. Rona. Not common in Scotland, though I have taken it abundantly at Buddon Ness in Angus. First county records.

23. *Pteronidea ribesii* Scop. Larvæ on Gooseberry (*Ribes Grossularia*). 28 taken. Widespread and common in Scotland. Arrhenotokous; females 16, males 8 chromosomes.

24. *Pteronidea pavida* Lep. Larvæ feeding on *Salix aurita* and *S. cinerea.* 29 specimens taken. Bivoltine in Scotland. Arrhenotokous; females 16, males 8 chromosomes. Common on Caprea willows. First county records.

25. *Pteronidea nigricornis* Lep. Larvæ feeding on *Salix aurita.* 23 taken. Also on S. Rona. Females reared. Females 16 chromosomes. First Scottish records.

26. *Pteronidea curtispina* C. G. Thoms. Larvæ feeding on *Salix aurita.* 2 specimens taken. Not common in Scotland. First county record.

27. *Pteronidea oligospila* Först. Larvæ feeding on *Salix aurita* and *S. cinerea.* 6 taken. First county record.

28. *Pteronidea polyspila* Först. Larvæ feeding on *Salix aurita.* 11 taken. Common on Alder according to Malloch (1914). First county record.

29. *Amauronematus viduatus* Zett. Larvæ feeding on *Salix aurita.* Identified by Mr Benson from reared females. First county record. Recorded by Malloch (1914) from Irvine.

30. *Lygonematus laricis* Htg. Larvæ feeding on *Larix europea* D.C. 7 specimens taken. First county record.

31. *Selandria stramineipes* Kl. Larvæ on Bracken (*Pteris aquilina*). Also on S. Rona. Arrhenotokous; females 16, males 8 chromosomes. First county record.

32. *Empria pulverata* Retz. Larvæ feeding on *Alnus rotundifolia.* 40 specimens taken. Univoltine in Scotland. Thelytokous; females 16 chromosomes. Very common on Alders in Scotland.

33. *Rhogogaster punctulata* Kl. Larvæ on *Alnus rotundifolia* and *Sorbus aucuparia.* Very common in Scotland. First county record.

34. *Rhogogaster viridis* L. Larvæ feeding on *Alnus rotundifolia*. 5 specimens taken. Polyphagous. Widespread distribution in Scotland. First county record.

Family *Siricidæ*. (Identified by means of Waterston's keys.)

35. *Sirex cyaneus* L. Single adult female taken from Scots Pine (*Pinus sylvestris*). Not uncommon in Scotland within recent years. Probably imported with Baltic timber. First vice-county record.

36. *Sirex gigas* L. Adult females on *Pinus sylvestris*. 6 taken. This Continental destroyer of conifers is becoming alarmingly common in Scotland. I have seen many trees riddled by its ravages. Arrhenotokous; females 16, males 8 chromosomes. First vice-county record.

In addition to the above Hymenoptera Symphyta a specimen of the large Ichneumon, *Rhyssa persuasoria*, whose eggs parasitise larvæ of *Sirex* living in the trunks of pines, was taken by Mr L. C. Comrie, B.Sc., who has kindly supplied the following account of its capture:—"In the Pine Woods above the Sawmill at Raasay on 3rd August 1935, at 6 P.M. on a dull misty day, a *Rhyssa* female was seen laying in a cut stump 5 feet high and was watched for some time. It finally extracted its ovipositor, which had been inserted to a depth of between 2 and 3 inches, and flew off slowly but steadily with legs dangling. On the next day, at the same time, the stump was revisited, and again I found and watched a female laying a few eggs. It was thereupon captured. The stump, which had probably been cut in 1935 or '34, since it showed no signs of decay, showed no emergence holes of *Sirex*, though older logs did have such holes."

First county record.

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captured by him; to Dr A. C. Stephen and Mr A. R. Waterston, both of the Royal Scottish Museum, for putting their services and museum records at my disposal; to Mr R. B. Benson, of the British Museum (Natural History), for the identification of certain adults; to the leaders of the Expedition, Professors J. W. Heslop Harrison, F.R.S., and A. D. Peacock, F.R.S.E., for their invitation to Raasay and especially to the latter for laboratory facilities at University College, Dundee.

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Iceland Gull at Musselburgh.—As the gull family comprise the majority of birds to be seen at Musselburgh now, I have been watching them closely, and on the 22nd of June I saw an Iceland Gull among them; its general whiteness first attracted my attention, the white being relieved by a few brown markings. It seemed to be in good health and I think it is worth recording as it is such an unusual date to see this species.—D. I. MOLTENO, Musselburgh.

Dotterel near Edinburgh.—I thought that you might be interested to know of the occurrence of a pair of Dotterels in the immediate vicinity of Edinburgh. On the evening of 23rd May I was walking with a friend on the Braids when my attention was attracted to a pair of Plovers feeding on the golf course. At first I thought that they were Golden Plovers, but they allowed me to approach within ten yards and at that distance there was no difficulty in identifying them as Dotterels. Both birds were in full plumage, one, it seemed to me, being slightly more heavily marked on the underparts than the other. This bird was damaged; it was unable to run and only managed to hobble rather painfully, while there was a feather broken on the right wing. The other bird tried to distract my attention from its mate by running off, but eventually both took flight together and settled again a little way off.—J. C. WYKES, Loretto.

CONTRIBUTIONS TOWARDS A KNOWLEDGE OF THE SCOTTISH *ONYCHIURIDÆ* (COLLEMBOLA), II.

(*Continued from p.* 90.)

By Richard S. Bagnall, D.Sc., F.R.S.E.

Onychiurus waterstoni sp.n.

A small species coming near *armatus* from which it differs in the few vesicles of the PAO (18-22); the presence of 4+4 pseudocelli along the lower margin of the head; by the comparatively large feet, those of the hind pair being approximately *twice* as long as the AH, and by the short, straightish AH which are set on distinct tubercles, well separated basally. The pso. of Abd. V number 3+3 in a slightly arcuate series, and the longest apical bristle is 2·5 times as long as the AH.

Barra, Outer Hebrides, 6 examples (*Waterston*), vii.35. Edinburgh district, locally common; in Dalmeny Estate I found several hundred one day, under logs lying on grassland, January 1937.

debilis Group.

Onychiurus debilis (Mon.) Denis.

Bagnall, 1935, *Vasculum*, vol. xxi., p. 102.

This is *not* the *debilis* of Bagnall, which is a small form coming near *waterstoni* sp.n. and *armatus*. *O. littoralis* Dürkop must be sunk as a synonym of the true *debilis*, and other synonyms (according to Denis) are *neglectus* Schäff and *litoreus* Fols. I am able to show that there are other species falling in the group and, pending study, have described an inland species, *O. moniezi* Bagn. from the North of England, and two further species herein, whilst I have also reinstated *evansi* as a good species.

O. debilis is a true halophile and is found under stones below high-water mark between Granton (Edinburgh) and South Queensferry.

Onychiurus evansi Bagn.

I have received an example of *O. debilis* from Denis (who redescribed the species). There are several allied species in my collection, and pending further study I am forced to regard *evansi* as a good species. It differs in its smaller size and more delicate form, in the nature of its PAO, the form of its smaller foot and the relatively shorter empodial appendage.

Onychiurus thalassophilus sp.n.

This and the next species fall into the *debilis* group and differ from all known species *in that the empodial appendage of the foot is vestigial*, being reduced to a minute, stumpy process.

Length 1·5 mm. Form much as in *debilis*; AH about 3·0 times as long as laterally broad at base, set on papillæ which are about 0·35 the length of the AH and separated by less than their length; the longest bristles of Abd. VI are about 2·5 times the length of the AH. Hind foot about 0·75 the length of the tibio-tarsus and 1·4 to 1·6 times as long as the AH. The PAO is composed of *c.* 16-20 narrow, elongated, ovate or fusiform tubercles which are *not* contiguous; the length of the long axis is about 0·5 the length of hind claw.

SCOTLAND, Dalmeny Estate shore, well below high-water mark, 12.v.35, in numbers, and occasionally since; South Queensferry, xii.34, a few. DURHAM, shore near Ryhope Dene, 1 only, vi.34.

Onychiurus imminutus sp.n.

A smaller species than *thalassophilus* but in general form, relative lengths of AH, feet, etc., much as in that species. It is sharply differentiated by its much more slender AH, and by the unusually small PAO which is composed of some 28-30 shorter minute ovate contiguous tubercles, and the long axis of which is only 0·35 the length of the hind foot. Further material will doubtlessly reveal further differences.

Dalmeny Estate shore, 1 example well below high-water mark, 3.viii.35, and another above tide mark, 10.i.37.

fimetarius Group.

Onychiurus fimetarius (Auct.) Stach.

A largish species without anal horns, of which I am collecting material for study. Occasionally taken in fields and gardens, Edinburgh district.

Onychiurus pygmæus sp.n.

A minute species of the *fimetarius* group which apart from its size differs considerably in the pseudocelli and chætotaxy of the abdomen.

The lower and outer pso. behind the antenna comes close to the nearer one within the post-antennal area. There are only 2 + 2 dorsal pso. on Abd. V, which are strongly oblique, whilst the other pso. appear to be as follows: Th. i, 0 + 0, subcoxal 1 + 1; Th. ii, 1 + 1, postero-lateral 1 + 1 and subcoxal 1 + 1[i]; Th. iii, 1 + 1, postero-lateral and subcoxal, ?, ? Abd. I, 1 + 1, lateral ?0 + 0;

Abd. II, 1 + 1, lateral 1 + 1, and Abd. III and IV 0 + 0 and 0 + 0 each. Foot shortish, empodial appendage shorter than claw with basal half lightly laminate.

Edinburgh fields, not uncommon, ii.35 onwards.

ambulans Group.

Onychiurus ambulans (Nic.).

Stach, 1934, *Ann. Mus. Zool. Polonici*, vol. x., p. 175, pls. xxxiv. and xxxv.

The above is not the *ambulans* of Handschin, nor does Stach include references to the latter in his citations. It is, however, the *ambulans* of Lubbock and other British authors and would appear to be widely distributed in Great Britain.

Edinburgh district in numbers.

Onychiurus rectospinatus Stach.

1922, *Ann. Mus. Nat. Hung.*, vol. xix., p. 8, pl. 1, f. 1-5; *O. ambulans rectospinatus* Stach, 1934, *Ann. Mus. Zool. Polonici*, vol. x., p. 183, pls. xxxiv. and xxxv.

Sharply distinguished from the above by the straight AH. I have found this species in Beds, Yorks, and Durham in numbers on chalk and limestone, whilst it is common in the Edinburgh district in more barren localities than appear to be affected by *ambulans*. First British records.

Onychiurus subambulans Denis.

1935, *Bull. Sci. Bourgogne*, vol. v., p. 32, figs. 1-3.

I first found this species in numbers at South Queensferry in December 1934, and set it (and another species of the *ambulans* group) aside for study. In the more widely spaced and noticeably longer and relatively more slender AH, and in the form of the long slender claw in which the empodial appendage is shorter than the inner margin of the claw and is separated from it basally. Denis has shown, also, that the ventral organ of the ♂ is in the form of a broad pouch situated between the segments II and III and furnished on both the anterior and posterior faces with numerous minute setulæ, thus differing considerably from the ♂ organ in *ambulans* and *rectospinatus*, which is composed of two "tubules" on II and a dozen or so on III as figured by Stach.

SCOTLAND, South Queensferry in numbers, xii.34 onwards; Edinburgh district occasionally. NORTHUMBERLAND, Alnmouth, 1 only, iv.36, and DURHAM, Ryhope, vi.34, Gibside Woods, not uncommon, v.36 onwards, and Fatfield, i.37.

Onychiurus laminatipes sp.n.

for *Onychiurus ambulans* Handschin (*nec* Auct.), 1920, *Verh. Naturf. Ges. Basel*, vol. xxxii., p. 23, figs. 45-48 (with v. *inermis*).

In view of the strong basal lamella of empodial appendage in all the feet this cannot be referred to either of the preceding species. It is undoubtedly rare with us and I have, as yet, only found a few examples on the banks of the Almond between Cramond Brig and Cramond, ii.35 and x.35, and in the Edinburgh neighbourhood.

Onychiurus bearei sp.n.

Length *c.* 0.8 to 0.9 mm. Colour, white. Surface somewhat strongly granular, especially the head; body bristles strong and unusually long. PAO of *ambulans*-type with 16 compound tubercles. Feet with simple claw and laminate empodial appendage. AH slender, curved, 0·4 to 0·5 the length of the longest posterior bristles and *c.* 0·7 (0·8) the length of the hind foot. The longer body bristles 1.25 to 1·5 times the length of the hind foot.

The small size, slender AH and noticeably long body bristles serve to separate this species from *laminatipes*.

Edinburgh, several, garden, vi.35, and occasionally from fields in the neighbourhood.

The following is a key to the British species of the *ambulans-fimetarius*-group, in which *both the AH and laminate empodial appendage of foot are present*:—

1. AH very long, about 5·0 times as long as laterally broad before base and substantially longer than the hind foot. Abd. V furnished with 2 pairs of short dorsal spines. *O. edinensis* Bagn.

   AH of normal length, substantially shorter than the hind foot. Abd. V not furnished with spines . . 2

2. Length 2·0-2·5 mm. Hind foot 1·6-1·8 times the length of AH; longest bristles of Abd. IV and V about as long as hind foot . . . . *O. laminatipes* sp.n.

   Length 0·8-0·9 mm. Hind foot 1·4 times as long as the AH; longest bristles of Abd. IV and V *c.* 1·3-1·5 times the length of hind foot . . *O. bearei* sp.n.

TULLBERGIINÆ.

Stenaphorura axelsoni Bagn.

1935, *Ent. Mo. Mag.*, vol. lxxi., p. 172; 1936, *loc. cit.*, vol. lxxii., p. 39.

The full synonymy is given in the second reference above

cited. One of our commoner species, of which I have examples from Perthshire, Stirlingshire, Argyllshire, and Dumbartonshire.

Stenaphorura denisi Bagn.

1935, *loc. cit.*, vol. lxxi., p. 172, figs. 6-9.

A readily recognised and common species found abundantly in the Edinburgh district, Perthshire, etc.

Stenaphorura quadrispina Börn.

Old records must be regarded with some suspicion as most are referable to *S. axelsoni*. I have recently recorded a single small example (*Ent. Mo. Mag.*, vol. lxxii., p. 39) found on the slopes of Ben Vorlich (Dumbarton) at about 1000 feet, 28.vii.35.

Stenaphorura lubbocki Bagn.

1935, *loc. cit.*, vol. lxxi., p. 173, figs. 10, 11; 1936, *loc. cit.*, vol. lxxii., p. 40.

Described from single examples found at Gleneagles (Perthshire) and Ravenscar (E. Yorks) viii.34. Apparently less rare in the West—Ardlui (Dumbarton) several, 28.vii.35, and one example at the foot of the Cobbler (Argyllshire) 3.viii.35. On both occasions wet weather made collecting almost impossible.

Stenaphorura absoloni Bagn.

1936, *loc. cit.*, vol. lxxii., p. 40, figs. 24, 25.

This species is sharply separated from others of the *axelsoni* group (into which it would otherwise fall) by the structure of the post-antennal organ which is broad and regular in form, and comprises two series of 26-34 *double-headed* vesicles.

It is described from Corstorphine Hill, Edinburgh, 3.ii.35, and onwards, where it is not uncommon.

Neotullbergia laingi Bagn.

1936, *loc. cit.*, vol. lxxii., p. 35, figs. 12-14.

Two species of this genus, characterised by the branched AH, are now known, one from the Mediterranean and this species described from East Yorks (viii-ix.34) and Corstorphine Hill, Edinburgh, 3.ii.35, in each case single examples only. The British species is larger than *tricuspis* (Börn.) and possesses a complex post-antennal organ.

Metaphorura börneri Bagn.

1936, *loc. cit.*, vol. lxxii., p. 36, figs. 16-17.

A fine species and readily separated from *M. bipartita* Handschin

by the more numerous pseudocelli (20), the long last abdominal segment and the short space separating the AH.

Corstorphine Hill and neighbourhood, common, iv.35 onwards; fields around Edinburgh, occasional, iii-vii.35; Pentlands near Lothianburn, 1 only at *c.* 1000 feet, xii.34, and South Queensferry 1 only. Several examples at Gleneagles and Crieff, viii.34; Hawick, i.37.

Mesaphorura thalassophila sp.n.

The remaining species of *Metaphorura* and our known *Mesaphorura* will be described in the final part of my "British *Tullbergiinæ*." One species of *Mesaphorura*, however, should now be recorded—it is a small form allied to *krausbaueri* and allies, but is sharply separated from all European species by having the post-antennal organ compound as in *M. silvicola* and other extra-European species. Further it is a true halophile, active, and is found under stones well below high-water mark on the shores of the Firth of Forth, Dalmeny Estate, ii.35 onwards.

Mesaphorura iowensis Mills.

Tullbergia iowensis Mills 1932, Iowa State College, *J. of Sci.*, vol. vi. No. 3, p. 264, figs. 5-8.

This species is sharply differentiated from all others by the armature of the fifth abdominal segment which carries two heavy dorsal spines overhanging the pso. of that segment.

Hawick, under stones embedded in heavy clayey soil, i.37. Previously known from U.S.A., Hungary, and Poland, whilst I also have received specimens from Roumania.

Paratullbergia carpenteri Bagn.

1935, *loc. cit.*, vol. lxxi., p. 168, figs. 1-3.

This fine species is widely distributed in Great Britain. Scottish examples are from Edinburgh district; Pentland Hills (xii.34-iv.35); Dalmeny shore, viii.34; Gleneagles, 1 only, and Callander, several from under stones deeply embedded in the sandy soil of the banks of the Leny, viii.34; foot of Ben Vorlich near Ardlui, vii.35.

Paratullbergia macdougalli Bagn.

1936, *loc. cit.*, vol. lxxii., p. 37, figs. 18, 19.

This species, dedicated to Prof. R. Stewart Macdougall, LL.D., D.Sc., whilst plentiful in its Edinburgh habitat would appear to be otherwise rare—indeed I have only one other record, Ravenscar (E. Yorks).

Corstorphine Hill, Edinburgh, iv.35 onwards, not uncommon.

(*Concluded.*)

BOOK NOTICES

The Lore of the Lyre-Bird. By AMBROSE PRATT. Melbourne: Robertson and Mullens. Pp. 71, 16 plates, 3rd Edition. 1937. Price 5s. The lyre-bird is familiar to all, but its restricted range in Australia and elusive habits have hitherto rendered the study of its behaviour a difficult undertaking. Since 1931 a lady, who lives hermit-wise in the Dandenong Ranges, has enjoyed an unprecedented opportunity of studying this bird. By chance, a lyre-bird visited her garden and has been an almost constant visitor for six years. The bird became tame and ornithologists quickly seized the opportunity to investigate its habits. Menura, the lyre-bird, is an excellent mimic and the male is fond of displaying his wonderful plumage. Mr Ambrose Pratt, President of the Royal Zoological Society of Victoria, has studied this specimen closely and has also collected much curious lore concerning the species. The photographic illustrations are excellent for so difficult a subject, and the various attitudes assumed by the lyre-bird when singing and dancing are of great interest. Curators of museums should be especially interested in Plate 11 of Menura dancing and singing. "The Menura spreads his tail fanwise, and brings it forward over his head, with the lyre plumes extended widely at the sides. The picture shows that the conventional design—used, *e.g.*, on Commonwealth postage stamps—is incorrect." The same remarks also apply to many of the mounted specimens of males in our museums. Altogether this is a most entrancing book which deserves a wide circulation in this country.

A Monograph of the British Neuroptera. Vol. II. By F. J. KILLINGTON. London: Ray Society, 1937. Pp. v+306, 15 plates, 46 text figs. 8vo. Price 25s. The present volume deals with the lacewing flies (families Hemerobiidæ and Chrysopidæ) and 42 species are described in detail. The author has been at pains to revise the nomenclature, and in an appendix proposes a new genus *Kimminsia* to contain the five species formerly placed in the genus *Boriomyia* which has no representatives in this country. A further appendix deals with the methods of collecting, preserving, and rearing the various species, and should be of great practical value.

We hope that this excellent monograph will reawaken the interest of Scottish entomologists in the Neuroptera, since much work remains to be carried out before we can have any comprehensive idea of the present distribution of these fine insects.

Bird Migration. By A. LANDSBOROUGH THOMSON. Bird-Lovers' Manuals (H. F. & G. Witherby). Illustrated, 5s.

A short account of our knowledge of bird migration has for long been needed and this book adequately fills this gap. The subject is treated in four sections. The first gives an account of the different types and phenomena of migration, the second the directions, seasons and methods of migration, the third the immensity, complexity and regularity of migration, and in the last the various theories which

have been put forward as to the manner and causes of migration are discussed.

A number of photographs, maps and diagrams are used with success to illustrate the text.

This is an admirable little book, which should be read by all interested in this subject.

NOTES

Rare Fishes from Creetown, Kirkcudbrightshire.—Anchovy, *Engraulis encrasicholus* (L.).—Two of these fishes were taken on the 30th May and 1st June 1937. They measured $5\frac{1}{2}$ and 6 inches respectively. Further, writing on the 19th June, Mr Birrell informed me that he had taken several more Anchovies in the eel nets.

The Anchovy is rare in Scottish waters, but has visited the Solway on previous occasions. In the summer of 1890 it spread as far north as the Minch. On 27th June of that year some were taken at Silloth (Macpherson, *Fauna of Lakeland*, 1892, p. 519). In January and February 1900, they were again numerous and several were taken off Annan (Gladstone, *Fauna of Dumfriesshire*, 1912, p. 59).

Belted Bonito, *Pelamys sarda* (Bloch).—A female, measuring 23 inches in length and weighing 5 lbs. 2 oz., was taken on 17th June 1937. The ovaries were well developed and measured 9 inches in length.

This fish is found on both sides of the Atlantic and is abundant in the Mediterranean and in the tropical waters of the Atlantic. It has visited Scottish waters only on rare occasions, but has previously appeared in the Solway. One was taken in the Newbie Salmon nets, Upper Solway, in 1896. Early in July of this year a Bonito was reported in the daily press as having been taken off Girvan.

A female Monkfish, *Squatina squatina* (L.), measuring 4 feet $3\frac{1}{2}$ inches, was taken on 17th June.

A male Horse Mackerel, *Trachurus trachurus* (L.), measuring 13 inches in length was taken on 19th June.

These fishes were kindly presented to the Royal Scottish Museum by Mr Adam Birrell.—A. C. Stephen, Royal Scottish Museum.

Bottle-nosed Whale in the Forth.—The much-decomposed carcase of a Bottle-nosed Whale, *Hyperoodon rostratus* (Müller), 20 feet 9 inches in length, was washed ashore near Longniddry on 9th August. It had been observed floating about in the Firth for some days previously and is presumed to have been injured by a passing vessel.—A. C. Stephen, Royal Scottish Museum.

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PUBLISHERS' NOTE.

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With which is incorporated

"The Annals of Scottish Natural History"

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EDITORIAL.

WILDFOWL AND HERON IN OUTER HEBRIDES.

WE should like to bring the following appeal by Mr James W. Campbell before our readers.

"I am engaged at present on a work dealing with various aspects of the bird-life of the Outer Hebrides, and am particularly anxious to obtain information, other than that already published, on the following: GEESE, DUCKS, and WADERS—Changes in status, habits or haunts; numbers, relative proportions of sexes and of adults and young; food and damage to crops. HERON—Position and details of heronries and any observations on this species in the Outer Hebrides.

"I shall be very grateful if any of your readers who can help will communicate with me at Layer Marney Hall, Kelvedon, Essex."

THE HANDBOOK OF BRITISH BIRDS.

We are glad to bring the following request by Mr H. F. Witherby to the notice of our readers.

"As many ornithologists are already aware, a new edition of *A Practical Handbook of British Birds* has been for some time in preparation. We should be very grateful to any of your readers who would now send us notes of any omissions or errors in the original work, and of any *unpublished* observations which would make the work more accurate and complete. Should secrecy in regard to locality be necessary this will be rigidly respected.

"As it is proposed to publish in five volumes at six monthly intervals beginning next spring, we shall be glad to have now any notes relating to the Order Passeres. It would be a convenience if observations concerning breeding-habits or food were sent direct to the Rev. F. C. R. Jourdain at Bellevue Road, Southbourne, and all other notes to me at Gracious Pond Farm, Chobham, Surrey."

SCOTTISH MARINE BIOLOGY

Two useful papers which should prove of interest to naturalists have recently been published.

In the *Proceedings Royal Society of Edinburgh*, vol. xvii., part 3, Dr D. S. Raitt has given an account of the bottom-dwelling amphipods of the north-western North Sea and adjacent waters. Amphipods are of some economic importance as fish food, especially for the young stages of the cod, plaice, dabs and skate. They occur in greatest abundance on the inshore grounds and are less numerous in the deep central area of the North Sea. The genus *Ampelisca* predominates and accounts for almost half of the total collection. Within this genus zonation of species is well illustrated.

Dr A. Ritchie has published an account of his work on the food and feeding habits of the haddock in Scottish waters (*Fishery Board for Scotland, Scientific Investigations*, 1937, No. 11). This contains a large and varied amount of information with a large series of tables. The principal feeding season of the haddock is from May to December, while it is much reduced during the spawning period in the early part of the year. This reduction is most noticeable in the larger fish. It is also more apparent in fish from the deep offshore areas than in fish from the shallower areas in the south and west of the North Sea. In the deep central area where growth is poor, feeding is also poor.

ON THE OCCURRENCE OF *GAMMARUS* IN SCOTTISH COASTAL, BRACKISH AND INLAND WATERS.

By D. S. RAITT, D.Sc., Ph.D., F.R.S.E., F.L.S., The Marine Laboratory of the Fishery Board for Scotland, Aberdeen.

THERE are four species of the Amphipod genus *Gammarus* on record as common in Scottish waters. They are *G. locusta* (L.), *G. marinus* Leach, *G. duebeni* Lilljeborg, and *G. pulex* (L.). The first and second are generally accepted as inhabiting salt water, the third brackish water, and the fourth fresh water.

The papers of the late Dr Thomas Scott, formerly of the scientific staff of the Scottish Fishery Board, and an acknowledged authority upon the Crustacea of Scottish waters, contain numerous records of these four *Gammarus* species, which, however, appear to have become overlooked since his time. The explanation probably lies in that they are spread over some 21 separate publications and a period of some twenty-one years. The writer has therefore endeavoured to bring them all together and to collate them with more recent investigations, as a contribution to the ecology of the genus to be linked with similar data, as available, from other regions.

Throughout the ten years 1889 to 1898, for example, Scott conducted an extensive study of the invertebrate fauna of the inland waters of Scotland. His survey embraced about 125 lochs, ranging from the Shetland Islands to Cantyre and from the Outer Hebrides to Aberdeenshire, Kinross, and Linlithgow. A list of his reports thereon is given in the accompanying bibliography.

In the course of these inland water investigations, he records the occurrence of the accredited freshwater *Gammarus*

species *pulex* in the following lochs, all of which are of freshwater category :—

Loch of Lumbister, Yell, Shetland.
Lunga Water, Yell, Shetland.
Muskra Water, Yell, Shetland.
Loch Houllsquey, Northmavine, Shetland.
Pettidale Water, Northmavine, Shetland.
Gossa Water, Mainland, Shetland.
Neugles Water, Mainland, Shetland.
Setter Loch, Bressay, Shetland.
Loch Henpriggs, Caithness.
Loch Mullach, Corrie, Sutherland.
Loch Rescobie, Forfar.
Forfar Loch.
Loch Leven, Kinross.
Raith Loch, Fife.
Camilla Loch, Fife.
Lochgelly Loch, Fife.
Linlithgow Loch, Linlithgow.
Duddingston Loch, Midlothian.
Lakes, Streams, and Ditches of Basin of R. Forth.
Loch Katrine.
Loch Lomond.
Loch Doon, Ayrshire.

In addition, he records the occurrence of the accredited brackish water species *duebeni* in the following lochs, all of which again are definitely of freshwater category :—

Loch of Fedra, Yell, Shetland.
Loch Snarravoe, Unst, Shetland.
Loch of Belmont, Unst, Shetland.
Loch of Beiton, Unst, Shetland.
Loch of Huxton, Whalsay, Shetland.
Loch of Livister, Shetland.
Loch of Benigarth, Northmavine, Shetland.
Loch of Brindister, Mainland, Shetland.
Loch of Fladdabister, Mainland, Shetland.
Loch of Tingwell, Mainland, Shetland.
Sandy Loch, Mainland, Shetland.
Aith Loch, Bressay, Shetland.
Brough Loch, Bressay, Shetland.
Loch of Beosetter, Bressay, Shetland.
Skipper's Loch, Bressay, Shetland.
*Loch Mor, Barra, Outer Hebrides.
*Loch na Doirlinn, Outer Hebrides.
Loch Cadna Mor, Outer Hebrides.
Loch an Ail, Outer Hebrides.
Loch Scotageary, Outer Hebrides.
Loch nam Faoileann, Outer Hebrides.
Loch Scadowa, North Uist.
Loch Skealter, North Uist.
Lochan a Chaite, Perthshire.
Loch Lubnaig, Perthshire.
Achy-Lochy, Cantyre.
Loch Ruan, Cantyre.
Park Loch, Cantyre.
Tangy Loch, Cantyre.

I have failed to find these freshwater records included in the distribution of *duebeni* in subsequent literature.

Scott was in no doubt as to his identifications. He published details of the characters he used in distinguishing the two species (Scott and Duthie, 1894-1895, 14, p. 240), and with regard to his specimens of *duebeni* from Loch Ruan, near Campbeltown, Cantyre, he writes: "Loch Ruan is situated several hundred feet above sea-level and part of the town of Campbeltown obtains its supply of water from this loch; the occurrence of *G. duebeni* in it is therefore of interest,

* Since shown to be slightly brackish. See Forrest and others, 1936.

as it tends to show that this Amphipod although sometimes observed in brackish water is not limited to such conditions" (1890-1897, 15, p. 322).

In no case did he find *pulex* and *duebeni* in one and the same loch, although they occurred in the same district. His papers on material other than from fresh water contain no further records of *pulex*; but he has also recorded *duebeni* from brackish pools at the mouth of the River Don, Aberdeenshire (1900, p. 263), from three brackish water localities in the Firth of Forth, the mouth of the Cocklemill Burn, Largo Bay, pools at Luffness, near Aberlady, and pools on the Isle of May (1906, pp. 163 and 379).

He has placed *G. marinus* on record from brackish water, east Loch Tarbert, Loch Fyne (1896, p. 140), from off Loch Buy, Mull (1896*a*, p. 185), and between tide-marks on the Dalmeny shore, Firth of Forth (1906, p. 162). He states that it is generally but sparingly distributed throughout the Forth estuary.

His records of *G. locusta* include specimens from Loch Spelve, Mull, and Loch Linnhe (1896*a*, p. 185), Loch Fyne (1896, p. 140, and 1908, p. 98), the Firth of Clyde (1890-1897, 15, p. 317, and 1905, p. 796), and the Firth of Forth (1887, p. 248, and 1906, p. 162), as well as from the stomachs of a number of marine fishes (1901, p. 492). In the Forth he found it common in the littoral zone and among decaying seaweed near high-water mark, while near Dumbarton, in the Firth of Clyde, it was very common in brackish pools at the roots of the dense vegetation on the shore to the west of the town.

More recently there has been published, by Elmhirst, 1935, an account of the occurrence of *Gammarus* species in the Clyde area, together with the results of an experiment in the introduction of fresh water into flasks containing *locusta*, *marinus*, and *duebeni*. He gives *locusta* as occurring from depths of about ten fathoms to low-water mark, *marinus* from low-water mark to high-water neaps, and *duebeni* from high-water neaps into the brackish water area about high-water springs. Under experimental conditions *locusta* showed no tendency to enter fresh water; *marinus*,

while usually reacting negatively, did so more slowly, sometimes tending to linger in contact with the diffusion layer; *duebeni*, on the other hand, definitely sought fresh water.

Elmhirst further observes that the freshwater *Gammarus* of the south-west of Scotland resemble *duebeni* in several characters. After sending specimens to Sexton, Plymouth, however, it was "decided in correspondence that they ought to be called *G. pulex*, although approaching *G. duebeni* in (1) size and shape of eye, (2) general hairiness, (3) spinulation of the dorsal part of the urosome, and (4) spinulation of the telson."

Nicol, 1936, dealing with the brackish water lochs of North Uist, provides further records. The waters investigated included all intermediate conditions between lochs entered by every tide and having a salinity of over 30 per cent., and those entered only by the highest spring tides with a salinity of 2 or 3 per cent. The fauna encountered included 59 marine, 24 fresh, and 25 brackish water species, as well as 5 euryhaline forms, such as the salmon, which are equally at home in any salinity. Only two species of *Gammarus* were found. They were *marinus* and *duebeni*. The latter was by far the more common and occurred in waters over the whole of the wide salinity range. The species *marinus* was found only at locations characterised by high salinities.

Similar results have also been obtained by an Edinburgh University expedition studying the natural history of Barra (Forrest, Waterston, and Watson, 1936). Although gammarids were collected from most of the lochs and from some of the streams of the island, *G. pulex* was not encountered, "its place being taken by *G. duebeni* which occurred in all suitable habitats from shore pools to the farthest inland lochs." The species *locusta* and *marinus* were encountered on the coast. The identifications were made for the expedition by Elmhirst, whose publication on the *Gammarus* of the Clyde area has already been cited.

The writer has recently concluded a systematic and ecological study of the benthic Amphipoda of the north-western North Sea and adjacent waters, based upon material collected by Petersen Bottom Sampler and from haddock

stomachs. The investigation covered in the main the open waters of the area, but also extended into the shallows of the coastal zone. It did not embrace intertidal or brackish waters. The only *Gammarus* species taken was *locusta*. It was met with at only three locations, one off Aberdeen at a depth of 26 m., one off the Moray Firth at a depth of 145 m., and one off the west coast of Denmark at a depth of 54 m. From its quantitative representation in the Bottom Sampler material it is to be regarded as amongst the least common of the Amphipod species of the habitat surveyed. It has occurred, however, in material from certain supplementary sources. The writer has identified specimens from Loch Indale, Islay, from the entrance to the Caledonian Canal, and from a number of locations on the north-east coastline of Scotland.

From the entrance to Aberdeen harbour, moreover, large collections of both *marinus* and *duebeni* have repeatedly been made. Within the pier-heads, amongst stones and *Enteromorpha* on the tidal bed of the River Dee, these two species occur side by side. Both appear to be capable of living in wide extremities of salinities. For a period of over seven months, for example, they were kept in sea water under laboratory conditions. The sea water was taken from three miles off Aberdeen. Both thrived and bred. Both have also been successfully transferred to fresh water drawn from the ordinary household supply to the town of Aberdeen.

I have also examined the whole of the Scott collection of Amphipoda in the possession of the Fishery Board for Scotland, including several specimens of the four *Gammarus* species under consideration. I have compared Scott's specimens of *duebeni* from fresh water with my own material of the same species from estuarine conditions and I am thoroughly satisfied as to their respective identifications. The systematic works consulted as to the morphological characteristics of the different species were Chevreux and Fage (1925), Sars (1895), Stebbing (1906), and Stephensen (1929).

Scott, then, has recorded both *G. pulex* and *G. duebeni*

from Scottish freshwater lochs, but his records appear to have become overlooked. I have examined both Scott's material and specimens of *duebeni* from estuarine conditions such as are regarded as the normal habitat of the species and I am satisfied as to the respective identifications. The records from North Uist and from Barra provide complete confirmation as to the wide range of salinity in which *duebeni* may be found, and similarly with those of Elmhirst from the Clyde area.

The species *Gammarus duebeni* Lilljeborg must accordingly be accepted as a normal inhabitant of the fresh waters of Scotland, as well as *G. pulex*, and as ranging in its distribution through all degrees of salinity to estuarine and coastal conditions.

The Scottish records of *G. pulex* are confined to fresh water, and it may further be observed, from Scott's fresh-water investigations, that *pulex* would seem to occur further inland than *duebeni*, the latter having been encountered chiefly in the Shetlands, the Outer Hebrides, and Cantyre.

In Scottish waters, *G. marinus* has been found only in intertidal and estuarine locations, and *G. locusta* from intertidal and estuarine to open sea conditions.

The occurrence of these four species of the genus, in the Scottish area, may therefore be said to present the picture of a series of overlapping distributions, species to species, from the open sea, through intermediate environmental conditions, into the fresh waters of inland lochs.

So far there appear to be no Scottish records of the two remaining brackish water species of *Gammarus* of northern Europe, *G. chevreuxi* Sexton and *G. zaddachi* Sexton. The remaining marine species of the North Sea region, *G. cambylops* Leach, is listed by Stebbing, 1906, from Arran and Shetland, and, it is understood, is also being found by Elmhirst on the Ayrshire coast.

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Whooper Swan and Black-necked Grebes at Loch Dochart.—On 16th September 1937 at Loch Dochart, West Perthshire, I saw a Whooper Swan. This is an unusual date to see this species.

Two Black-necked Grebes were also present on the 16th, evidently on migration, as they were gone two days later.—D. I. MOLTENO, Loretto.

Dumfriesshire Hemiptera-Heteroptera.—The only representative of the Berytidæ I have met with is *Berytus minor* H.S. and then only a single specimen. It was found at the roots of rushes on Newton Moss in April. The Lygæidæ are better represented. *Stygnocoris pedestris* Fall. is common in moss and about the roots of heather. *Trapezonotus arenarius* L., scarce, taken on Nutberry Moss by sweeping in October. *Drymus sylvaticus* Fab., common in moss, particularly in spring, and generally distributed. *D. brunneus* Sahlb. also abundant. *D. piceus* Flor, a rare species. About half a dozen specimens taken at various times in autumn from wet *Sphagnum* on Newton Moss. *Scolopostethus affinis* Schill., scarce, at Browhouses in September from ragwort. *S. thomsoni* Reut., plentiful by sweeping nettles, etc. I have met with it in nearly every month of the year but always brachypterous. *S. decoratus* Hahn, abundant on heather and generally macropterous. *Gastrodes ferrugineus* L., local but not rare on coniferous trees. Newton and Nutberry Mosses in spring and autumn. Three species of Tingididæ have occurred. *Acalypta parvula* Fall., rare or overlooked, by sifting moss, etc. *Derephysia foliacea* Fall., local but hardly rare. All my specimens came from young ash trees. *Tingis cardui* L., locally abundant on thistles.—Jas. Murray, Gretna.

Narrow-bordered Bee Hawk Moth (*Hæmorrhagia tityus* (L.)) in Mid-Perth.—Although it cannot be called rare, this attractive Hawk Moth is not met with every day and it may be of interest to record that I found it in Mid-Perth this summer. Two were seen in Glen Lochay on 14th June haunting a sunny space surrounded by young birch trees. They flew low over the short turf in a bewilderingly elusive manner, disappearing suddenly to reappear as suddenly hovering over some small flower or fallen log.—C. Ethel Evans, Edinburgh.

Death's Head Hawk Moth (*Acherontia atropos* (L.)) in Argyll.—Mr Leonard T. Toms of Netherhall, Largs, lately forwarded to me a female of this notorious immigrant which he found in a bee-hive at Kilberry, Knapdale, Argyll, in October 1937. I know of no other occurrence of this species in Scotland during 1937.—A. R. Waterston, B.Sc., Royal Scottish Museum, Edinburgh.

Mottled Hairworm (*Gordius villoti* (Rosa)) in Edinburgh.—A fine male, 19 cm. in length, which came down a tap in a house in Edinburgh was sent to the museum by Miss C. E. Rutherford, 30 Newbattle Terrace, on 7th September. In 1914 Evans collected many specimens in the river Tyne at Ormiston, Haddingtonshire, but none has been recorded from the Forth Area since that year.—A. R. Waterston, B.Sc., Royal Scottish Museum, Edinburgh.

KNAPDALE: A SUMMER SURVEY.

By W. M. M. CHAPMAN and B. W. TUCKER, M.B.O.U.

IN the summer of 1935 Mr W. B. Alexander, with two members of the Oxford Ornithological Society, paid a visit to Knapdale, and subsequently to the Rev. J. M. McWilliam (author of *The Birds of Bute* and *The Birds of the Clyde*), who pointed out to him that this area had never been properly worked. Accordingly in the following summer Mr B. W. Tucker organised a survey of Knapdale by the Oxford Ornithological Society from Lochgilphead. This paper is based on the notes of a party of ten who stayed there from June 4th to 9th (under Mr Alexander's direction), of a party of seven who stayed from June 10th to 17th (under Mr Tucker's direction), and of the Rev. J. M. McWilliam, who stayed at Tayvallich from May 19th to 21st and at Barnluasgan Farm from June 8th to 26th, and supplied most of the information about the Tayvallich peninsula. The collator revisited Knapdale, to check up on two points, on June 28th 1937.

The method adopted was to drive round the coast paying special attention to islets, and to walk over the moors to all fresh-water lochs; eighty lochs were visited and a fair idea of the country was obtained. A drought prevailed.

The lower parts of Knapdale are in a fairly advanced state of cultivation; ploughed fields are fairly common and the pasture and hay are good. A narrow belt of woods, for the most part natural, fringes the coast for about half its length. The greater part of the area consists, however, of very broken moorland, rising steeply to 500 feet, but seldom more than 1200 feet high. It is ill-drained, with just over a hundred small lochs of an average altitude of 675 feet. The vegetation is mostly coarse grass, with a good deal of heather and rather more bracken.

In general, Knapdale is not ornithologically rich; the common moor birds—Grouse, Lapwing, Meadow Pipit, Kestrel—are generally, but thinly, distributed. Only Curlew

and Common Sandpiper are common. The common water birds—Mallard, Teal, Common Gull—are fairly numerous on the large lochs grouped in the north-west, and on two large lochs in South Knapdale, but otherwise very scarce. On the other hand, the Divers can presumably find food in any of the lochs. The lower wooded country west and north of Loch Sween is much richer than the rest of the area, not only in passerine birds (Reed Bunting, Tree Pipit, Grey Wagtail, Sedge Warbler, Whitethroat, Wheatear, Sand Martin), and water birds (Snipe, Woodcock, Land Rail, Moorhen), but even in large birds (Nightjar, Barn and Tawny Owls, Buzzard).

The affinities of Knapdale with the mainland (as opposed to the S. Inner Hebrides) seem to be:—

(1) The presence or comparative commonness of Yellow-hammer, Redstart, Blue Tit, Martin, Sand Martin, Greater Spotted Woodpecker and Barn Owl;

(2) the absence of Chough, Tree Sparrow, Fulmar, Little Tern, Arctic Skua, Puffin, Shoveller, Greylag, Storm Petrel and Manx Shearwater; and

(3) the fact that Cormorant, Gannet, and Lesser Black-back, though present, were not breeding.

The affinities of Knapdale with the S. Inner Hebrides (as opposed to the mainland) seem to be:—

(1) The presence or comparative commonness of Hooded Crow, Black- and Red-throated Divers;

(2) the absence or comparative scarcity of Carrion Crow, Magpie, Garden and Grasshopper Warblers, Swift and Stockdove; and

(3) the large amount of black on the throat of Golden Plover.

Noteworthy species typical of the West Coast were:—Twite, Rock Dove, Black Guillemot; relatively common species: Raven, Lesser Redpoll, Whin- and Stone-chat, Wood and Willow Warblers, Peregrine; relatively scarce ones: Grey Wagtail (except near Tayvallich) and Wheatear.

The writers' obligations to the *Handlist* of Miss Baxter and Miss Rintoul and to Mr McWilliam's *Birds of the Clyde* are obvious.

SPECIFIC LIST.

NOTE.—Words like "abundant" and "scattered" which refer ambiguously to the numbers in which a species is present and to the generality of its distribution, have been avoided. Unless otherwise described, a species is to be taken to be evenly distributed in typical country. Words in the scale "very common," "numerous," "common," "fairly common," "scarce," are *relative to the normal numbers of a species*, not, unless this is indicated, to the comparative numbers of species in Knapdale. Thus Raven is described as "common," Rook as "fairly common"; there were more Rooks.

RAVEN, common, breeding.

HOODED CROW (but ? hybrid), several, one family party, seen round L. Caolisport.

[CARRION CROW, ? seen by Lochgilphead.]

ROOK, fairly common.

JACKDAW, numerous breeding colony on S.E. cliffs, and roost at Barnluasgan.

JAY, three seen.

STARLING, only fairly common, small flocks of young birds.

GREENFINCH, common.

TWITE, breeding, *c.* six (in all) pairs found at three points on W. coast (Ruadh Sgeir, P. of Knap, Kilberry); the typical horn-yellow bill was conspicuous.

LESSER REDPOLL, very common, ubiquitous up to 1000 feet.

LINNET, one pair seen near Tayvallich.

BULLFINCH, several seen.

CHAFFINCH, common.

HOUSE SPARROW, common.

YELLOWHAMMER, common throughout Knapdale.

REED BUNTING, fairly common on Crinan Canal and in other suitable places.

SKYLARK, surprisingly common, especially on all lower ground.

TREE PIPIT, numerous in Tayvallich peninsula, one or two at head of L. Caolisport, not elsewhere.

MEADOW PIPIT, fairly common all over moors.

ROCK PIPIT, common on coast, one or two on moors.

GREY WAGTAIL, common in Tayvallich peninsula, scarce elsewhere.

PIED WAGTAIL, common.

TREE CREEPER, seen, singly or a pair, three or four times; probably common.

GREAT TIT, common.

BLUE TIT, common.

COLE TIT, common, the most numerous Tit.

LONG-TAILED TIT, one pair and one small party seen.

GOLDCREST, seen twice.

WILLOW WREN, very common.
WOOD WREN, numerous.
SEDGE WARBLER, as Reed-Bunting.
WHITETHROAT, common in Tayvallich peninsula, fairly common elsewhere.
MISSEL THRUSH, only fairly common.
SONG THRUSH, common.
BLACKBIRD, common.
RING OUZEL, seen once.
WHEATEAR, fairly common in Tayvallich peninsula, scarce elsewhere.
WHINCHAT, common on moors, at lower altitudes; in bracken, bog-myrtle and alders rather than heather; more numerous than Meadow Pipit.
STONECHAT, as Whinchat, about half as numerous.
REDSTART, fairly common.
ROBIN, common.
DUNNOCK, only fairly common.
WREN, numerous.
DIPPER, common; on most, though not all, suitable burns.
SWALLOW, common.
MARTIN, fairly common, scattered.
SAND MARTIN, colony of *c.* twenty pairs on Crinan Canal.
SWIFT, seen once or twice; one pair about the eaves of a house near Lochgilphead not proved to be nesting.
NIGHTJAR, one churring in Carndubh Burn (N. Knapdale) at 500 feet.
GREATER SPOTTED WOODPECKER, seen or heard half a dozen times.
CUCKOO, common, young seen.
TAWNY OWL, heard all over Tayvallich peninsula, not elsewhere.
BARN OWL, one hunting by Nightjar, *q. cf.*
PEREGRINE, two eyries seen. ? three pairs. One eyrie certainly used again in 1937.
MERLIN, one, mature ♂, seen on shore.
KESTREL, common, or fairly common.
COMMON BUZZARD, apparently a family near Tayvallich; seen once in S. Knapdale.
SPARROW HAWK, seen once.
HERON, said to breed on island in L. Sween, fairly common on coast, once on a loch at 1200 feet.
MUTE SWAN, fifty at head of West L. Tarbet.
SHELD DUCK, numerous with broods round coast.
MALLARD, breeding on streams and twenty-four lochs, chiefly in north; parties up to fifty in sea-lochs.
TEAL, uncommon, distribution as last species.
EIDER, common on coast; occasional, once with brood, on inland lochs.
RED-BREASTED MERGANSER, numerous with young on sea-lochs.
CORMORANT, young birds seen singly on sea.
SHAG, fairly common.
GANNET, seen off-shore once.

DABCHICK, found on three lochs in north, breeding.

BLACK-THROATED DIVER: one pair seen several times inland, one pair seen once inland and several times on the sea, and one odd bird seen. At least the first pair was probably only prevented from breeding by the drought. A pair was seen in the same place in 1937; a keeper reports that they habitually breed there and that the nest has been found in recent years.

RED-THROATED DIVER, at least five pairs found breeding, one more seen on L. Fyne.

WOOD PIGEON, only fairly common.

STOCK DOVE, seen once.

ROCK DOVE, small breeding colony at Kilberry H., not elsewhere.

OYSTER CATCHER, found or presumed breeding on several lochs; common on shore with young.

RINGED PLOVER, one or two pairs on every occasional patch of sandy beach.

GOLDEN PLOVER, a few (*c.* ten) pairs breeding; the large amount of black on the throat was striking.

LAPWING, common.

DUNLIN, three pairs found on the moors and one party of eight on the shore.

COMMON SANDPIPER, very common; breeding up to six pairs on almost all lochs; numbers on the shore.

REDSHANK, uncommon on shore; one seen on moors.

BAR-TAILED GODWIT, two seen on L. Caolisport, one in very red summer plumage.

CURLEW, numerous, on moors and shore.

COMMON SNIPE, breeding commonly on lower ground, a few on the moors.

WOODCOCK, very common round head of L. Sween; seen twice in south.

COMMON TERN, fair-sized breeding colonies on Ruadh Sgeir and Eilean Fada and small ones on most, or many, of the islets in Ll. Sween and Caolisport; a few pairs on the largest fresh-water loch in both N. and S. Knapdale.

ARCTIC TERN, same distribution as last species but less numerous, not certainly breeding inland.

BLACK-HEADED GULL, common round coast; thirty pairs on L. nan Torran, fifteen on Lochan Eun and one odd pair on another inland loch.

COMMON GULL, common; four colonies of ten to twenty-five pairs and a few pairs on eight other lochs.

HERRING GULL, two pairs on Câm L., a party of thirty to forty on L. Fyne; common.

LESSER BLACKBACK, a few seen.

GREATER BLACKBACK, fairly common, breeds on islets in sea-lochs.

RAZORBILL, occasional off-shore.

GUILLEMOT, a few breeding on south-west cliffs.

BLACK GUILLEMOT, breeding in colonies up to ten pairs on at least five islets in L. Sween and L. Caolisport; parties up to twenty seen.
LAND RAIL, common round L. Sween head and along Crinan Canal; not elsewhere.
MOORHEN, breeding on canal, three lochs in N. Knapdale and one at extreme south.
BLACK GROUSE, common.
RED GROUSE, fairly common.
PHEASANT, fairly common.

NOTES

Notes from Possil Marsh, Glasgow.—This year a greater number of Shovellers (5 or 6 pairs) than usual frequented Possil Marsh. Towards the end of April I noticed that they were beginning to pair and by 8th May numbers were reduced to three pairs. On 13th only two pairs remained and these were in very sportive mood. I lost sight of them till the 2nd June when one male was noted. I saw him frequently afterwards—alone. On 21st June a pair was seen on the water accompanied by five young birds. I saw them up till 4th August (but have not been there since). After the first few days on the open water they seemed to confine themselves more to the Marsh vegetation amongst the swamp. This is the first time, to my knowledge, that they have nested at the Marsh. Tufted Ducks were also more numerous—an interesting result. On 15th June three broods—10, 8, 8—observed.

Since the spring I have been in the habit of visiting the Marsh every few days. The results of nestings has far exceeded my expectations in spite of the colony of Black-headed Gulls.—WILLIAM RENNIE, Glasgow.

Greenland Wheatear in Renfrewshire.—A Greenland Wheatear (*Œnanthe œnanthe leucorrhoa*) was obtained near Balgray Dam, East Renfrewshire, on 10th September 1937, by Mr Robert L. Brown.

The specimen, a male in first winter plumage, has a wing measurement of 102 mm. and is now in my collection.—PHILIP A. CLANCEY, M.B.O.U.

Black Terns at Aberlady.—On 10th September 1937, at Aberlady Bay, I observed two immature Black Terns among a large flock of Common and Sandwich Terns.

In comparison with last year, migrant waders were poorly represented; no doubt this was caused by the contrary winds which had been prevailing for some time.—D. I. MOLTENO, Loretto.

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

(*Continued from p.* 144.)

VII. THE VARIATION OF THE LEPIDOPTEROUS GENUS TRIPHÆNA IN RAASAY, SOUTH RONA, AND SCALPAY, WITH SPECIAL REFERENCE TO *T. IANTHINA* ESP.

By J. W. Heslop Harrison, D.Sc., F.R.S.

In discussing the species *Triphæna ianthina* Esp., Tutt (*British Noctuæ*, vol. ii., p. 91) writes as follows:—"This species varies but little in any direction. There are two distinct forms in colour, one purplish, the other reddish-brown; otherwise there appears to be no variation worth noticing." These remarks he supplements by directing attention to similar views held by Newman (*British Moths*, p. 338). Of their general accuracy in respect to the bulk of the British range of *T. ianthina* there can be little doubt, but such is far from holding true in the island group comprising Raasay, South Rona, and Scalpay. There, like its congener *T. comes*, the species reveals itself as capable of a wide spread of variation. To indicate the course of this variation, as well as to list the island varieties of *Triphæna comes*, *T. orbona* and *T. pronuba*, is the purpose of the present paper.

I. *Triphæna ianthina* Esp.

The Type Form.— It is obvious from Esper's original description and from Tutt's account of the type specimen, that the latter insect in the area between the outer line and the base of the forewings, except for the costal blotches, is tinted with green. As Tutt realised, specimens so coloured are rarely met with in the British Islands. In spite of this, in Raasay they form nearly 5 per cent. of the *ianthina* population.

Var. *purpurascens* mihi.—Contrary to the indications of his knowledge that the greenish insect was the type of Esper, Tutt persisted in regarding the purplish form as such. Clearly such a position is untenable, and, in view of the abundance of purplish varieties, the name *purpurascens* is suggested for them. They may be taken throughout the British Islands, including South Rona, Raasay, and Scalpay, wherever the species occurs.

Var. *rufa* Tutt.—Also noted commonly in the islands.

Var. *peacocki* mihi.—Although black and blackish forms of *T. comes* are distributed very generally in North and West Scotland, melanic varieties of *T. ianthina* have not hitherto been reported. However, blackish insects, not so extreme as those belonging to the allied species, were captured at various points on Raasay. In these examples, the thorax and abdomen are black above, whilst the upper wings have a blackish ground colour. This, nevertheless, exhibits the usual grey irrorations and markings observed in the more abundant red and purplish specimens. The variety is named *peacocki* after my friend Prof. A. D. Peacock.

It ought to be found well scattered over the Scottish Highlands and Islands.

Var. *subrosea* mihi. — This insect presents a really magnificent appearance when fresh. It possesses a ground colour of a pinkish grey, sprinkled with blackish scales. The outer line is distinct, whilst the space between it and the usual position of the central shade stands out as a darkish band, lightly suffused with rosy-grey scales. The orbicular and reniform are both obsolete, but the submarginal line and the dull red costal patch are both present. The veins, especially vein 1 and those of the cell, tend to be outlined in black. The hindwings are normal. This form is scarce on Raasay.

Var. *plusioides* mihi.—In this insect the reniform and orbicular are well marked and filled in, except where the latter merges into the costal grey suffusion. Its general appearance recalls that of many British Plusias, from which fact the name is derived. Taken in the Inverarish area, Raasay.

Var. *virgata* mihi.—Median area exhibiting a black band; on all three islands.

Var. *ronensis* mihi.—In this variety the space between the submarginal and the outer lines, except for the reddish costal blotch, is filled in with grey. It was captured in all three islands, but more freely in Rona—hence its name.

II. *Triphœna comes* Hb.

The Type.— Insects of the type facies, and others approaching them, abound at sugar on Scalpay, but are much less common on the other two islands.

Var. *adsequa* Tr.—On every island.

Var. *pallida* Tutt.—This form has been bred from Raasay ova quite recently.

Var. *grisea* Tutt.—Quite common, Raasay, South Rona, and Scalpay.

Var. *rufo-grisea* Tutt.—With the preceding.

Var. *consequa* Tutt.—Also bred from Raasay ova.

Var. *rufescens* Tutt.—Captured commonly enough on Raasay and Rona, and bred in some numbers from ova obtained from Raasay females.

Var. *rufa* Tutt.—Common on Rona and Raasay, but absent from Scalpay.

Var. *curtisii* Newm.—Abundant on Rona and Raasay.

Var. *nigrescens* Tutt.—In my opinion this so-called variety is a composite, including within its limits a form evolved from var. *grisea* and a second from var. *rufa*. It should be noted that breeding experiments have demonstrated that in inheritance this form is epistatic to, not dominant over, the type.

Var. *lineata* mihi.—Entirely black except for clearly marked outer and submarginal lines; a few bred from Raasay ova.

III. *Triphœna orbona* Hufn.

The Type.—A single specimen of this exceedingly rare insect was bred from a larva swept from mixed low plants on the Inverarish-Holoman road, Raasay.

IV. *Triphœna pronuba* L.

The Type.—Like all the varieties of this species, usually

so abundant in most localities, the type was very far from being so plentiful as *T. comes* and *T. ianthina* on these islands; nevertheless, it was seen on all, rarely at sugar and more commonly at ragwort flowers. In addition, ova were found encircling grass stalks, and larvæ taken from *Rumex*, *Primula*, *Calluna*, etc., from which many forms including the type were bred.

Var. *ochrea* Tutt.—Not plentiful.

Var. *ochrea-innuba* Tutt.—A little less rare.

Var. *brunnea* Tutt.—Sparingly; a teratological example of this variety was boxed from ragwort near Suisnish; it exhibited strange indentations and prolongations of various veins of the forewings.

Var. *innuba* Tr.—Taken singly at sugar on Scalpay.

(*To be continued*)

NOTES

Young Gannets with Malformed Beaks.—Two young Gannets on the Bass Rock this year had crossed mandibles like those of a Crossbill. They were well fed and in good condition, but how they will get on when it comes to fending for themselves remains to be seen. They were marked with rings numbered 120908 and 120909 and curiously enough were close together. There is no previous record of such malformed beaks on young Gannets, as far as I can learn.

Gannets were nesting much nearer the top of the Rock than in previous years, and 200 young were marked with rings as compared with 80 last year.—H. W. Robinson, Lancaster.

First Fulmar Petrel to Hatch on the Bass Rock.—Last year one pair of Fulmars on the Bass produced an egg which, however, disappeared. This year two pairs laid, one egg disappearing, probably destroyed by the big gulls that frequent the Rock. The other egg hatched out, probably on 9th July, as the egg was well chipped that morning and probably hatched out later in the day. This is the first record of a Fulmar Petrel hatching out on the Bass. Curiously enough, with a pair under observation in Orkney last year, the chick also hatched out on 9th July.—H. W. Robinson, Lancaster.

Basking Shark at Alloa.—A Basking Shark, *Cetorhinus maximus* (Gunner), was caught in the salmon nets on the Forth at Langcarse, rather more than a mile west of Alloa on 30th August 1937. It was a young male, measuring from the tip of the snout to the end of the tail twelve feet seven and a half inches. The gill rakers, which in an adult may attain a length of five to six inches, measured two and three quarter inches. It seemed quite normal in most characteristics except for the snout, which possessed at its upper termination a protuberance resembling in shape a small rhinoceros horn, quite unlike the streamline profile of the Basking Shark's snout figured in most text-books. — MARGERY I. PLATT, Royal Scottish Museum.

Notes from North Uist.—The Terns arrived on 2nd May, and on the same date a Ringed Plover's nest with a clutch of four eggs was found. The Terns are almost a week later than last year in their arrival. The first Corncrake was seen on 4th inst. running among the trellises on the drive. A Humble Bee was noted on 5th.

On 8th May quite a number of things were noted. First I found a Black-headed Gull's nest with three eggs on a small tidal island measuring only about two acres. On this same islet a profusion of wild violets and primroses were in evidence, and a single Little Stint was noted. Last year this little wader was observed in almost the exact locality and just one day later. Eiders are moving from the shore to the hill where they have now of recent years decided to nest. Formerly they preferred to have their sites nearer the shore.

A Twite has nested again in a Veronica bush outside the drawing-room window; the first egg was laid on 16th May and to-day it has five eggs. Last year when this number had been attained a storm blew up and threw the nest and eggs out of the bush—the eggs were smashed. On the whole nesting is later than last year. The Swallow has not made its appearance yet, nor have I seen any Sand Martins. Numbers of Common Sandpipers "trill" along the shores of the freshwater lochs and Corncrakes are quite as numerous as in former years. A Hen Harrier was seen on 22nd May close to the farm steading. After three days of much needed rain the afternoon of 23rd May became bright and warm. On this date the first nest of the Common Snipe with four eggs was found in a marsh. The bird was sitting so close that when she rose she actually brushed against my shoe. In the same marsh several Black-headed Gulls' and Green Plovers' nests all containing eggs were noted, and an Oyster Catcher's nest with three eggs was

discovered near the shore. At present a number of Whimbrel or May Fowl are to be seen; but they do not breed here, though I am told that they do so in North Rona, Isle of Lewis.

On 23rd May a Great Skua was seen flying in a westerly direction; it passed quite low and could not be mistaken. This is the second example only that I have seen, the first being over ten years ago. The Twite's nest which met with disaster last year has again been harried by the wind, but so far only two of the five eggs have been blown out of the nest and smashed. On 1st June the remaining eggs were found broken lying on the ground below the nest.

A Great Black-backed Gull's nest with three eggs, one of them light green in colour, was found on an island close to a house situated on the shore. It is seldom the Black-backed Gull lays so near habitation. There is a loch named Scadavy on which there are exactly 365 small islands, and this is where they take up their breeding quarters and it is unusual to find them outside this locality. A flock of fifty Bar-tailed Godwits is still here and Common Gulls and Black-headed Gulls as well as Oyster Catchers are nesting freely. A Merganser's nest with seven eggs was found on the shore of a freshwater loch on 27th May.

A single Shoveller was seen on 16th July on the small loch on Heisker Island, North Uist.

On 22nd July a Crossbill was seen sitting on the marsh fence between Griminish and Scolpaig, close to the main road. It was quite tame and let one quite close to it. The first I saw here was also at Scolpaig on 11th July 1916.—George Beveridge, Vallay, N. Uist.

Peacock Butterflies on Islay.—On 9th September we saw a Peacock butterfly sunning itself on a rock above Port Ellen. Another was seen by us near Bridgend on the 11th, and we were told of yet another being seen near Port Askaig the day before. The two seen by us were in perfect condition. We also saw a Red Admiral on 10th September.—Leonora Jeffrey Rintoul and Evelyn V. Baxter.

Dotterel in the Inner Hebrides.—As there appears to be no previous record of the Dotterel in the Inner Hebrides, it seems to us worth while recording that we saw one on Islay. This was above Port Ellen on 9th September 1937; the bird was evidently on migration.—Evelyn V. Baxter and Leonora Jeffrey Rintoul.

SCOTTISH BIRD NOTES.

By James W. Campbell.

(1) Outer Hebrides.

House Sparrow (*Passer d. domesticus*).—This species has increased during the last few years and is now abundant in North Uist and Benbecula in the immediate vicinity of human habitations. In these islands it appears to be more numerous and widely distributed during the breeding season than in the winter. It is also well distributed through South Uist, Harris and Lewis.

Garden Warbler (*Sylvia borin*).—There was one in song in the garden of the hotel, Tarbert, Harris, on 27th June 1937. I had an excellent view of the bird from a distance of a few feet; the bird was still singing on the next day when I left Tarbert.

House Martin (*Delichon u. urbica*).—One, Newton, North Uist, 5th June 1937.

Heron (*Ardea c. cinerea*).—There were forty-seven nests at the heronry on Wiay, Benbecula, on 5th June 1936, and forty-five on 27th May 1937.

Common Tern (*Sterna h. hirundo*).—During the last few years I have found the Common Tern in many places in North and South Uist and Benbecula and it is now by no means rare, although in my opinion, at any rate as far as North Uist is concerned, the Arctic Tern is still the more numerous.

Little Auk (*Alle a. alle*).—On 16th January 1937, while crossing from Kyle of Lochalsh to Tarbert, Harris, in the T.S.M.V. *Loch Mor*, a large number was encountered off the north coast of Skye. It was impossible to make an accurate count; but there were certainly many hundreds of them all flying north-westerly until we were a few miles north-west of Rudha Hunish, after which none was seen till East Loch Tarbert, where there were a few on the water. Throughout January and February several occurred in the Sound of Harris, and the remains of one recently eaten, probably by a cat, was found at Loch Portain, North Uist.

SPOTTED CRAKE (*Porzana porzana*).—One was killed in North Uist on 22nd October 1936.

(2) CLYDE.

These short notes which refer to observations made during visits to Campbeltown in January and February 1933, and to Inveraray in August 1932 to 1936, have been prompted by the remarks made by Mr J. M. M'William in *The Birds of the Firth of Clyde*, as to the need for further information concerning the status of many species, especially in the northern part of the area dealt with in his book. Although these notes are concerned with a few species only, full notes were kept on the status, habitat, and habits of all the birds observed in these localities, and it is hoped to deal with these and also with those for other parts of Argyll more fully in subsequent notes.

(A) *Kintyre.*

CORN-BUNTING (*Emberiza c. calandra*). — Numerous around some of the stackyards between Campbeltown and Kilkenzie, and flocks containing thirty to forty were noted.

"GREY" GEESE.—During my stay at Campbeltown, some time was spent in pursuit of Grey Geese on the Laggan, and as I was often within sixty to seventy yards of them, there were excellent opportunities for accurate identification of their species. It was difficult to arrive at an estimate of the number using this area for their number varied markedly from day to day, depending no doubt on the amount of disturbance they were subjected to, both here and in the neighbourhood, but there were probably between one hundred and two hundred and fifty. This total was made up of GREY LAG (*Anser anser*) and WHITE-FRONTED (*Anser albifrons*), and again it was difficult to estimate the proportion of the two species, for on one day one would predominate and on the next the other. All the Grey Lags handled had bills of the orange-yellow type.

PINK-FOOTED GOOSE (*Anser brachyrhynchus*). — Fully identified on one occasion only, 22nd January, when an excellent view through the telescope was had of a small

party feeding near some Grey Lag. The geese were within two hundred yards and the visibility was good so that the distinctive characters were readily made out and compared.

BARNACLE GOOSE (*Branta leucopsis*)—About twenty, on 16th January, were the only ones observed.

WATER-RAIL (*Rallus a. aquaticus*).—Several were seen on the Laggan.

(B) *Inveraray.*

WHINCHAT (*Saxicola r. rubetra*) and STONECHAT (*Saxicola torquata*).—Both were fairly numerous in suitable areas during August and a few Stonechats were still feeding young early in the month.

WIGEON (*Anas penelope*).—There is a small loch in the hills between Glen Aray and Glen Shira, within three miles of Inveraray, where Wigeon are reported to have bred for some years; I have seen young ones here which were unable to fly.

TUFTED DUCK (*Nyroca fuligula*). — It may be worth noting that I was informed by Mr D. M'Kenzie, keeper at Inveraray, that a "Golden-eyed" Duck nested in 1931 and 1933 on a small loch near the one used by the Wigeon and within three miles of Inveraray. The full description I was given pointed to the birds being Tufted Duck, but further evidence is desirable before the breeding of the Tufted Duck at this loch can be established.

BLACK-NECKED GREBE (*Podiceps n. nigricollis*). — On 14th August 1936 I had a very good view from about thirty yards, through field glasses, of a Grebe swimming in the harbour at Inveraray. The slightly up-tilted bill and other distinctive characters were readily made out; there were no traces of summer plumage.

(3) WEST ROSS.

LONG-TAILED DUCK (*Clangula hyemalis*). — Nine in Gruinard Bay, 6th May 1933

FULMAR (*Fulmarus g. glacialis*).—There were several at the Summer Isles on 2nd June 1931.

NOTE

Wild Goat in Scotland.—Mr Hugh Boyd Watt has lately summarised, in so far as information is available, the history and status of wild goats in Scotland (*Journal of Animal Ecology*, vol. vi., No. 1, May 1937). These goats are feral and have been derived from domestic stocks introduced by man. They are generally distributed in small numbers in certain districts from the Shetlands to Galloway and the Cheviots, but they are of most frequent occurrence in the Highlands and the Western Isles.

BOOK NOTICES

An Introduction to Comparative Biochemistry. By ERNEST BALDWIN. Cambridge: University Press, 1937. Pp. xviii+112. Price 5s. Dr Baldwin in a clear and somewhat technical account describes the various biochemical processes found in the physiology of animals of the sea, freshwater, and land. The subject is treated largely from an evolutionary standpoint and the argument for the probable origin of vertebrates from a freshwater ancestor is discussed. Other topics include, the colonisation of freshwater, the ionic composition of the blood, the regulation of osmotic pressure and osmotic independence, the colonisation of dry land, the excretion of nitrogen, respiration, and the more important animal pigments. This is an invaluable book which should be in the hands of all senior students of zoology and naturalists who are interested in the problems of evolution and ecology of animals.

Some Problems of Being Alive: A Junior Biology. By J. J. BRYANT, B.Sc. Edward Arnold. Pp. viii+248. 2s. 9d. This book is an excellent introduction to a difficult subject. It is written by a schoolmaster for use in schools, and is "designed for use during the middle-school period when elementary Nature Study is no longer sufficient, but before the rigid examination syllabus dictates what shall and what shall not be done." In fact one cannot imagine the examination dictators ever approving a syllabus on the lines of this book! Typical chapter titles are: Growing, Reproducing, Moving, Getting Energy for Living, Unfavourable Seasons.

There is a useful appendix giving technical details of dissections, etc., and an adequate index. The numerous diagrams are well done and are worth many pages of text.

The Desert Pool. By G. A. CHALKLEY. London: Longmans, Green & Co. Illustrated. Pp. 228. Price 6s. Here the author recounts in story form life in the African veld on the border of Bechuanaland. The description of the appearance and habits of all the wild animals,

and how some were tamed by the young hero1 "Tony," lost in this trackless country, proves interesting reading. The author has illustrated his drama by 80 excellent photographs.

Where to look for Wild Flowers. By S. C. JOHNSON. London: W. Foulsham & Co., Ltd. Pp. 143, 8 coloured plates and many text figs.

This is a book for the beginner to take with him on his rambles. Many of the common plants of the wayside are figured in colour while the text is written in simple everyday English. The plants are classified according to colour, shape, number of petals, etc., and under each plant is given a short description of the appearance and habitat. The treatment throughout is elementary and the book may be recommended to those who like to know the names of the conspicuous flowers which are seen during a day's walk.

The Country Rambler's Complete Guide. By S. C. JOHNSON, London: W. Foulsham & Co., Ltd. Pp. 143, 8 coloured plates and many text figs. Price 2s. net.

This volume is uniform with the last, and attempts to deal with the animals and plants which may be met with in a country walk. With the small space allotted to each species and the vast field covered, the result is inevitable. The descriptions in many instances are quite inadequate for certain identification, but there should be little difficulty in naming animals and plants from the coloured illustrations. This book like the last should prove useful in stimulating beginners to progress to sérious study of some group of animals or plants.

Plant Ecology. By HILDA DRABBLE. London: Edward Arnold & Co. Pp. 130, 12 plates (24 photographs). Price 7s. 6d. net.

This volume provides an excellent introduction to the study of plants in their natural habitats. The work is divided into two parts. Part I. gives a clear and concise account of the structure and modifications of plant organs in relation to their physiological function, thus building up for the student a basis for the understanding of Part II. The eighteen chapters which form this part embrace all the plant communities found in the British Isles. The book is easily read and should be of real value to students of Botany and Zoology.

An Anthology of Modern Animal Writing. Modern Anthologies, No. 9. By FRANCES PITT. London: Thomas Nelson and Sons, Ltd. Pp. xiii+291. Price 3s. 6d. This series of thirty-two articles has been gathered together for those to whom a study of the living animal in its natural surroundings is of special interest. The net has been widely spread and the result is very satisfactory, although one or two of the articles included seem somewhat legendary rather than the result of close study of the animal mentioned. There is much, however, of real interest and we can recommend the volume to all naturalists.

The Way of a Serpent. By T. H. GILLESPIE. London: Herbert Jenkins Ltd. Pp. 217. Price 3s. 6d. net. Mr Gillespie, the Director of the Zoological Park in Edinburgh, is already well known as a writer of valuable books on popular zoology. In this volume he has given us a popular account of the habits of Snakes—a group of animals to which he has always been strongly attracted. In his present capacity he has had still further opportunities for study and these he has put to good use. The volume is an exceedingly interesting one—well written and well illustrated by many clear and attractive plates, with a really effective frontispiece of the Green Tree Boa in colour. There are eight chapters in all dealing with such matters as Snakes in general; How Snakes Feed; The Great Constrictors; Poisonous Snakes; British Snakes, etc., as well as an appendix on the behaviour of various animals in the presence of a Snake.

Afoot in Wild Places. By SETON GORDON. London: Cassell & Co., Ltd. Pp. xiv+220, 48 plates. 1937. Price 12s. 6d. net. Mr Seton Gordon is well known for his writings on the Highlands and Islands of Scotland and his latest book retains throughout the same high standard of its predecessors. The author writes enchantingly of the dunes, *machair* and rocky coasts, the folklore and natural history of the lonely Hebridean Isles which he knows so well. It is easy to follow him "afoot" whether it be in the Hebrides, the Farne Isles, Irish Isles or on the Ile de Batz, so inspired and enthusiastic is our guide. This is a most pleasing and satisfying book which is greatly enhanced by beautiful photographs by the author and his wife.

Grouse Land and the Fringe of the Moor. By Lt.-Col. Lord GEORGE SCOTT. London: H. F. & G. Witherby Ltd. Pp. 197, 8 plates. 1937. Price 7s. 6d. net. This book deals with the various aspects of life of the grouse and other game birds of the moorland. The author has collected much valuable and interesting information quoting here and there from the well-known volumes on *The Grouse in Health and Disease*, but also drawing largely from his own considerable experience of grouse shooting and moor management. The text is well written and the illustrations are on the whole good. We recommend this volume for serious study to all shooting enthusiasts and those concerned with the management of grouse-moors.

Watching Wild Life. By PHYLLIS BOND. London: Longmans, Green & Co. Illustrated. Pp. 177. Price 6s. This little volume with 18 photographs taken by the author is a guide to the character of wild animals of the English countryside, particularly their actions under the strain of human scrutiny. It teaches one in a simple way what to do, and what to avoid doing, when an observer wishes to study a local fauna. Its greatest value lies in the fact that the author's own

personal experience is quoted. Virtually for beginners and young people interested in Nature. Deals chiefly with bird-life.

Koala. By CHARLES BARRETT. Melbourne: Robertson and Mullens Ltd. 1937. 31 pp. Price 2s. This little book can be fully recommended. It is a short but interesting account by one who has the well-being of this fascinating little animal at heart. The author has studied the Koala in its native haunts and not the least attractive part of the book is the collection of 17 photographs, most occupying a full page.

Wonders of the Sea: Shells. London: B. T. Batsford Ltd. Price 5s. Shells possess many points of interest both artistically and biologically, and their adaptations to the varying conditions of life are often very striking. In this volume it is the beauty of the shells themselves which is stressed, and this is a side which appeals to most of us. There are fifteen coloured page plates painted from nature and beautifully reproduced. To the artist and naturalist alike this book should prove a joy.

Transactions and Proceedings of the Perthshire Society of Natural Science, vol. ix., part 6. 1935-37. Pp. 212+lxxxv-xcix. Price 2s. 6d. This part contains much material of interest and covers a wide range of subjects as a list of the chief titles shows:—The Birds of Atholl; The Natural History of Whales; Recent Temporary Rock Exposures within the City of Dundee; Occurrence of Garnet Sands in the Tay Estuary; Botanical Notes from Glen Lyon; Amateur Astronomy; The Scottish Coronation Stone; The Geology of the Coronation Stone; also Proceedings.

A Guide to the Farne Islands. By T. RUSSELL GODDARD. Newcastle-upon-Tyne: Andrew Reid & Co., Ltd., 32 pp. Price 6d. In this handy little guide a good deal of varied information has been packed. The birds and mammals are fully described and a section on the history and topography of the islands is included. There are several excellent photographs.

A List of Irish Birds, showing the Species contained in the National Collection. By G. R. HUMPHREYS. Fifth Edition. Dublin: Stationery Office. Price 6d. This list as compiled brings the information up to the end of 1936, and the author is to be congratulated on the way in which he has done the work. For all species a series of notes is given. These deal with the status of the bird, and in the case of the rarer species with the specimens secured. Brief particulars are also given of birds ringed in Great Britain or on the Continent which have been recovered in Ireland; also of the much smaller number of birds ringed in Ireland and recovered elsewhere.

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